



FL Vocabulary Learning of Undergraduate English Majors in Western China: Perspective, Strategy Use and Vocabulary Size

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Abstract

The present study, by use of questionnaire and vocabulary tests, has investigated the foreign language vocabulary learning situation of 481 undergraduates in terms of their perspective of vocabulary learning, strategy use and vocabulary size. Based on the questionnaire investigation and vocabulary level tests, the characteristics of the subjects' foreign language vocabulary learning have been outlined: (1) Objects have the belief that vocabulary should be learned by using them; the most frequently used strategies include dictionary use, guessing the meaning and note-taking; objects average out to a small vocabulary size. (2) Significant differences exist in the use of some strategies between different graders and different majors. (3) Four strategies (cognitive & meta-cognitive) significantly correlate with vocabulary size. In order to facilitate learners' foreign language vocabulary development, four tentative solutions have been offered to solve the relevant problems: (1) Raising learners' awareness of FL vocabulary development and try to enlarge their vocabulary size; (2) Developing learners' productive vocabulary by using the target words in authentic contexts; (3) Fostering learners' awareness of using appropriate vocabulary learning strategies; (4) Broadening learners' vocabulary learning approaches by utilizing both the intentional (direct) learning methods and the incidental (indirect) ones. The research results may probably offer empirical reference for the foreign language vocabulary teaching and learning in China.

Keywords: Vocabulary learning strategy, Vocabulary development, Receptive vocabulary size, Productive vocabulary size

1. Introduction

As the communicative teaching approach prevailed in the 1970s, people have realized that vocabulary is the basis of any language. FL vocabulary learning is vital in FL learning because to a certain extent, learners' FL proficiency is greatly determined by their mastery of FL vocabulary (Sökmen, 1997). Since then, vocabulary teaching and learning has been paid increasing attention in FL teaching. In the last thirty years, the studies on perspectives and strategies of vocabulary learning have attracted lots of researchers' interest, and become the key topics in vocabulary learning research. In the related studies abroad, Gains & Redman (1986), Cohen (1990), Nation (1990, 2001), Hatch & Brown (1995) examined various strategies used in vocabulary learning; Sanaoui (1995), Lawson & Hogben (1996) compared the vocabulary learning methods and strategies of learners with different proficiencies (top students and poor students); Krantz (1991), Luppescu & Day (1993), Grabe & Stoller (1997) studied the correlation between extensive reading, using dictionaries and vocabulary learning; Schmitt (1997) empirically investigated 600 Japanese learners' FL vocabulary learning strategies.

Studies on vocabulary learning strategy in China dates back to the 1980s. The representative studies that reflect the mainstream perspective and achievements in this domain include: Wang (1998) invited 50 subjects and studied the relationship between perspective, strategy use and retention effects of English vocabulary learning; Wu & Wang (1998) focused on the strategies used in English vocabulary learning by Non-English majors; Zhang (2001) did a similar study on the English vocabulary learning strategy of postgraduates; Gu (1994), Gu & Hu (2003) investigated the relationship between learners' vocabulary learning strategy, vocabulary size and English achievements. These studies, on the one hand, have been quite effective in exploring the field of vocabulary learning strategy and promoting vocabulary teaching and learning practice in China; on the other hand, they have provided methodologically good examples for the researchers in China including so many EFL teachers, and therefore improved the research quality in this domain.

Among the studies reviewed above, we failed to find one specifically focusing on the characteristics of EFL learners' vocabulary learning strategy in Western China. As a university English teacher in this region, I intuitively have the idea that the undergraduates in Western China have not used effectively appropriate strategies to learn English vocabulary because most of them are accustomed to direct learning (memorization). In order to see if any evidence can be collected to support this intuition and whether there are any problems in their English vocabulary learning, we have designed this

study, and consider it worthwhile. We aim at answering the following six questions in the study:

- (1) What are the characteristics of the subjects' FL vocabulary learning in terms of their perspective, strategy use and vocabulary size?
- (2) Is there any difference between male and female learners' vocabulary learning perspective and strategy use?
- (3) Is there any difference between the learners with different proficiencies in terms of their vocabulary learning perspective and strategy use?
- (4) Is there any difference between English and Non-English majors' vocabulary learning perspective and strategy use?
- (5) Is there any difference between learners' receptive and productive vocabulary sizes?
- (6) Is there any correlation between learners' strategy use and their vocabulary size?

2. Research design

2.1 Instruments

Two kinds of instruments have been adopted in the present study: one is the questionnaire of vocabulary learning, and the other is vocabulary level tests.

As Oxford (1990) states that cognitive and meta-cognitive strategies are more important in SL/FL learning, we focus on these two types of strategies utilized by our subjects in the study. The questionnaire has been adapted by slightly revising Gu & Johnson's VLQ5 (1996), considering our practical situation and the operability. Three major dimensions have been included in the questionnaire, namely perspective of vocabulary learning, meta-cognitive strategy and cognitive strategy, which have been further divided into 21 variables, and each variable consists of 2 or 3 items, 60 items in all (see the table below). The Likert 5-scale scoring method has been adopted: behind each item, there are 5 numbers (from 1 to 5), which means: 1= completely disagree or the item is completely untrue for me; 2= usually disagree or the item is usually untrue for me; 3= agree sometimes or the item is sometimes true for me; 4= usually agree or the item is usually true for me; 5= completely agree or the item is completely true for me. The subjects are required to select the relevant number according to their own perspective and strategy use of vocabulary learning.

Insert Table 1 Here.

There are two vocabulary level tests in the study: The Receptive Levels Test (A Vocabulary Levels Test: Test B-The 5000 Word Level) designed by Norbert Schmitt, Diane Schmitt and C. Clapham based on Nation (1990); The Productive Levels Test: Version C (The 3000 Word Level) by Nation (2001). In the receptive levels test, there are 10 groups of words with 6 in each, and the subjects are required to pick out three from the 6 words given in each group to match the relevant explanations on the right respectively; in the productive levels test, there are 18 sentences, and the subjects need to spell out the underlined word (the initial 2 ~ 4 letters have been given) in each sentence. Subjects' vocabulary sizes can be calculated according to the number of the correct items they have got and the grades of the tests.

2.2 Subjects

We randomly selected 500 undergraduate subjects from 6 universities in five provinces in Western China, and invited them to respond to the questionnaire investigation and take the vocabulary levels tests. After the investigation and tests, we received the valid questionnaires and tests papers of 481 subjects, among whom there are 223 males, 258 females; 196 English majors and 285 Non-English majors; 180 sophomores, 164 juniors and 137 seniors.

2.3 Study implementation

The questionnaire investigation and vocabulary levels tests were done between September and November in 2007. One or two teachers in each of the six universities were invited to help carry out the investigation and tests during their classroom teaching time to avoid the subjects' casual ticking and spelling. After receiving the 481 subjects' valid questionnaires and test papers, we scored them carefully, and finally, by using SPSS 13.0 to do the data analysis, we got the statistical results in terms of the total descriptives, comparison between male and female subjects' perspective and strategy use, comparison between different graders' perspective and strategy use, comparison between English and Non-English majors' perspective and strategy use, comparison between subjects' receptive and productive vocabulary sizes, and the correlation between strategy use and vocabulary size.

3. Results of the data analyses

3.1 Total descriptives

Insert Table 2 Here.

Table 2 provides us with the variable description and the basic statistical results, including minimum score, maximum score, mean and standard deviation. Observing the column of "Mean", we can find that only 3 variables have been

reported well-used (Mean>3.5), while the others haven't, and among which 8 have been poorly-used (Mean<3.0). These indicate that the subjects in the study have not satisfactorily been using most of the vocabulary learning strategies. The three frequently-used strategies are "using dictionary" (Mean=3.7662/3.7369), "Guessing meaning in contexts" (Mean=3.5141/3.4329) and "taking notes" (Mean=3.4043/3.3979), which belong to the cognitive strategies used in the initial treatment stage, but for those important cognitive and meta-cognitive strategies needed to be used in the stages of reinforcement and trying using, the data show that the use of them is far from being satisfactory.

As far as the perspective of vocabulary learning is concerned, most subjects hold the idea of "learning words by using" (Mean=4.0684) but do not support the idea of "learning words by rote memorization" (Mean=2.7515), which corresponds to Gu & Hu's (2003) conclusion. However, it is not difficult to find many students (who believe that words should be learned in the process of using them in contexts) learning English words by oral or visual repetition, e.g. memorizing wordlists, which seems to suggest that the perspective and strategy that learners consider correct and effective do not really match what they have actually adopted.

3.2 Comparison between male and female subjects

For the 21 variables listed in Table 3, only slight differences have been found between male and female subjects' perspective and strategy use of vocabulary learning except for the sixth and eighteenth variables in which the difference is almost significant (Sig.=0.098/0.074). For the perspective of vocabulary learning, both the male and female subjects believe that words should be learned in the process of using them (Mean=3.97/4.11) and do not agree with the perspective of learning words only by memorization (Mean=2.84/2.71); for the use of strategies, male subjects outperformed female subjects in 10 variables, while in return female subjects outperformed males ones in 11 variables. This is similar to Li's finding (2002) but does not completely agree with Oxford, Nyikos and Ehrman's (1988) conclusion that the use of learning strategies significantly correlates with gender: females are generally more skillful than males at using learning strategies, especially the social-interactive strategy. We assume that one possible and risky cause for this controversy is that the social-interactive strategy has not been included in the present study.

Insert Table 3 Here.

3.3 Comparison between different graders

By comparing the vocabulary learning perspective and strategy use of the subjects in Grade 2, 3 and 4, we find that significant difference exists in the use of five strategies, and Table 4 lists the statistical data of the five variables.

As can be seen in Table 4, the juniors outperformed significantly the sophomores in using "imagic and visual coding" strategy; the seniors surpassed the sophomores in the use of three strategies: "using dictionaries for learning", "associating" and "imagic and visual coding", and the difference reached significant level; the difference between the juniors and the seniors in using the four strategies is a little bit complex: the juniors have more frequently used "visual repeating" than the seniors, while in using the strategies of "selective noticing", "using dictionaries for learning", and "imagic and visual coding", the seniors outperformed significantly the juniors. To sum up, subjects in higher grades have been more frequently and skillfully using vocabulary learning strategies than those in lower grades.

Insert Table 4 Here.

3.4 Comparison between English and Non-English majors

Table 5 indicates that English majors and Non-English majors hold similar perspective on vocabulary learning: a little more Non-English majors believe that vocabulary need to be learned by rote memorization while more English majors agree with the idea that words should be learned in the process of using them, and the difference is far from being significant.

Among the 19 learning strategies, English majors have more frequently used 17 than Non-English majors, and the difference between the two groups of subjects in using the two strategies (using background and textual information, and using dictionary for word learning) has reached significant level, which seems to indicate that English majors are more capable of utilizing the background knowledge and textual information related to the subject to guess word meaning and learn words. Meanwhile, for dictionary-using strategies, English majors are more likely to relate dictionary use to their vocabulary learning. Therefore, dictionary use has been considered as a method of vocabulary learning rather than a tool for solving the vocabulary problem in reading activities, which is a prominent difference between English and Non-English majors in terms of using dictionaries.

Insert Table 5 Here.

3.5 Comparison between subjects' receptive and productive vocabulary sizes

After testing and scoring 481 subjects' receptive and productive vocabulary sizes, we have adopted the Paired-Sample T Test to compare these two vocabulary sizes. Table 5 indicates that the subjects' receptive vocabulary size is much bigger than their productive vocabulary size, and significant difference has been found ($t=786.353$, $sig.=0.000$), which

is one of the serious problems in EFL learners' vocabulary development, that is the imbalance of the quantity and quality of vocabulary learning.

Insert Table 6 Here.

3.6 Correlation between strategy use and vocabulary size

By doing the correlation analysis on the 21 variables (perspectives and strategies) and vocabulary sizes, we find that there are only 4 strategies significantly correlated with vocabulary sizes, which have been listed in Table 7.

To begin with, the two learning strategies of "using dictionary for word learning" ($r=.179/.156$, $p=.013/.031$) and "noting down usage" ($r=.168/.163$, $p=.020/.024$) significantly correlate positively with vocabulary size at the 0.05 level, that is, the better subjects use the two strategies, the larger their vocabulary size, which corresponds to Gu & Hu's conclusion (2003); Next, the strategy of "visual repeating" ($r=-.163/-.196$, $p=.025/.007$) correlates negatively with vocabulary sizes: the negative correlation has reached significant at the 0.05 level with subjects' receptive vocabulary size and at the 0.01 level with their productive vocabulary size, which well matches the conclusions of Gu & Johnson (1996) and Gu & Hu (2003), which proves that learning vocabulary only by visual repetition has a negative influence on the growing of vocabulary size (especially the productive one), and this validates the important role of information processing depth in vocabulary learning and retention (Craik & Tulving, 1975); Then, "trying using" strategy also positively correlates significantly with vocabulary sizes at the 0.05 level ($r=0.158/0.166$, $p=0.029/0.022$), which reveals that learners will probably have larger receptive and productive vocabulary sizes if they often use frequently the target words in oral and written activities, and this further supports the perspective that words are learned in the process of using them; Finally, the significant positive correlation between receptive and productive vocabulary sizes at the 0.01 level suggests that receptive vocabulary size is the essential basis and precondition for the development of productive vocabulary size.

Insert Table 7 Here.

4. Findings and discussions

4.1 Major findings

Based on the questionnaire investigation, vocabulary level tests and the interviews with some of the subjects, we are able to outline the characteristics of FL vocabulary learning of the undergraduates in Western China represented by the 481 subjects:

- (1) Generally speaking, the undergraduates hold the perspective of learning vocabulary in the process of using them in contexts and do not agree with that of learning vocabulary only by rote memorization; the three learning strategies they have been using most frequently are "using dictionary", "guessing word meaning in contexts" and "taking notes"; the vocabulary sizes they have average out to about 2156 (receptive) and 859 (productive).
- (2) As for the strategy use, no significant difference exists between males and females, but the difference between different graders, and that between English and Non-English majors have reached significant level. To be exact, undergraduates in higher grades have more frequently and successfully used vocabulary learning strategies than those in lower grades, especially in the use of "imagic and visual coding", "using dictionary for word learning", "associating" and "selective noticing"; English majors outperformed Non-English majors in the use of 17 strategies, and the difference between them in utilizing "using textual knowledge and background information" and "using dictionary for word learning" is significant, while Non-English majors have been more frequently using "oral repetition" and "visual repetition", which seems to suggest that they are more willing to use rote memorization like "memorizing wordlists".
- (3) The undergraduates' strategy use correlates with their vocabulary sizes, and the 4 strategies that significantly correlate with vocabulary sizes are "using dictionary for word learning", "noting down usage", "visual repeating" and "trying using". A significant negative correlation exists between "visual repeating" and vocabulary size, which proves that the training of using vocabulary learning strategies must be emphasized to enlarge learners' vocabulary size. Meanwhile, teachers had better encourage learners to utilize appropriate strategies in vocabulary learning to develop the width and depth of their vocabulary knowledge, achieve more effective elaboration and establish better connection of the vocabulary knowledge in the long-term memory (mental lexicon) for activation and later retrieval.
- (4) The major problems have been found in the undergraduates' FL vocabulary development: A. Learners' vocabulary size, which is much smaller than what the syllabus requires, restricts their FL learning; B. A serious imbalance exists between productive and receptive vocabulary sizes with the ratio of 1: 3, which is far away from some researchers' viewpoint that SL/FL learners' productive vocabulary size needs to be about 1/2 of their receptive vocabulary size (Aitchison, 1987; Clark, 1993, etc.); C. The average condition of using vocabulary learning strategies is unsatisfactory with only 3 strategies well used; D. Known from the interviews, most of the undergraduates are accustomed to using traditional methods (focusing on rote memorization) in vocabulary learning without knowing or trying some other methods supported by modern computer and network technologies, which influences their vocabulary development.

4.2 Discussions

Based on the findings (especially the problems) listed above, we are able to offer our risky solutions to the problems:

- (1) Both teachers and learners need to be aware of the importance of vocabulary in FL learning, and try their best to enlarge learners' vocabulary size;
- (2) Focus on both receptive and productive vocabulary sizes, and specially emphasize developing learners' productive vocabulary by doing vocabulary productive training, that is in fact try to use the target words in oral and written communicative contexts. By using the target words in authentic contexts, learners, on the one hand, can acquire the conceptual, phonetic and syntactic knowledge and information of the target words, and on the other hand, can obtain more elaborated processing of the word knowledge, establish better network of word knowledge connections and consequently enhance the vocabulary retention effects, which is in fact the essence of "learning in using".
- (3) Teachers need to encourage the learners to collect those vocabulary learning strategies proved to be effective, and learn to select and use certain learning strategies according to their own cognitive styles or personal preferences. Meanwhile, learners should keep reflecting on their strategy selecting and using to make themselves effective learners.
- (4) FL vocabulary learning is a time-consuming and difficult process, and psychologically, learners must have the preparation and determination to win this long-lasting battle; practically, they need to use more methods to learn vocabulary, including the direct (intentional) learning method well used by most Chinese learners, and the incidental (indirect) vocabulary acquisition most effectively used by native speakers. Combing these two approaches may probably lead to better learning results.

References

- Aitchison, J. (1987). *Words in the Mind: an Introduction to the Mental Lexicon*. Oxford and New York: Basil Blackwell.
- Clark, E. V. (1993). *The Lexicon in Acquisition*. Cambridge: Cambridge University Press.
- Cohen, A. D. (1990). *Language Learning: Insights for Learners, Teachers and Researchers*. New York: Newbury House/ Harper Row.
- Craik, F. I. M., & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology*, 104, 268 – 284.
- Gairns, R. & Redman. S. (1986). *Working with Words: A Guide to Teaching and Learning Vocabulary*. Cambridge: Cambridge University Press.
- Grabe, W. & Stoller. F. L. (1997). Reading and vocabulary development in a second language: A case study. In J. Coady & T. Huckin (Eds.). *Second language vocabulary acquisition: A rationale for pedagogy*. Cambridge: Cambridge University Press.
- Gu Y-Q. (1994). Vocabulary learning strategies and language outcomes. Paper presented at the International Language in Education Conference in Hong Kong.
- Gu, Y-Q, & Johnson, R. K. (1996). Vocabulary learning strategies and language learning outcomes. *Language Learning*, 46 (4), 643-679.
- Hatch, E. & Brown. C. (1995). *Vocabulary, Semantics and Language Education*. Cambridge: Cambridge University Press.
- Krantze, G. (1991). *Learning Vocabulary in a Foreign Language: A Study of Reading Strategies*. The University of Goteborg.
- Lawson, M. J. & Hogben. D. (1996). The Vocabulary Learning Strategies of Foreign Language Students. *Language Learning*, 46: 101-135.
- Luppescu, S. & Day. R. (1993). Reading, dictionaries and vocabulary learning. *Language Learning*, 43.
- Nation, I. S. P. (1990). *Teaching and Learning Vocabulary*. New York: Newbury House Publishers.
- Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*, Cambridge: Cambridge University Press.
- Oxford, R. (1990). *Language Learning Strategies: What Language Teacher Should Know*. New York: Newbury House Publishers.
- Oxford, R., Nyikos, M. & Ehrman, M. (1988). Vive la difference? Reflections on sex differences in use of language learning strategies. *Foreign Language Annals*, 21 (4).
- Sanaoui. R. (1995). Adult Learners' Approaches to Learning Vocabulary in Second Languages. *The Modern Language Journal*, 79: 15-28.
- Schmitt, N. (1997). Vocabulary learning strategies. In Schmitt, N. & McCarthy, M. (Eds.). *Vocabulary: Description*,

acquisition and pedagogy. Cambridge: Cambridge University Press.

Sökmen, A. J. (1997). Current trends in teaching second language vocabulary. In Schmitt, N. & M. McCarthy. (Eds). *Vocabulary: Description, acquisition and pedagogy* [C]. Cambridge: Cambridge University Press.

Zhang, P. (2001). Study on the vocabulary learning strategies of English and Non-English Postgraduates. *Foreign Languages Teaching and Research*, 6: 442- 449.

Gu, Y-Q. & Hu, G-W. (2003). Vocabulary learning strategy, vocabulary size and English achievements. In Wen, Q. [Ed.] *Empirical studies on English learning strategies*. Xi'an: Shanxi Normal University Press.

Wang, W-Y. (1998). Perspective, strategy and English vocabulary memorization. *Foreign Languages Teaching and Research*, 1: 47-51.

Wu, X. & Wang, Q. (1998). Non-English major undergraduates' vocabulary learning strategies. *Foreign Languages Teaching and Research*, 1:53-37.

Li, J. Y. (2002). An empirical study on Chinese learners' perspective and their use of SL learning strategies. *Foreign Languages Teaching* 1.

Table 1. Dimensions, types and items

Dimensions	Types	Variables	Items
Perspectives		2	6
Meta-cognitive strategies		2	6
	Initial treatment	Guessing Dictionary using	2 3
		Note taking	2
Cognitive strategies	Reinforcement	Repeating	3
		Coding	6
	Try using		1
Total			21
			60

Table 2. Descriptives of the variables

No.	Variable Description	Min.	Max.	Mean	Std. Deviation		
1	Perspective	Learning words by rote memorization		1.00	4.67	2.7515	.77879
2		Learning words by using		1.33	5.00	4.0684	.72371
3	Meta-cognitive strategies	Selective noticing		1.00	5.00	3.1779	.72659
4		Active learning		1.00	5.00	3.3937	.86688
5	Cognitive strategies	Using background and textual information		1.00	5.00	3.5141	.81903
6		Using local linguistic information		1.00	5.00	3.4329	.79688
7		Using dictionary for meaning comprehension		1.33	5.00	3.7662	.79808
8		Using dictionary for word learning		1.33	5.00	3.7369	.85165
9		Dictionary-using strategy		1.00	5.00	3.1619	.80039
10		Noting down meaning		1.00	5.00	3.3979	.94881
11		Noting down usage		1.00	5.00	3.4043	.89108
12		Using word-lists		1.00	5.00	2.6424	.88296
13		Oral repeating		1.00	5.00	2.9591	.96314
14		Visual repeating		1.00	5.00	2.6915	.93625
15		associating		1.00	5.00	2.9216	.85010
16		Imagic and visual coding		1.00	5.00	2.3927	.94928
17		Auditory coding		1.00	5.00	3.0987	.85770
18		Using word formation (stems and affixes)		1.00	5.00	2.9275	.93409
19		Meaning-focused coding		1.00	5.00	2.7116	.83915
20	Context-focused coding		1.00	5.00	3.1204	.85031	
21	Trying using		1.00	5.00	3.1862	.83524	
22	Vocabulary sizes	Receptive vocabulary size		2.00	30.00	16.1937	6.93573
23		Productive vocabulary size		0.00	13.00	5.3874	2.57450

Table 3. Comparison between male and female subjects' perspective and strategy use

	1	2	3	4	5	6	7	8	9	10
Male	2.84	3.97	3.13	3.53	3.47	3.29	3.84	3.65	3.23	3.60
Female	2.71	4.11	3.20	3.33	3.53	3.50	3.74	3.77	3.13	3.51
t	1.082	-1.212	-.581	1.453	-.442	-1.661	.791	-.921	.743	.768
Sig.	.281	.227	.563	.148	.659	.098	.430	.358	.459	.402
11	12	13	14	15	16	17	18	19	20	21
3.36	2.67	2.93	2.76	2.78	2.31	3.08	2.94	2.72	3.05	3.24
3.42	2.63	2.97	2.66	2.98	2.43	3.11	2.92	2.71	3.15	3.16
-.417	.305	-.299	.640	-1.466	-.811	-.239	.074	.141	-.777	.568
.677	.761	.765	.523	.144	.418	.812	.942	.888	.438	.570

Table 4. Comparison between different graders' perspective and strategy use

Variable	(I) GRADE	(J) GRADE	Mean Difference (I-J)	Std. Error Difference	Sig.
Selective noticing	3	2	-.05954	.11167	.855
		4	-.39982(*)	.16335	.040
Using dictionary for word learning	2	3	.13702	.12922	.540
		4	-.49320(*)	.19062	.028
	3	2	-.13702	.12922	.540
		4	-.63022(*)	.18903	.003
Visual repeating	3	2	.08130	.14392	.839
		4	.51307(*)	.21053	.041
Associating	2	3	-.23896	.12951	.158
		4	-.56613(*)	.19104	.010
Imagic and visual coding	2	3	-.48043(*)	.14210	.003
		4	-.69450(*)	.20961	.003
	3	2	.48043(*)	.14210	.003
		4	-.21407	.20786	.559

Table 5. Comparison between English and Non-English majors' perspective and strategy use

Variable description	T	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Learning words by rote memorization	-.137	.891	-.01552	.11356
Learning words by using	.165	.869	.01745	.10552
Selective noticing	1.398	.164	.14733	.10541
Active learning	1.400	.163	.17609	.12576
Using background and textual information	2.094	.038	.24729	.11807
Using local linguistic information	.468	.641	.05431	.11613
Using dictionary for meaning comprehension	1.006	.316	.11679	.11607
Using dictionary for word learning	2.544	.012	.31072	.12211
Dictionary-using strategy	.843	.400	.09819	.11649
Noting down meaning	.958	.339	.13220	.13802
Noting down usage	.096	.924	.01246	.12993
Using word-lists	.258	.796	.03326	.12873
Oral repeating	-.479	.632	-.06728	.14036
Visual repeating	-1.018	.310	-.13863	.13615
associating	.869	.386	.10756	.12371
Imagic and visual coding	.449	.654	.06206	.13835
Auditory coding	.163	.871	.02035	.12506
Using word formation (stems and affixes)	.847	.398	.11515	.13595
Meaning-focused coding	.846	.399	.10333	.12213
Context-focused coding	1.606	.110	.19780	.12316
Trying using	1.052	.294	.12778	.12144

Table 6. Comparison between subjects' receptive and productive vocabulary sizes

		Paired Differences					t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	REC - PRO	1295.53	9.024	1.648	1292.16	1298.90	786.353	.000

Table 7. Correlation between strategy use and vocabulary size

Variable		Receptive vocabulary size	Productive vocabulary size
Using dictionary for word learning	Pearson Correlation	.179(*)	.156(*)
	Sig. (2-tailed)	.013	.031
	N	481	481
Noting down usage	Pearson Correlation	.168(*)	.163(*)
	Sig. (2-tailed)	.020	.024
	N	481	481
Visual repeating	Pearson Correlation	-.163(*)	-.196(**)
	Sig. (2-tailed)	.025	.007
	N	481	481
Trying using	Pearson Correlation	.158(*)	.166(*)
	Sig. (2-tailed)	.029	.022
	N	481	481
Receptive vocabulary size	Pearson Correlation	1	.938(**)
	Sig. (2-tailed)	.	.000
	N	481	481
Productive vocabulary size	Pearson Correlation	.938(**)	1
	Sig. (2-tailed)	.000	.000
	N	481	481

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).