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Vocabulary learning strategy as a perceived predictor of EFL learners' written receptive vocabulary knowledge among Ethiopian university students

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Abstract

Studies emphasize on combination of incidental and intentional vocabulary learning strategies in English as foreign language pedagogy. The current study established the significance of vocabulary learning strategies as a perceived predictor of written receptive vocabulary knowledge among Ethiopian university EFL students. A quantitative correlational design was employed. To gather the appropriate data, a vocabulary learning strategy questionnaire and vocabulary size test were administered to 356, randomly selected, freshman English as a foreign language learners. To analyze the data, correlation and multiple linear regressions were computed using SPSS version 23. The major findings of the study revealed a significant positive relationship between perceived vocabulary learning strategies and written receptive vocabulary knowledge among the target English as a foreign language university students. In addition, the overall vocabulary learning strategy preferences have a significant positive linear relationship with perceived written receptive vocabulary knowledge. Remarkably, while metacognitive, social consolidation, cognitive, social determination, and memory strategy were analyzed, only determination strategy significantly contributes to predicting students' written receptive vocabulary knowledge. This study provides useful insights to EFL teachers, and curriculum designers with regard to improving learners' vocabulary learning. The authors also suggest conducting research to understand the directivity of the relationship between vocabulary learning strategies and written receptive vocabulary knowledge.

Introduction

Providing someone with a fish feeds them for a day; teaching them how to fish sustains them indefinitely (Wenden, 1985). Wenden applies this metaphor to argue that while language teachers might solve immediate challenges by giving answers, cultivating learners' ability to independently navigate problems empowers them to attain lasting educational growth.

In the context of English as a foreign language (EFL), vocabulary is described as one of the most essential elements of a language that determines students' success in learning the language (Boonkongsaen & Intaraprasert, 2014; Cellat &Köse, 2017; Golkar &Yamini , 2007; Heng ,2011). In the same vein, Harmer (1997) described that "it is generally believed that if language structures make up the skeleton of language, then it is vocabulary that provides the vital organ and flesh*"* (p.153). Another key point, Wilkins (1972) stated that "Without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (p.111). Among numerous aspects of language such as pronunciation, writing system, syntax, pragmatics, rhetorical modes for reading and composition, culture, and spelling, vocabulary is the most important aspect (Folse, 2008). Not differently, Schmitt (2008) stated that all students, teachers, materials writers, and researchers agreed that learning vocabulary is a crucial part of understanding a second language. Indeed, a person with a limited vocabulary faces difficulties in understanding foreign language learning (FLL). Regarding this, Bernardo and Gonzales (2009) argued that students' academic achievement in their chosen field also greatly depends on wide vocabulary acquisition.

Besides, to be successful in vocabulary learning, employing various vocabulary learning strategies (VLSs) is crucial. For instance**,** Alharthi (2014) and Xu and Hsu (2017) stated that VLSs enable FLLs to apply effective techniques in communicative competence and develop long-term maintenance of foreign language vocabulary knowledge inside and outside the classroom setting. Likewise, Schmitt (2008) indicated that since vocabulary learning is a difficult and gradual process, applying diverse and proper VLSs enables learners to be effective through an incremental learning process. Learners gain an enormous amount of vocabulary when they use VLS which is valuable for different language levels (Nation,2001). Admittedly, previous research works highlighted that the lack of implementation of various VLS could be a reason for foreign language learners' poor vocabulary knowledge. Concerning this, Schmitt (1997) declared that poor language learners employ few strategies and

show little awareness of how to learn new words or how to connect new words to old knowledge. Unsuccessful foreign language learners do not use a wide range of VLSs, and they do not know how to learn the form and meaning of large words in a variety of contexts and situations (Waldvogel, 2013).

Moreover, VLSs are crucial in that they help learners to become independent learners. Independent learning allows learners to take responsibility for their own learning by setting goals, planning and evaluating their progress over time (Al-fuhaid, 2004). Equally important, Heng (2011) specified that foreign language learners should be hardworking, independent learners and use effective VLS which contributes to self-vocabulary learning. A good language learner is an independent learner who can indicate and employ different VLSs in learning vocabularies (Hasnan &Alam, 2012). Building on the previous point, Bennett (2006) stated that the most effective way to improve learners' vocabulary skills is to improve their ability to work in an autonomous manner. Hence, the strategies employed by successful language learners have become the focus of attention among teachers and researchers because foreign language learners who take greater control of their learning will become more successful than those who do not (Fan,2003). Similarly, Kojic-sabo and Lightbown (1999) explained that learners' independence relates to success in vocabulary learning and the overall English proficiency.

Vocabulary acquisition is still a contentious issue of how learners acquire vocabulary effectively and efficiently or how it can best be taught (Hamzah et al., 2009; Kalajahi & Pourshahian,2012). Furthermore, Al-Omairi (2020) stated that studies on VLS within an EFL setting are still ongoing. Various studies have been conducted regarding foreign language learners' VLS and their vocabulary size. For example, (Aktar & Strong, 2019; Alsharif, 2022; Hamzah et al., 2009; Khan & Ariffin, 2023; Khatimah, 2018; Memis, 2018; Salim & Yamat, 2022) have conducted to explore the association between VLS and vocabulary knowledge in other countries' contexts.

Moreover, a number of studies, in the Ethiopian EFL context, have investigated issues related to VLSs. Among them, Getachew and Getachew (2014) assessed VLSs used by Jorgo Nole, grade 11 EFL students, and they concluded that the most frequently used VLS for the high achievers was cognitive strategy, and the least used strategy was a social strategy. Besides, Asafew (2021) investigated EFL Students' Awareness and Use of VLS in high school EFL students and concluded

that most of the EFL learners were not aware of the importance of VLSs and did not think that these VLSs are important to raise their vocabulary knowledge.

As well, Abebaw and Nuru (2024) assessed the effect of VLS training on vocabulary knowledge, and they concluded that VLS trainings proved to be valuable in broadening learners' awareness to explore effective strategies aiding their self-learning. Haimanot et al., (2024), investigated the effect of VLSs on students' vocabulary achievement and motivation, and they concluded that training in VLSs had a significant impact on learners' vocabulary knowledge attainment.

Yet, to the best of the present authors' knowledge, to date, no empirical research on VLS and its relationship with students' written receptive vocabulary knowledge (WRVK) has been conducted in the Ethiopian higher education EFL context. Critically, earlier studies related to vocabulary mainly placed their emphasis either on the types of VLSs used, training or learners' vocabulary knowledge. So far, there is a research gap in the relationship between VLSs and WRVK. Hence, this study aims to identify the students' VLS preference and its contributions to WRVK in the Ethiopian higher education EFL contexts.

Based on the gaps identified, the following research questions are formulated to guide the research process: Q1: Is there any significant relationship between vocabulary learning strategy preferences and written receptive vocabulary knowledge among English as Foreign Language students in the Ethiopian university context? Q2: How significantly does students' vocabulary learning strategy preference predict their written receptive vocabulary knowledge? Q3: To what extent do the different vocabulary learning strategies that English as a Foreign Language students use contribute to their written receptive vocabulary knowledge?

Emperical Reviews

Definition of Vocabulary learning strategies

Based on various perspectives, many scholars developed different definitions of VLSs. For instance, Intaraprasert (2004) defined it as "any set of techniques or learning behaviours, which EST students reported using in order to discover the meaning of a new word, to retain the knowledge of newly learned words, or to expand their knowledge of English vocabulary" (p. 53). Additionally, Taka (2008) stated that Vocabulary learning strategies are deliberate techniques learners use to facilitate vocabulary acquisition, helping them discover, understand, and remember word meanings and forms. These strategies also support

organizing, retrieving, and applying vocabulary in communication. Catalan (2003), understood VLS as an understanding of the methods (processes, strategies) involved in vocabulary acquisition, as well as purposeful steps learners employ to (a) determine meanings of unfamiliar words, (b) store them in long-term memory, (c) retrieve them when needed, and (d) apply them in oral or written communication.
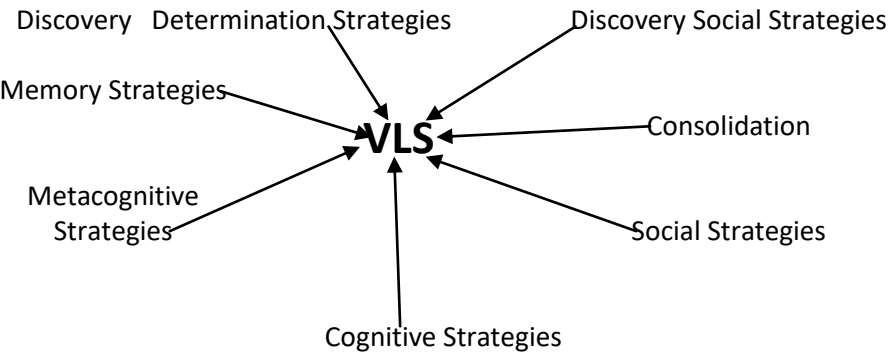
Classification of vocabulary learning strategies

Various researchers (Gu & Johnson, 1996; Lawson &Hogben,1996; Schmitt, 1997; Intaraprasert ,2004; Winke & Abbuhl, 2007) have developed numerous classifications of VLSs. In particular, Gu and Johnson classified VLS as selective attention and self-initiation, guessing strategies, dictionary strategies, note-taking strategies, rehearsal strategies, encoding strategies, and activation strategies. On the other hand, Lawson and Hogben discovered four categories of VLSs (repetition, word feature analysis, simple elaboration, and complex elaboration).

Above all, Schmitt's VLS taxonomy, which is influential, is divided into two domains: discovery strategies which are strategies used to discover the meaning of an unknown word, and consolidation strategies which are strategies used to consolidate (or learn) the meaning of a previously unknown word. Discovery strategies are further subdivided into determination strategies and social strategies.Consolidation strategies, on the other hand, are subdivided into social, memory, cognitive, and metacognitive strategies (see Schmitt's,1997 taxonomy, Figure 1).

As a matter of fact, Schmitt's VLSs taxonomy, which is applied in this study, has been employed in several earlier studies (Hayatbakhsh et al.,2023; Al Fraidan & Fakhli ,2024; Ali,2020; Al-Omairi,2020; Alsharif ,2022; Bernardo & Gonzales, 2009; Castellano-Risco,2018; Ghalebi et al., 2021; Khan & Ariffin,2023; Kridis, 2023; Nirattisai & Chiramanee,2014; Waldvogel, 2013). Differently, Intaraprasert classified VLS into three categories: discovering the meaning of a new word, retaining the knowledge of newly-learned vocabulary items and expanding learners' knowledge of vocabulary. On the other hand, Winke and Abbuhl developed three types of VLS, namely, input-based, output-based and cognition-based strategies.

Table 1
VLS Taxonomy (Schmitt,1997)

Discovery   Determination Strategies   Discovery Social Strategies

Memory Strategies

Consolidation

VLS

Metacognitive
Strategies

Social Strategies

Cognitive Strategies

Receptive vocabulary knowledge

Scholars in the vocabulary arena agreed to divide prominent vocabulary knowledge within the scope of its use in either the skills of writing, reading, listening and speaking. Accordingly, they divide vocabulary knowledge into productive and receptive vocabulary (Maskor & Baharudin,2016). Concerning this, Nation (2001) stated that receptive vocabulary comprises noticing the form of a word while listening or reading and recovering its meaning. Despite this, productive vocabulary use involves wanting to express meaning through speaking or writing and retrieving and producing the proper spoken or written word form. Furthermore, Schmitt (2010) stated that receptive vocabulary knowledge consists of receptive knowledge of orthography, meaning and form, grammatical functions, syntax, and association. "Receptive use of L2 requires using the senses of listening and/or seeing" (Al-fuhaid,2004, p.67).

Written receptive vocabulary knowledge

According to Nation (2012), WRVK is the vocabulary knowledge required for reading. Various scholars considered the specific purpose of WRVK. For example, Webb (2008) stated that knowing learners' written receptive vocabulary size gives evidence for teachers whether learners will be able to comprehend a text. Furthermore, Nation (2001) highlighted that written receptive vocabulary knowledge is a vital indicator of vocabulary size and plays a key role in EFL proficiency and communicative competence in English. Accordingly, vocabulary size that includes written

receptive vocabulary is eventually related to language proficiency and communicative competence.

Vocabulary size test

Vocabulary size denotes the number of words that a student recognizes, at least the shallow meaning (Wero et al.,2021). Moreover, Nguyen and Nation (2011) stated that VST was formulated to measure the total vocabulary size of EFL learners' proficiency in receptive vocabulary knowledge, specifically written receptive vocabulary size, not productive use. Nguyen and Nation also emphasized that VST measures WRVK, the vocabulary knowledge essential for reading, but it does not evaluate listening, speaking, and writing vocabulary size. Nation and Beglar (2007) explained that VST was developed to estimate overall written receptive vocabulary size that contains 140 items with 10 items from each of fourteen 1,000-word levels, a four-item multiple-choice format, which is framed based on the British National Corpus. VST inspects to what extent learners detect the target language words compared to their classmates at identical educational levels (Alsharif, 2022).

Theoretical framework

The current study was supported by two theories of language learning: cognitive language learning theory, which owes its origin mostly to Piaget and socio-cultural language learning theory, derived from Vygotsky's cultural-historical theory. Regarding the first theory, Kapur (2017) stated that Piaget believed that cognitive development is the result of the interaction between the individual and the environment. Moreover, this theory is applicable to the independent variables of this study such as memory, cognitive, meta cognitive and discovery determination strategies. On the other hand, socio-cultural language learning theory underlines social interaction and cooperative learning, connection with other teachers, and the world-at-large in which learning takes place (Brown, 2007). Thus, the second theory applies to the other independent variables of the current study, namely, social consolidation and social discovery strategy.

Methods

This research employed a quantitative research approach with a correlational design as it was established to describe the relationship between VLS and WRVK (Creswell, 2014). The needed data were collected through an adapted vocabulary learning strategy questionnaire

(VLSQ) and vocabulary size test question (VSTQ). The VLSQ was adapted from Waldvogel (2013) which was originally developed by Schmitt (1997). Moreover, after conducting a pilot study, Waldvogel added two VLSQs: a) an item on computer-based VLS and b) extensive FL reading and used 60 VLSs. As well as, after conducting the pilot study in which 30 Bahir Dar University EFL students were asked to add any additional VLSs they used which were not listed in Schmitt's taxonomy, the current researchers added two VLSs: a) Amharic-English dictionary and b) mobile phone dictionary. Thus, the current study employed 62 five-point Likert-scale VLSQ items to measure EFL learners' VLS preferences.

The other data collection instrument employed in this study was the standardized VSTQ adopted from Nation and Beglar (2007). This test comprises from the first 1,000 to the fourteenth 1,000-word families of English, and each item in the test represents 100-word families. Although, it consists of 140 multiple-choice items, the researchers, for the purpose of the current study, reduced it to 100 items to save administration time. To illustrate this further, Beglar (2010) asserted that there exists a lack of differences among the eleventh through the fourteenth 1000-word frequency levels. Besides, Nguyen and Nation (2011) declared that even learners could sit a 70-item version of the test since it works well. In fact, previous researchers, in particular Albodakh and Cinkara(2017) and Lee (2014) employed a 100-item version of this test to measure FLL vocabulary size. Furthermore, Nation (2012) suggests "Initial studies using the test indicate that undergraduate non-native speakers of non-European backgrounds successfully coping with study at an English speaking university have a vocabulary size around 5,000-6,000 word families" (p.6). Based on the above justifications, this test, for the purpose of the current study, was shortened to 100 items.

Data collection procedures

Notably, to avoid confusion that the English version might cause, the VLSQ was translated into the Amharic language, which is the federal official language of Ethiopia, and broadly spoken throughout the country. After the VLSQ was translated into Amharic by authorized translators, two linguists from Bahir Dar University were invited to triangulate and to improve the accuracy of the translations. Lastly, the adapted VLSQ tool was piloted for reliability on a group of 30 freshman undergraduate EFL students in an equivalent university. Consequently, the reliability test score showed α=0.957. Hence, the VLSQ was considered reliable and employed in the current study.

Data analysis methods

To analyze the data, Pearson correlation and linear multiple regression were applied using SPSS version 23 to separately identify the relationship and prediction degrees between the independent (VLS) and dependent (WRVK) variables.

Population and sampling

The participants of this study were freshman EFL students enrolled in the 2023/2024 academic year at Debre Tabore University, Ethiopia. During the data collection period, they were taking Communicative English Language Skills *I* and *II* as common courses. Based on the data obtained from the university's registrar and alumni office, the total number of freshman students during the academic year was 3260. Then, a simple random sampling technique was used to select 356 samples from the total population and the sample size was calculated using Yamane (1967) formula as follows.

$$n = \frac{N}{1 + N(e)^2} = \frac{3260}{1 + 3260(0.05)^2} = 356.284, \text{where } n = \text{samples, N} = \text{population, e} = \text{sampling error}(0.05)$$

Results

The relationship between VLS and WRVK among university EFL students

To answer the first research question, a Pearson product-moment correlation was conducted to examine the relationship between VLS and WRVK. As referred in Table 2, WRVK has a statistically significant positive correlation with values of : determination VLS (r =0.432, p = .000 < 0.01), memory VLS (r =0.238, p = .000 < 0.01), cognitive VLS (r =0.217, p = .000 < 0.01), metacognitive VLS (r =0.216, p = .000 < 0.01), social consolidation VLS (r =0.179, p = .001 < 0.01), social determination VLS (r =0.164, p = .002 < 0.01), indicating a significant and positive correlation between WRVK and the six VLSs among EFL students in Ethiopian Universities.

Table 2
Correlation matrix between VLS and WRVK among the university EFL students.

		WRVK	DS	SDS	SCS	MS	CS	MCS
Written receptive vocabulary knowledge (WRVK)	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	356						
Determination strategy (DS)	Pearson Correlation	.432[**]	1					
	Sig. (2-tailed)	.000						
	N	356	356					
Social determination strategy (SDS)	Pearson Correlation	.164[**]	.393[**]	1				
	Sig. (2-tailed)	.002	.000					
	N	356	356	356				
Social consolidation strategy (SCS)	Pearson Correlation	.179[**]	.399[**]	.559[**]	1			
	Sig. (2-tailed)	.001	.000	.000				
	N	356	356	356	356			
Memory strategy (MS)	Pearson Correlation	.238[**]	.613[**]	.550[**]	.576[**]	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	356	356	356	356	356		
Cognitive strategy (CS)	Pearson Correlation	.217[**]	.498[**]	.487[**]	.524[**]	.759[**]	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	356	356	356	356	356	356	
Metacognitive strategy (MCS)	Pearson Correlation	.216[**]	.420[**]	.440[**]	.509[**]	.672[**]	.630[**]	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	356	356	356	356	356	356	356

[**]. Correlation is significant at the 0.01 level (2-tailed).

Overall VLS level as a perceived predictor of WRVK among university freshman EFL students

The regression model in Table 3 shows that the six predictor variables (VLSs) together described 19.4% of the variation in the dependent variable (WRVK), and this prediction effect is found to be statistically significant (R^2=0.194, F (6,349) = 13.960, P= .000< .05).

The ANOVA in Table 4 further displays that, with the individual VLS combined, the overall VLS model has a significant positive linear relationship with perceived WRVK among the target students F (6,349) = 13.960, P= .000< .05).

Additionally, equivalent outcomes were also gained when total VLS (i.e., overall score on the VLSs as a whole) was evaluated as a predictor

variable to perceived WRVK among the sample students. Consequently, the regression results in Table 5 infer that students' total VLS significantly positively predicted their perceived WRVK (β=0.678, t= 6.031, P= .000< .05). In sum, to answer the second research question, the multiple regression analysis results declared that total VLS is a significant positive predictor of WRVK among university students in Ethiopia.

Table 3

Regression model summary for the combined contribution of VLS to the supposed prediction of WRVK among the university EFL students

Mode					Change Statistics				
1	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.440[a]	.194	.180	1.169	.194	13.960	6	349	.000

    a. Predictors: (Constant), metacognitive strategy, determination strategy, social determination strategy, social consolidation strategy, cognitive strategy, memory strategy

    b. Dependent Variable: written receptive vocabulary knowledge

Table 4

Summary of ANOVA results for the overall perceived prediction effect of VLS on WRVK among the university EFL students

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114.544	6	19.091	13.960	.000[b]
	Residual	477.276	349	1.368		
	Total	591.820	355			

Table 5

Summary of the regression results for total VLS as a predictor of WRVK among the university EFL students

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.074	.330		3.260	.001
	VLS	.678	.112	.305	6.031	.000

    a. Dependent Variable: written receptive vocabulary knowledge

Contributions of individual VLS to the perceived prediction of WRVK among university EFL students

To answer the third research question, the extent of perceived individual contributions of the six VLSs to the prediction of WRVK among the university freshman EFL students was calculated using multiple linear regression analysis; the results of which are revealed in Table 6 below.

Table 6

Summary of regression results for individual contributions of VLS to the perceived prediction of WRVK among the university students

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.459	.330		1.389	.166
	Determination strategy	.909	.122	.456	7.453	.000
	Social determination strategy	-.010	.095	-.006	-.104	.917
	Social consolidation strategy	.022	.090	.016	.242	.809
	Memory strategy	-.251	.181	-.125	-1.389	.166
	Cognitive strategy	.040	.129	.024	.313	.755
	Metacognitive strategy	.158	.122	.088	1.300	.194

a. Dependent Variable: written receptive vocabulary knowledge

Hence, determination strategy was found to be the highest significant contributor to the prediction of WRVK (β = 0.909, t = 7.453, P = .000<.05). But comparatively insignificant contribution points were noted for Metacognitive strategy (β = 0.158, t = 1.300, P = .194>.05), Cognitive strategy (β = 0.040, t = 0.313, P = .755>.05), Social consolidation strategy (β = 0.022, t = 0.242, P = .809>.05), Social determination strategy (β = -0.010, t = -0.104, P = .917>.05), and Memory strategy (β = -0.251, t = -1.389, P = .166>.05), respectively. Consequently, from the results of the regression analysis, it can be inferred that the determination strategy has significant positive individual contributions to the perceived prediction of WRVK among the target university freshman EFL students while the contribution of metacognitive, social consolidation, cognitive, social determination, and memory strategies appears to be relatively not significant

Discussion

The present study aimed to predict higher education freshman students' WRVK based on their VLS preferences. Thus, the first research question aimed to determine if there was any significant relationship between perceived VLS and WRVK among higher education EFL students in Ethiopian higher education context. The results of the Pearson correlation analysis specified that WRVK has a significant positive perceived relationship not only with total VLS but also with all of the individual VLSs among the target freshman students. Additionally, the second research question examined whether VLS preference is a significant perceived predictor of WRVK among freshman students in Ethiopian universities. Accordingly, the results of the linear multiple regression analysis asserted that the overall VLS preferences have a significant positive linear relationship with perceived WRVK among freshman EFL students of Ethiopian higher education. Besides, the third research question tested the degree to which students' preference for the six categories of VLS contributes to predict their WRVK. Accordingly, determination strategy significantly contributes to this effect as individual learners' VLS preference while metacognitive, social consolidation, cognitive, social determination, and memory strategy do not relatively have significant contributions to predict students' WRVK.

In alignment with the results of several studies conducted in different contexts, such as (Agustianti et al,2021**;** Haimanot et al.,2024; Hamzah et al, 2009; Memis, 2018; Nirattisai & Chiramanee, 2014; Salim &Yamat, 2022; Zuhairi& Mistar, 2023), the present study revealed a significant relationship between VLS and WRVK. In contrast, the current result diverges from several previous findings (e.g. Aktar & Strong, 2019; Kalajahi & Pourshahian, 2012; Khan & Ariffin, 2023; Prayitno, 2015) in which no correlation between VLSs and vocabulary size was reported.

Moreover, the results of the six VLSs revealed that there was only one strategy that correlated with students' WRVK, which was the determination strategy. This result is similar to the findings of Al Friadan and Fakhli (2024). Conversely, Alsharif (2022) reported that the determination strategy did not show any significant relationship with participants' vocabulary size. Additionally, this finding also partially supports earlier research findings of Khatimah et al. (2018), who testified that determination and metacognitive strategies correlated with students' vocabulary size.

Conclusion

The objective of this study was to examine the role of VLS as a predictor of WRVK among freshman EFL students of Ethiopian universities. Based on the research questions, VLS's perceived relationship with and predictive effect on WRVK among the learners is statistically computed. Accordingly, the result of this study shows a significant correlation between the six VLSs and students' WRVK. Besides, unlike metacognitive, social consolidation, cognitive, social determination, and memory strategy, determination strategy has a significantly positive contribution to this effect.

The more strategies used by EFL learners, the better their vocabulary size they have. To improve students' WRVK, higher education EFL teachers recommended offering VLS pieces of training for their EFL learners. Previous studies (Abebaw &Nuru, 2024; Haimanot et al., 2024; Kok & Canbay, 2011) stated that VLS training has been verified to be very valuable in broadening learners' awareness to explore effective strategies and to increase their learning autonomy. Additionally, while teaching the English language, EFL teachers are advised to identify students' preference for VLS, to design more effective vocabulary learning tasks, to make the lessons more engaging and effective.

Though this research has recognized a correlation between VLS and WRVK, further study is required to fully understand the complexities of the relationship. Here are three options to take this research further. First, researchers may conduct a more comprehensive investigation on a wide range of factors affecting VLS and WRVK (e.g. belief, attitude, motivation, class level, gender, and social and situational. Secondly, for a robust understanding of the problem, a more robust methodology employing mixed-methods design that uses interviews to include learners' opinions about VLSs and classroom observations to give insight about all that happens during the instructional time appears worth investigating. Thirdly, researchers may also employ experimental design to better understand the directionality of the relationship.

Implications

Drawing on the findings of the current study, the researchers recognized the following   theoretical, Pedagogical and methodological implications. First, the findings of this study support existing theories on the importance of VLS in language acquisition. The significant positive relationship between VLS and EFL learners' WRVK offers empirical support for models like Schmitt's (1997) VLS taxonomy that highlight the

importance of strategic learning in EFL/ESL learning. Second, the current findings have various vital implications for vocabulary teaching – learning activities. For example, explicit vocabulary instruction, specifically discovery determination strategy, should be the basic element of vocabulary teaching to increase independent learning that   boost written receptive vocabulary acquisition. Finally, from methodological perspective, the current study emphasis the accuracy of quantitative method research approach in VLS studies. In other words, the method has been found effective in giving wide-ranging understanding of EFL learners' VLS and its relationship with WRVK. So, future research can implement the same design to investigate the complexities of VLS and WRVK in greater depth.

Limitations

The current study focused on only quantitative design which may cause methodological limitations. First, this approach, often lack the depth required to discover the contextual and personal experiences of EFL learners' VLS practice. Second, the cross-sectional nature of quantitative data limits understandings how VLS use and vocabulary knowledge change over time. Lastly, since the currents study focused merely on written receptive vocabulary knowledge, it disregarded EFL learners' productive vocabulary knowledge.

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Conflict of interest

No potential conflict of interest was reported by the authors.

References

Abebaw, D., & Nuru, M. (2024). The effect of vocabulary learning strategy training on vocabulary knowledge; the case of Addis Ababa University. *Teaching English Language*, *18*(1), 177-210. https://doi.org/10.22132/tel.2024.402105.1478

Agustianti, E., Delfi, S., & Dahnilsyah, D. (2021). The correlation between university students' vocabulary learning strategies and the vocabulary mastery level   J-   SHMIC: *Journal of English for Academic*, *8*(2), 153-167. https://doi.org/10.25299/

Aktar, T., & Strong, D. (2019). Relationships of international students' l2 vocabulary, receptive skills, and strategy use: A Pathway College Context. *English Language Teaching*, *12*(10), 65-81. https://doi.org/10.5539/elt.v12n10p65

Albodakh, K., & Cinkara, E. (2017). The relationship between learner motivation and vocabulary size: the case of Iraqi EFL classrooms. *Arab world English journal*, *8*(2). https://dx.doi.org/10.24093/awej/vol8no2.20

Al Fraidan, A., & Fakhli, I. (2024). Vocabulary learning strategies of university students: The case of preparatory year students and English major students. https://doi.org/10.30827/portalin.vi41.24321

Al-Fuhaid, M. R. (2004). Vocabulary learning strategies: an empirical study of their use and evaluation by Saudi EFL learners majoring in English. http://etheses.dur.ac.uk/1752

Alharthi, T. (2014). Role of vocabulary learning strategies in EFL learners' word attrition. *International Journal of English Language and Linguistics Research*, *2*(3), 13-28.DOI: https://doi.org/10.37745/ijellr.13

Ali, M. A. (2020). Investigation of vocabulary learning strategies to identify word meanings for Saudi EFL students in reading context. *Arab World English Journal*, *11* (3).   149-169. https://dx.doi.org/10.24093/awej/vol11no3.9

Al-Omairi, M. (2020). The use of vocabulary learning strategies by EFL and EAP undergraduate university learners in the Iraqi context. *Arab World English Journal (AWEJ) Special Issue on the English Language in Iraqi Context*. https://dx.doi.org/10.24093/awej/elt2.7

Alsharif, R. (2022). Relationship between vocabulary learning strategies and vocabulary size: evidence from Saudi female EFL

learners. *International Journal of Education and Literacy Studies*, *10*(1), 188-197.http://dx.doi.org/10.7575/aiac.ijels.v.10n.1p.188

Asafew, A. K. (2021). EFL students' awareness and use of vocabulary learning strategies in EFL classes: the case of grade 11 students at Woreta secondary and preparatory school, south Gondar, Ethiopia. *Journal of Literature, Languages and Linguistics.* https://iiste.org/

Beglar, D. (2010). A Rasch-based validation of the vocabulary size test. *Language testing*, *27*(1), 101-118. https://doi.org/10.1177/0265532209340194

Bennett, P. (2006). An evaluation of vocabulary teaching in an intensive study programme. *Unpublished MA thesis. University of Birmingham.* https://www.semanticscholar.org/

Bernardo, A. S., & Gonzales, H. T. (2009). Vocabulary learning strategies of Filipino college students across five disciplines. *TESOL Journal*, *1*(1), 17-27. http://www.tesol-journal.com

Boonkongsaen, N., & Intaraprasert, C. (2014). Use of English vocabulary learning strategies by Thai tertiary-level students in relation to fields of study and language-learning experiences. *English Language Teaching*, *7*(5), 59-70. https://doi:10.5539/elt.v7n5p59

Brown, D. H. (2007). *Principles of language learning and teaching (5th Ed.)*. NY: Pearson Educations. https://dehkhodaedu.com/

Castellano-Risco, I. (2018). Receptive vocabulary and learning strategies in secondary school clil and non-clil learners. *Onomázein*, 40. 28-48.https://doi.org/10.7764/onomazein.40.02

Catalan, R. M. J. (2003). Sex differences in L2 vocabulary learning strategies. *International Journal of Applied Linguistics*, *13*(1), 54-77. https://doi.org/10.1111/1473-4192.00037

Cellat, S., & Köse, G. (2017). The Relationship between vocabulary size and four language skills of Turkish EFL learners. *International Journal of Language Academy*, *5*. http://dx.doi.org/10.18033/ijla.3590

Creswell, J. W., & Creswell, J. D. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications. https://www.researchgate.net

Fan, M. Y. (2003). Frequency of use, perceived usefulness, and actual usefulness of second language vocabulary strategies: A study of

Hong Kong learners. *The Modern Language Journal*, *87*(2), 222-241. https://doi.org/10.1111/1540-4781.00187.

Folse, K. S. (2008). Six vocabulary activities for the English language classroom. In *English Teaching Forum, 46(*3), pp. 12-21). US Department of State. Bureau of Educational and Cultural Affairs, Office of English Language Programs. https://files.eric.ed.gov/

Getachew. B., & Getachew. S. (2014). Vocabulary learning strategies used by EFL students: The case of 11th grade high and low achievers at Jorgo Nole Preparatory School. *Ethiopian Journal of Education and Sciences*, *9*(2), 17-33. http://10.140.5.162//handle/123456789/476

Ghalebi, R., Sadighi, F., & Bagheri, M. S. (2021). A study of vocabulary learning strategies among high and low Iranian English vocabulary learners. *Cogent education*, *8*(1). https://doi.org/10.1080/2331186X.2020.1834933

Griffiths, C. (2004). *Language-learning strategies: Theory and research* (1). AIS St Helens, Centre for Research in International Education. https://www.google.com/

Golkar, M., & Yamini, M. (2007). Vocabulary, proficiency and reading comprehension. *The Reading Matrix*, *7*(3). https://www.readingmatrix.com/

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

Haimanot, A., Temesgen, M., & Adege, A. (2024, August). Effect of vocabulary learning strategies on students' vocabulary knowledge achievement and motivation: the case of grade 11 high school students. In *Frontiers in Education,*9. https://doi.org/10.3389/feduc.2024.1399350

Hamzah, M. S. G., Kafipour, R., & Abdullah, S. K. (2009). Vocabulary learning strategies of Iranian undergraduate EFL students and its relation to their vocabulary size. *European Journal of social sciences*, *11*(1), 39-50. https://www.scirp.org/

Harmer, J. (1997). *The practice of English Language Teaching*(4th ED). Longman. https://dl3.languagecentre.ir/

Hasnan, S., & ALAM, S. (2012). Enhancing vocabulary knowledge through vocabulary learning strategies: a Case study of TESL undergraduates

of universiti teknologi Mara. *Bachelor of Education (HONS) TESL, Universiti Teknologi Mara*. http://d1wqtxts1xzle

Hayatbakhsh Abbasi, B., Haddad Narafshan, M., & Seifaddiny, P. (2023). Relationship between vocabulary learning strategy use and learning styles using structural equation modelling across age and gender. *International Journal of Foreign Language Teaching and Research*, *11*(47), 133-148. https://doi.org/10.30495/jfl.2023.707752

Heng, K. (2011). Effective vocabulary learning strategies: Perspectives from Cambodian students and teachers. http://dx.doi.org/10.13140/RG.2.2.17395.17445

Intaraprasert, C. (2004). EST students and vocabulary learning strategies: A preliminary investigation. *Unpublished Research, Suranaree University of Technology.*http://sutir.sut.ac.th:8080/sutir/

Kalajahi, S. A. R., & Pourshahian, B. (2012). Vocabulary learning strategies and vocabulary size of ELT Students at EMU in Northern Cyprus. *English Language Teaching*, *5*(4), 138-149. http://dx.doi.org/10.5539/elt.v5n4p138

Kapur, V. (2017). Understanding constructivism in the second language learning context. *Scholarly Research Journal of for Humanity Science & English Language, 123,* 97-105. https://oaji.net/

Khan, A. N. S. O., & Ariffin, K. (2023). The relationship between vocabulary learning strategies and vocabulary level among Malaysian English major undergraduates. *AJELP: Asian Journal of English Language and Pedagogy*, *11*(1), 82-96. https://doi.org/10.37134/ajelp.vol11.1.6.2023

Khatimah, N. H. (2018). *The Correlation between Students' Vocabulary Learning Strategies and Their Vocabulary Size* (Doctoral dissertation, Universitas Negeri Makassar).https://eprints.unm.ac.id/

Kojic-Sabo, I., & Lightbown, P. M. (1999). Students' approaches to vocabulary learning and their relationship to success. *The Modern Language Journal*, *83*(2), 176-192. http://www.jstor.org/stable/330334 . https://doi.org/10.1111/0026-7902.00014

Kök, I., & Canbay, O. (2011). An experimental study on the vocabulary level and vocabulary consolidation strategies. *Procedia-Social and Behavioral Sciences*, *15*, 891-894. DOI:10.1016/j.sbspro.2011.03.206

Kridis, O. B. (2023). The Chaining method for better vocabulary retention:
        Tunisian university students as a case study. *Journal of English
        Language Teaching and Applied Linguistics*, *5*(1), 13-21.
        http://dx.doi.org/10.32996/jeltal.2023.5.1.3

Lawson, M. J., & Hogben, D. (1996). The vocabulary-learning strategies of
        foreign-language students. *Language learning*, *46*(1), 101-
        135.https://doi.org/10.1111/j.1467-

Lee, S. (2014). Korean EFL university students' English vocabulary size and
        their writing proficiency. *Journal of the Korea English Education
        Society*, *13*(2), 21-43.
        http://dx.doi.org/10.18649/jkees.2014.13.2.21

Le Thi Cam Nguyen, & Nation, P. (2011). A bilingual vocabulary size test of
        English for Vietnamese learners. *RELC journal*, *42*(1), 86-99.
        https://doi.org/10.1177/0033688210390264

Maskor, Z. M., & Baharudin, H. (2016). Receptive vocabulary knowledge
        or productive vocabulary knowledge in writing skill, which one
        important. *International Journal of Academic Research in Business
        and Social Sciences*, *6*(11), 261-271.
        http://dx.doi.org/10.6007/IJARBSS/v6-i11/2395

Memis, M. R. (2018). The relationship between vocabulary learning
        strategies and vocabulary of learners of Turkish as foreign or second
        language. *Educational Policy Analysis and Strategic Research*, *13*(4),
        164-185. https://doi.org/10.29329/epasr.2018.178.10

Nation, I. S. P. (2001). *Learning vocabulary in another language* (Vol. 10).
        Cambridge: Cambridge university press.https://catdir.loc.gov/

Nation, I. S. P. (2012*). A vocabulary size test. https://www.wgtn.ac.nz/*

Nation, P., & Beglar, D. (2007). *A vocabulary size test*. The Language
        Teacher.(31), 9-13. https://openaccess.wgtn.ac.nz/

Nirattisai, S., & Chiramanee, T. (2014). The contribution of vocabulary
        learning strategies to university students' vocabulary size. *Silpakorn
        University Journal of Social Sciences, Humanities, and Arts*, *14*(2),
        45-66. https://www.thaiscience.info/

Pavičić Takač, V. (2008). *Vocabulary learning strategies and foreign
        language acquisition*. Multilingual Matters.
        https://doi.org/10.21832/9781847690401

Prayitno, T. (2015). *The correlation between vocabulary learning
        strategies and vocabulary size of the fourth semester students of
        English Department of IAIN Palangka Raya academic year*

2013 (Doctoral dissertation, IAIN Palangka Raya http://digilib.iain- palangkaraya.ac.id/

Salim, N., & Yamat, H. (2022). Relationship between vocabulary learning strategies and vocabulary size. *International Journal of Academic Research in Business and Social Sciences*. *12*(5), 1428 – 1447. http://dx.doi.org/10.6007/IJARBSS/v12-i5/13072

Schmitt, N. (1997). Vocabulary Learning Strategies. In N. Schmitt, & M. McCarthy (Eds.), Vocabulary: Description, Acquisition, and Pedagogy (pp. 199-227). Cambridge: Cambridge University Press. https://www.cambridge.org/

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. Springer. https://doi.org/10.1057/9780230293977

Taka, V. P. (2008). Vocabulary learning strategies and foreign language acquisition. *In Vocabulary Learning Strategies and Foreign Language Acquisition. Multilingual Matters.* http://dx.doi.org/10.21832/9781847690401

Waldvogel, D. A. (2013). The relationships between vocabulary learning strategies and vocabulary size among adult Spanish foreign language learners. *Journal of Language Teaching & Research*, *4*(2). https://doi:10.4304/jltr.4.2.209-219

Webb, S. (2008). Receptive and productive vocabulary sizes of L2 learners. *Studies in Second language acquisition*, *30*(1), 79-95. http://dx.doi.org/10.1017/S0272263108080042

Wenden, A. L. (1985). Learner strategies, *TESOL Newsletter,* 19(5), 1-7. https://www.scirp.org/

Wero, T., Machmud, K., & Husain, N. (2021). The study on students' vocabulary size. *Jambura Journal of English Teaching and Literature*, *2*(1), 22-34. https://doi.org/10.37905/jetl.v2i1.10279

Wilkins, D. A. (1972). *Linguistics in language teaching* (Vol. 111). Edward Arnold.https://www.scirp.org/

Winke, M., & Abbuhl, R. (2007). Taking a closer look at vocabulary learning strategies: A case study of a Chinese foreign language class. *Foreign Language Annals*, *40*(4), 697-712. https://doi.org/10.1111/J.1944-9720.2007.TB02888.X

Xu, X., & Hsu, W. C. (2017). A new inventory of vocabulary learning strategy for Chinese tertiary EFL learners. *TESOL International Journal*, *12*(1), 7-31. https://files.eric.ed.gov/

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.https://doi.org/10.1177/001316446402400434

Zuhairi, A., & Mistar, J. (2023). Vocabulary learning strategies and vocabulary mastery by Indonesian EFL learners. *World Journal of English Language*, *13*(8). DOI:10.5430/wjel.v13n8p453