

# Engineering and Humanities Students' Strategies for Vocabulary Acquisition: An Iranian Experience

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## Abstract

The present study set out to investigate the differences between EAP (English for Academic Purposes) students of Humanities and Engineering in terms of vocabulary strategy choice and use. One hundred and five undergraduate Iranian students (39 students from Engineering Faculty and 66 from Humanities Faculty) studying at Bu-Ali Sina University Hamedan, during the academic year of 2011–2012 participated in this study. For data collection purposes, a pilot-tested factor-analyzed five-point Likert-scale vocabulary learning strategies questionnaire (VLSQ) containing 45 statements was adopted. The results of independent samples t-test indicated that, overall, the two groups were not significantly different in the choice and use of vocabulary learning strategies. However, running Chi square analyses, significant differences were found in individual strategy use in 6 out of 45 strategies. That is, while Humanities students used more superficial and straightforward strategies like repetition strategy and seeking help from others, the Engineering students preferred much deeper, thought-provoking and sophisticated strategies like using a monolingual dictionary and learning vocabulary through collocations and coordinates. Further, the most and the least frequently used vocabulary learning strategies by the two groups were specified, out of which only two strategies in each category were commonly shared by both groups. The possible reasons why the results have turned out to be so as well as the implications of the study are discussed in details in the paper.

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## 1 Introduction

Vocabulary is considered as an essential component of language proficiency which provides the necessary foundations for learners' performance in all four main skills of speaking, reading, listening and writing, and is regarded as a component of paramount importance without which communication in a language is bound to break (cf. Cook 1991; Nation 2001; Milton 2009).

However, despite this recent emphasis exerted upon the role of vocabulary in second/foreign language teaching/learning research, it is still a contentious issue how foreign language learners acquire vocabulary effectively and efficiently or how it can best be taught. One of the effective ways of enhancing EFL learners' vocabulary reservoir is to equip them with knowledge of a sufficient number of vocabulary learning strategies (see e. g.,Lai 2005).

Vocabulary learning strategies (VLSs), as a sub-category of language learning strategies which in turn are a sub-taxonomy of general learning strategies (cf. Nation 2001), have been defined variously by different scholars in the field, the most comprehensive of which is probably that proposed by Nation (2001). Nation (ibid.: 217), taking various dimensions into

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consideration, maintains that a vocabulary learning strategy is one which enhances "the efficiency of vocabulary learning and vocabulary use", "involves choice", and is "complex"(i. e., one has to go through several stages to learn).

With regard to learning academic vocabulary, Nation (2001) holds that there are several reasons why academic vocabulary is considered to be of crucial importance and a useful learning goal for learners of English for academic purposes which are listed as follow: 1) Academic vocabulary is common to a wide range of academic texts, and not so common in non-academic texts. 2) Academic vocabulary accounts for a substantial number of words in academic texts, 3) Academic vocabulary is generally not as well-known as technical vocabulary, and 4) Academic vocabulary is the kind of specialized vocabulary that an English teacher can usefully help learners with.

There have been a large number of studies conducted on vocabulary learning strategies adopted by Iranian EFL learners. Kameli and Bin Mostapha (2012), for instance, investigated the most and least frequently used vocabulary learning strategies by adult Persian EFL learners. They found that language learners relied more on bilingual dictionaries to check meaning followed by guessing meaning from paragraphs. On the other hand, note-taking was reported to be the least frequently used VLS. As a part of a large scale project, Soodmand Afshar (2010) also investigated the most and least-frequently used VLSs by Iranian EFL majors and the relationship between gender and strategy use. He found that strategies such as "learning new words by reading books, newspapers, magazines, etc. in English", "repeating the word orally several times", "focusing on the phonological form of the new word" were the most frequently used strategies and "asking the teacher for an L1 translation", "drawing a picture of the new word" were reported to be the least frequently used strategies when learning a new word. Furthermore, the results of his study indicated that there were no statistically significant differences between males and females in the use of strategies.

Concerning ESP/EAP vocabulary learning strategies in EFL contexts, Bernardo and Gonzales (2009) studied the use of 53 common vocabulary learning strategies adopted by Baccalaureate students across five disciplines: Liberal Arts and Education, Computer Sciences and Engineering, Business Education, Hospitality Management, and Allied Medical Sciences in Philippine university. The results of the study showed statistically significant differences in the use of determination and social VLSs across the disciplines. On the other hand, they found non-significant differences in the employment of memory, cognitive, and metacognitive VLSs. Also, Atay and Ozbulgan (2007) explored the effects of memory strategy instruction along with learning through context on the ESP vocabulary knowledge recall of Turkish EFL learners. While the students in the control group learned/recalled vocabulary only through context, their counterparts in the experimental group were exposed to memory strategy instruction through the daily six-hour English instruction in addition to the contextual learning. During the memory strategy instruction, the teacher provided the students with the relevant theoretical knowledge about memory strategies and encouraged them to use them in their own vocabulary learning. It was found that the experimental group students had significantly better vocabulary gain scores than their counterparts in control group at the end of the study.

Peacock and Ho (2003) examined the use of 52 common language learning strategies by English for Academic Purposes students across eight disciplines: Building, Business, Computing, Engineering, English, Mathematics, Primary Education, and Science in a university in Hong Kong. They found that students from different disciplines utilized strategies that differed in frequencies and categories. Further, the students' strategy use was found to be influenced by such factors as age, gender, and proficiency. In another study, Durrant (2009) examined the viability of a collocation list for students of English for

academic purposes. He concluded that the vocabulary needs of students in Arts and Humanities were characteristically different from those students in other disciplines.

Relatively little research can be found in the literature of the field with regard to issues in ESP/EAP vocabulary learning in the EFL context of Iran. For one, Akbarian (2010) investigated the relationship between vocabulary size and depth of Iranian learners of English for specific/academic purposes (ESP/EAP). Dividing students into low and high proficiency groups based on mastering the 2000 most frequent words in Vocabulary Levels Test (VLT) (Schmitt2000), he found that vocabulary size and depth might be accounted for by the same factors, especially as the learners' proficiency increases. In another study, Seddigh and Shokrpur (2012) investigated the use of vocabulary learning strategies among medical students at Shiraz University of Medical Sciences. The results of the study indicated that guessing and dictionary strategies were the most frequently used VLSs and social strategies were among the least frequently used ones. The differences between dictionary strategies and study preferences, autonomy, social and selective attention were significant. The participants preferred using bilingual dictionaries frequently. Regarding gender, female medical students significantly used more VLSs than their male counterparts. This difference was especially considerable regarding guessing and note-taking strategies. In general, both male and female participants used guessing and dictionary strategies most frequently and they employed study preferences least frequently but the order of other strategies changed with gender.

As major or discipline might play a role in the choice and use of VLSs, and since Humanities and Engineering disciplines are usually considered to be two rather opposing poles on EAP /ESP continuum in the Iranian context, the present study was designed to put this assumption into an empirical investigation. The following research questions were thus formulated for the present study:

1. What are the vocabulary learning strategies used most and least frequently by EAP students of Humanities and Engineering?
2. Is there any significant difference between EAP students of Humanities and Engineering in terms of *overall* as well as *individual* vocabulary strategy choice and use?

## **2 Method**

### **2.1 Participants**

The present study was carried out during the academic year of 2011–2012 at the Faculties of Engineering and Humanities at Bu-AliSina University–Hamedan, Iran. A total of 105 undergraduate students (39 Engineering students and 66 Humanities students) participated in the study. The age of the participants ranged from 19 to 29. About 53 percent of the participants were female and the remaining 47 percent were male. It is worth mentioning here that in Iranian educational system, the majority of Humanities students at university have already studied Humanities at secondary high school too. Humanities students are, due to the nature of their subject matters and especially their locally-produced textbooks which do not very much, if at all, encourage critical and analytical thinking skills, mainly memorization-oriented in nature. Engineering students on the other hand, have already studied Mathematics at secondary high school and have higher tendency towards much deeper, analytical and mathematical activities and skills.

Also, since the present study adopted an intact group design, we could not check for the homogeneity of the participants in the two groups, something which is not commonly practised in strategy research in general. It is also to be noted that we did not control for the

effects of age, gender and proficiency in this study simply because the bulk of previous studies done on the topic in Iran (e.g., Soodmand Afshar 2010) have not found these variables to significantly affect strategy choice and use by Iranian EFL learners. However, there is still enough room for these variables, which might potentially affect strategy use, to be further explored in other similar studies.

Engineering		Percent	Humanities		Percent	Total			
No. of participants			No. of participants			No. of participants		Percent	
39	24M	37.14	66	25 M	62.86	105	49M		46.7
	15 F			41 F		56F		53.3	

**Table 1: Participants in the study.**

## 2.2 Materials and Instruments

To elicit the participants' self-reported vocabulary learning strategies, the Five-point Likert-scale vocabulary learning strategies questionnaire (VLSQ) developed and validated by Soodmand Afshar, Ketabi and Tavakoli (2012) for the EFL context of Iran was used. The questionnaire includes 45 statements on a Likert scale ranging from 1 (never or almost never true of me) to 5 (always or almost always true of me). A copy of the VLSQ can be found in Appendix 1.

## 2.3 Procedure

Soodmand Afshar, Ketabi and Tavakoli (2012) developed and validated a vocabulary learning strategies questionnaire (VLSQ) for the Iranian context drawing mainly upon Oxford (1990), Schmitt and Schmitt (1993), and Gu and Johnson (1996). Although the VLSQ had already been validated, since strategy research is heavily context-specific and because data collection instrument is the building block upon which the findings are built, the following steps were taken to further ensure the validity and reliability of the VLSQ. The questionnaire was translated into Persian in order to make the items easier and more comprehensible for the EAP participants; the translation of the questionnaire (i. e., the Persian version) was given to two experts in the field (two assistant professors of the department) to give their expert views on it and to check it with the original one written in English. The necessary changes proposed were then accordingly made by the researchers. Using back translation technique, a translation expert was asked to translate the Persian questionnaire into English. The results showed that the back-translated questionnaire and the one in English were almost identical.

The questionnaire was then pilot tested with a group of 50 similar subjects. Then, running factor analysis, the questionnaire was found to have an acceptable validity rate. Using Chronbach's Alpha consistency, the reliability of the questionnaire was calculated, the result of which indicated the questionnaire enjoyed an acceptable and fairly high reliability rate ( $r=.88$ ). The final version of the questionnaire (see Appendix 2) was administered to the participants of the study at the end of their EAP class sessions. Before administering the instrument, the purposes and the importance of the study were clarified to the participants and the full descriptive instructions regarding the administration procedures were provided. On average, it took about 30 minutes for the participants to complete the VLSQ.

Tables 2 and 3 below show the reliability and validity estimates of the questionnaire respectively.

Cronbach's Alpha	Number of Items
.88	45

**Table 2: Reliability statistics for the VLSQ.**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.527
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.
	<b>1.770</b>
	1035
	.000

**Table 3: Results of KMO and Bartlett's test for the VLSQ.**

### 3 Data analysis

Using SPSS, first, Chi-square analyses were conducted to compare the Engineering and Humanities students' responses on individual strategy use (i. e., their responses to each of the forty five statements of the questionnaire). Then, an Independent samples t-test was run to compare the mean reported frequency of overall strategy use by EAP students of Engineering and Humanities.

### 4 Results and Discussion

The first question of the study set out to identify the most and least frequently used VLSs by Engineering and Humanities students. Tables 4 and 5 demonstrate the results for the five most frequently used strategies by Engineering and Humanities students respectively.

Rank	Number of the Strategy	Name of the strategy	Frequency	No. of participants
1	6	I guess the meaning of a new word using background knowledge, general world knowledge and the immediate and the wider context.	64% agree	25
2	23	I use loci method (i. e., I remember words by putting them in specific locations in my mind).	51% agree	20
3	18	I connect the new word to a personal experience.	50% agree	19
4	28	I repeat the new word orally several times.	48% agree	19
5	24	I use new words in sentences through speaking.	46% agree	18

**Table 4: The five most frequently used strategies by engineering students.**

As shown in Table 4, "guessing the meaning of a new word using background knowledge, general world knowledge and the immediate and the wider context" was the first most frequently used strategy among Engineering students. This finding is congruent with the results of Seddigh and Shokrpur (2012) who, as mentioned earlier, found that Medical students at Shiraz University of Medical Sciences utilized more guessing strategies than any other type. Similarly, Kameli and Bin Mostapha (2012) found that Persian EFL Learners used the strategy of guessing meaning in sentence paragraph more frequently than any other

strategies. Furthermore, Wu (2005) found that one of the most frequently used strategies among EFL Learners in Taiwan was guessing the meaning of word from textual context. The second most frequently used strategy by Engineering students was "Loci method". In contrast to the findings of the present study, some researchers such as, Catalan (2003) found that "Loci method" was one of the least frequently used strategies by Spanish-speaking students. As Nagy-Kondoraand and Sörösb (2012) maintain, Engineering students enjoy certain abilities like spatial abilities which are of crucial importance for their future careers. It thus seems justifiable to say that Engineering students, having used regions of their brain that have to do with spatial learning, might have been enabled to use this mnemonic device in which the items to be remembered are mentally associated with specific physical locations. In other words, as this method relies on memorized spatial relationships to establish order and recollect memorial content, Engineering students seem to have used this method of memory enhancement as a strategy in order to recall lists of words.

The third most frequently used strategy by Engineering students was "I connect the new word to a personal experience". Similarly, Atay and Ozbulgan (2007) found "connecting the new word to a previous experience" was one of the most frequently used strategies among EFL learners.

The strategy of repeating the new word orally several times is also among the most frequently used strategies employed by the Engineering students. Similarly, Hamzah, Kafipour and Abdullah (2009) found that one of the most frequently used vocabulary learning strategies by Iranian undergraduate EFL students was repeating the new word orally several times. Furthermore, Kameli and Bin Mostapha (2012) reported that "repeating the word silently several times" had been one of the most frequently used strategies by Persian EFL Learners. Within the same lines, Soodmand Afshar (2010) found that the repetition strategy was not only highly favored by all (both good and poor) learners in the study, but it was also among the top five most frequently used strategies by good learners. These findings show, as indicated by the results of O'Malley et al. (1985), most successful Asian learners (including good Iranian EFL learners), have strong tendency towards, and adopt successfully, those vocabulary learning strategies like repetition and memorization that are more mechanical in nature.

Rank	Number of the Strategy	Name of the strategy	Frequency	No. of participants
1	3	I ask my teacher for an L1 translation	55% agree	36
2	6	I guess the meaning of a new word using background knowledge, general world knowledge and the immediate and the wider context.	53% agree	35
3	28	I repeat the new word orally several times.	48% agree	31
4	35	I use vocabulary section or glosses in my textbook to learn the new words.	45% agree	29
5	26	I study the spelling of the new word and I write new English words several times.	43% agree	29

**Table 5: The five most frequently used strategies by Humanities students.**

As Table 5 demonstrates, Humanities students employed the strategy of "asking teacher for an L1 translation" more frequently than any other types of strategies. This finding is in line with the results of the study by Catalan (2003) who found that one of the most frequently used strategies by Spanish-speaking students was asking their teacher for an L1 translation. Also, Alhaysony (2012) found that Saudi EFL students sought help from their teacher in vocabulary learning.

One of the likely reasons for this strategy being used most frequently by Iranian Humanities students is that, as the experience of both language teachers as well as subject-matter' ESP teachers teaching English to EAP students in the Iranian context indicates, Humanities students are among the weakest students of all faculties at English language and thus to compensate for this, they have to seek help from their teacher for learning vocabulary items.

The results of the study in this regard might be supported by Latsanyphone and Bouangeune (2009) who found that using learners' mother tongue (L1) to teach English as a foreign language to low English proficiency level students in Laos enhanced their retention of new vocabulary items both in isolation and in context. They argued that this is possibly due to clear definitions and explanations in L1, dictation quiz and translation exercises in the classroom. Within the same lines, Auerbach (1993, cited in Latsanyphone/Bouangeune, 2009) argues that the use of the learners' L1 in the L2 classroom will have a positive effect on learners' second language learning, especially in the area of vocabulary.

As revealed in Table 5, the strategy of using vocabulary section or glosses in textbook was ranked as the fourth most frequently used strategy by Humanities students in this study. In this respect, Catalan (2003) also reported that Spanish-speaking students learning Basque and English used vocabulary section in textbook more frequently than other strategies. The next most frequently used strategy by Humanities students was repeating the new word orally several times. The results of the study in this regard are well supported by those of Hamzah, Kafipour and Abdullah (2009) who found that one of the most frequently used vocabulary strategies by Iranian undergraduate EFL students was studying new words many times as mentioned earlier. This is also justifiable by taking the point into account that in general, the students in Asian and Middle Eastern contexts are basically more memorization and repetition oriented as compared to their counterparts in Western contexts.

As is evident from Table 5, there are two most frequently used strategies commonly shared by the two groups. These strategies include "I guess the meaning of the new word " and "I repeat the new word orally several times", the plausible reasons for which are discussed later in the section.

With respect to the least frequently used strategies, Tables 6 and 7 below demonstrate the results of the five least frequently used strategies by both Engineering and Humanities students.

Rank	Number of the Strategy	Name of the strategy	Frequency	No. of participants
1	44	I draw a picture of the new word.	47% totally disagree	18
2	33	I use physical actions when learning a new word.	38% totally disagree	15
3	36	I skip or pass the new word.	38% totally disagree	15
4	10	I write down the word, its definition/synonym and an example sentence in which the word is used.	25% disagree	10
5	17	I use flashcards to remember new English words.	25% disagree	10

**Table 6: The five least frequently used strategies by Engineering students.**

As Table 6 shows, the least frequently used vocabulary learning strategies by Engineering students are "I draw a picture of the new word", "I use physical actions when learning a new word", "I skip or pass the new word", "I write down the word, its definition/synonym and an example sentence in which the word is used" and "I use flashcards to remember new English words". Drawing a picture of the new word was reported in the study to be the least frequently used vocabulary strategy by Engineering students. Similarly, Soodmand Afshar (2010) also found that one of the five least frequently used strategies by Iranian EFL majors was "drawing a picture of the new word". He argued that a plausible reason for this might be that this strategy is a kind of strategy preferred, perhaps mostly by children and elementary level learners who, naturally speaking, deal with concrete vocabulary. However, taking the fact into consideration that most of the words needed by intermediate and advanced EFL learners in general and EAP learners in particular are abstract in nature, the findings in this regard do not sound very surprising.

Rank	Number of the Strategy	Name of the strategy	Frequency	No. of participants
1	36	I skip or pass the new word.	35% disagree	23
2	2	I use a monolingual English dictionary.	30% disagree	20
3	44	I draw a picture of the new word.	25%	17
4	13	I write down the word, its definition/synonym, its pronunciation, its part of speech, an example sentence in which the word is used and other grammatically related words.	24% disagree	16

5	12	I write down the word, its definition/synonym, its pronunciation, its part of speech (e. g. noun, verb, adj., adv., etc) and an example sentence in which the word is used.	24% disagree	16
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**Table 7: The five least frequently used strategies by Humanities students.**

As shown in Table 7, the first least frequently used strategy by Humanities students is "I skip or pass the new word" (the third least frequently used strategy by Engineering students in Table 6), a strategy which can be categorized under the umbrella term of avoidance strategies. In agreement with this finding, Soodmnad Afshar (2010) also found that Iranian EFL majors employed this strategy as one of the least frequently used strategies. The second least frequently used strategy reported by Humanities students was monolingual English dictionary use. This is most probably because Iranian EAP learners in general, and Humanities students in particular, do not have good command of English language and hence prefer to use bilingual dictionaries rather than monolingual ones whose adoption needs a rather good command of language. However, this finding is inconsistent with those of Asgari and Mustapha (2011) who found that using monolingual dictionary was popular with ESL students in Malaysia. Moreover, Hamzah, Kafipour and Abdullah (2009) also found that using monolingual dictionary was the most frequently used strategy by undergraduate EFL learners, a finding which contradicts that of the present study in this regard. This shows that cultural context and cultural factors as well as educational system might also affect the type of strategies learners adopt. Another least frequently used strategy by Humanities students was drawing the picture of the new word. This finding corroborates that of Soodmand Afshar, Ketabi and Tavakoli (2012) who found that both good and poor Iranian EFL majors employed this strategy as one of the least frequently used strategies.

According to Table 7, "I write down the word, its definition/synonym, its pronunciation, its part of speech, an example sentence in which the word is used and other grammatically related words" and "I write down the word, its definition/synonym, its pronunciation, its part of speech (e. g. noun, verb, adj., adv., etc.) and an example sentence in which the word is used" are other least frequently used strategies by Humanities students.

Although writing the words down in a vocabulary notebook is one of the best vocabulary learning strategies which could increasingly enhance the retention of vocabulary items leading more to enhancement of the depth of vocabulary knowledge (Soodmand Afshar 2010), Iranian EAP learners, especially Humanities students, used this strategy less frequently than the other ones as the findings indicated. Again, this is most plausibly because Humanities students are not as proficient as Engineering students to make use of monolingual dictionaries to comprehend and write several aspects of the given word down in a notebook.

As shown in Tables 6 and 7, there are two least frequently used strategies (i. e. "I ignore or skip the new word" and "I draw the new word") commonly shared by the two groups.

This is most probably because the former is an avoidance strategy whose adoption might sometimes cause serious lapses in communication (both in reception and production) especially if the word at issue is a key one playing a crucial role in understanding the text. The most plausible explanation for the latter being among the least frequently used strategies is that this strategy lends itself well for use with concrete words and usually by children as mentioned earlier in this section.

Number of the Strategy	Name of the strategy	Percent		Pearson Chi-Square Asymp. Sig. (2-sided)
		Humanities	Engineering	
2	I use a monolingual English dictionary.	Disagree 30.8%	Agree 44.7%	.002
3	I ask my teacher for an L1 translation.	Agree 55.4%	Agree 35.9%	.003
19	I associate the word with its coordinates and collocations.	Agree 36.4%	Agree 23.1%	.032
28	I repeat the new word orally several times.	Totally agree 42.2%	Totally agree 20.5%	.013
30	I use Keyword Method	Agree 27.7%	Agree 23.7%	.018
44	I draw a picture of the new word	Disagree 25.8%	Totally disagree 47.4%	.048

**Table 8: Chi square analyses for individual strategy use.**

In order to determine significant differences in individual strategy use by Engineering and Humanities students, Chi square analyses were conducted. The results show significant differences in individual strategy use in 6 out of 45 vocabulary learning strategies.

As is evident from Table 8, there are six individual vocabulary learning strategies which are used significantly differently by the two groups. These strategies include "I use a monolingual English dictionary", "I ask my teacher for an L1 translation", "I associate the word with its coordinates and collocations", "I repeat the new word orally several times", "I use keyword method" and "I draw a picture of the new word".

The significantly highly frequent use of monolingual dictionaries by Engineering students can be well justified by the fact that, in general, in Iranian educational system, the most studious students in secondary high school and those who have a good background in English language, take up Engineering and Medical fields at university although exceptions can be, and are, always found. Thus, Engineering students made significantly more frequent use of monolingual dictionaries most probably because they had relatively better background in English language thanks to having taken English (conversation) courses at private language institutes which are rampant throughout the country. Additionally, would-be Engineering students have to score higher in all exam subjects, especially in English Language which acts as a success-determining factor at University Entrance Examination. The Humanities students, on the other hand, due to their not very good prior knowledge of English, preferred, most plausibly, to seek help from others either by asking their teacher for an L1 translation or by consulting bilingual dictionaries. However, although these differences exist between the two groups, previous studies of the ilk conducted in Iranian context (including that by Soodmand Afshar, Ketabi and Tavakoli 2012) indicate, overall, there is no significant difference between good and poor Iranian EFL learners in vocabulary strategy choice and use although they might act differently in the frequency of use of specific strategies.

The Humanities students' significantly more frequent use of key word method" and "drawing picture of the new word" and "associating the word with its coordinates and collocations" is most plausibly because the majority of the participants in the Humanities group were studying

such disciplines as Arabic literature, Persian Literature, Education, etc. and were thus dealing with literature and language in one way or another. Since, on the one hand, these strategies are somewhat imagination-based, and on the other hand, language, literature and imagination are inextricably intertwined, the Humanities students came to outperform their Engineering counterparts in the use of these strategies.

Also, the Humanities students' significantly more frequent use of the strategy of repeating the word orally several times can be explained by taking the point into account that this strategy is mostly memorization-based and thus is preferred and used more frequently by Humanities students who, naturally speaking, are more memorization-oriented than Engineering students who are mostly analytically minded.

Thus, in sum, it appears that the vocabulary needs of Arts and Humanities students are characteristically, if not significantly, different from those of Engineering students as maintained by Durrant (2009).

Moreover, an independent samples t-test was conducted to check for the significant differences between Humanities students and Engineering students in terms of overall strategy use. The results indicated that, overall, the two groups were not significantly different in the choice and use of vocabulary learning strategies.

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.262	.610	.536	103	.593	2.30886	4.30695
Equal variances not assumed			.537	80.290	.593	2.30886	4.29973

**Table 9: Independent sample t-test for overall strategy use by Humanities and Engineering Students.**

As shown in Table 9, overall, there was no significant difference between the students of Engineering and those of Humanities in terms of vocabulary strategy choice and use. In line with this finding, Gu(2002), investigating the impact of gender and academic major on vocabulary learning strategies of Chinese EFL learners, found academic major to be a less potent background factor than gender in determining learning results and strategies in learning vocabulary.

## 5 Conclusion and Implications of the Study

This study investigated vocabulary learning strategies adopted most and least frequently by EAP students of Humanities and Engineering and the differences between these two groups in terms of *overall* as well as *individual* vocabulary strategy choice and use. The finding indicated that overall, the two groups were not significantly different in the frequency of use of vocabulary learning strategies, that the Engineering students preferred and adopted vocabulary learning strategies which were deeper and more thought-provoking in nature (e. g., using monolingual English dictionaries and associating words with their collocations

and coordinates) in comparison to their Humanities counterparts who adopted more mechanical, less sophisticated strategies such as getting help from others like use of bilingual dictionaries and asking teacher for an L1 translation.

The findings of the present study pose significant educational implications for teaching and learning EAP vocabulary in the Iranian context. First, according to the interpretation scale of Oxford's (1990) SILL, only learners with a mean of above 3.5 are considered high strategy users. However, based on the descriptive statistics of the study, the reported mean of strategy use by the participants of both groups of Engineering and Humanities was below 3.5 out of five. Therefore it is necessary to make ESP/EAP students strategy-conscious and train them in the use of vocabulary learning strategies which can contribute to learner independence (Swan 1997) in post-method era. Second, as the study specified the most and least frequently used vocabulary learning strategies by EAP students of Humanities and Engineering, the curriculum developers and syllabus designers are recommended to incorporate into their curricula and syllabi those vocabulary learning strategies found to be used highly frequently in the study.

Third, according to the results of the study, there were six individual vocabulary learning strategies which were used significantly differently by the two groups. As such, when teaching the EAP courses, the EAP teachers in the Iranian context and most plausibly in other developing countries, are suggested to take into consideration the differences between the students of Engineering and those of Humanities in terms of individual vocabulary strategy use and encourage Humanities students to use VLSs which are deeper and more thought-provoking in nature like those adopted by Engineering students as discussed earlier.

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## Appendix 1: Vocabulary Learning Strategies Questionnaire (VLSQ)

Dear student,

This VLSQ is for students of English as a second or foreign language. You will find statements about learning English vocabulary. Please read each statement carefully and evaluate yourself on the basis of a five-digit scale describing **HOW TRUE THE STATEMENT** is about you:

1. Never or almost never true of me
2. Usually not true of me
3. Somewhat true of me
4. Usually true of me
5. Always or almost always true of me

Answer in terms of how well the statement describes you.

***Do not answer how you think you are, or what other people do.***

**There are no right or wrong answers to these statements.** It takes about 40-50 minutes to complete the Questionnaire. If you have any questions, let us know about it immediately:

1. I make use of a bilingual (English–Persian or Persian-English) dictionary.

1      2      3      4      5

2. I use a monolingual English dictionary.

1      2      3      4      5

3. I ask my teacher for an L1 translation.

1      2      3      4      5

4. I ask my teacher for an English sentence including the new word.

1      2      3      4      5

5. I ask classmates for meaning.

1      2      3      4      5

6. I guess the meaning of a new word using background knowledge, general world knowledge and the immediate and the wider context.

1      2      3      4      5

7. I check prefixes, suffixes and word roots to discover the meaning of unknown words.

1      2      3      4      5

8. I have a vocabulary notebook and I write down every new word I come across.

1      2      3      4      5

9. In my vocabulary notebook, I write down just the word and its definition/ synonym.

1      2      3      4      5

10. I write down the word, its definition/synonym and an example sentence in which the word is used.

1      2      3      4      5

11. I write down the word, its definition/synonym, its pronunciation and an example in which the word is used.

1      2      3      4      5

12. I write down the word, its definition/synonym, its pronunciation, its part of speech (e. g. noun, verb, adj., adv., etc.) and an example sentence in which the word is used.

1      2      3      4      5

13. I write down the word, its definition/synonym, its pronunciation, its part of speech, an example sentence in which the word is used and other grammatically related words.

1      2      3      4      5

14. I analyse part of speech of the new word.

1      2      3      4      5

15. I check for L1 cognates (i. e. I look for words in my own language that are similar to new words in English).

1      2      3      4      5

16. I memorise word lists (i. e. lists of words in English with their Persian equivalents).

1      2      3      4      5

17. I use flashcards to remember new English words.

1      2      3      4      5

18. I connect the new word to a personal experience.

1      2      3      4      5

19. I associate the word with its coordinates and collocations.

1      2      3      4      5

20. I connect the word to its synonyms and antonyms.

1      2      3      4      5

21. I associate the new word to others which are related to it and are located in the same area of meaning. (e.g., Furniture: table, chair, bed).

1      2      3      4      5

22. Where a new word's meaning lies along a "scale" of gradable adjectives, I use scales for learning and remembering "gradable" adjectives (e. g., burning, hot, warm, cool, freezing).

1      2      3      4      5

23. I use loci method (i. e., I remember words by putting them in specific locations in my mind).

1      2      3      4      5

24. I use new words in sentences through speaking.

1      2      3      4      5

25. I use new words in sentences through writing.

1      2      3      4      5

26. I study the spelling of the new word and I write new English words several times.

1      2      3      4      5

27. I focus on the phonological form (i. e. the pronunciation) of the new word.

1      2      3      4      5

28. I repeat the new word orally several times.

1      2      3      4      5

29. I make an image of the word's meaning.

1      2      3      4      5

30. I use Keyword Method (i. e. I think of a L1 word that sounds similar to the new L2 word then make a single mental image combining the meaning of both words (e.g. to learn the English word " shabby " which means untidy, a Persian learner of English might think of the Persian word " شبی " meaning a night and then making a relationship between the meaning of the two ( English and Persian ) words e.g. by imagining that at night the people are usually shabby at bed time.

1      2      3      4      5

31. I paraphrase the new word's meaning.

1      2      3      4      5

32. I learn the words of an idiom together.

1      2      3      4      5

33. I use physical actions when learning a new word.

1      2      3      4      5

34. I take notes of new words in class.

1      2      3      4      5

35. I use vocabulary section or glosses in my textbook to learn the new words.

1      2      3      4      5

36. I skip or pass the new word.

1      2      3      4      5

37. I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign.

1      2      3      4      5

38. I make up (coin) new words if I don't know the right ones in English.

1      2      3      4      5

39. I revise new words several times during a day.

1      2      3      4      5

40. I pick up new words from various English websites when searching the internet.

1      2      3      4      5

41. I learn new words by listening to live English media like BBC, VOA, etc, and by watching English TV channels and movies.

1      2      3      4      5

42. I learn new words by reading books, newspapers, magazines, etc. in English.

1      2      3      4      5

43. I pick up new words when playing computer games in English.

1      2      3      4      5

44. I draw a picture of the new word.

1      2      3      4      5

45. I learn new words from English songs and poems.

1      2      3      4      5

## Appendix 2

دانشجوی گرامی: با سلام و احترام

پرسشنامه ای که پیش روی شماست برای پژوهشی دانشگاهی تنظیم شده است. خواهشمند است با دقت و صداقت میزان موافقت خود را با هر يك از موقعیتهای داده شده مشخص کنید. از توجه و زمانی که برای پاسخگویی به این پرسشنامه اختصاص می دهید متشکریم.

ردیف	موقعیت	کاملاً موافقم	موافقم	نظری ندارم	مخالفاً کاملاً
1	من از فرهنگ لغتدوزبانه (فارسی به انگلیسی یا انگلیسی به فارسی) استفاده میکنم.				
2	من از فرهنگ لغت یک زبانه (انگلیسی به انگلیسی) استفاده میکنم.				
3	من از استادام میخواهم تا کلمات را به فارسی ترجمه کند.				
4	من از استادام میخواهم تا لغت را در یک جمله انگلیسی به کار ببرد.				
5	از هم کلاسی ام میخواهم تا لغات را برایم معنی کند.				
6	با استفاده از دانش عمومی و دانش قبلی معنی لغت جدید را حدس میزنم.				
7	برای پیدا کردن معانی لغت آشنا پیشوندها و پسوندها و ریشه لغت را بررسی میکنم (unsuccessful: un+succes+ful).				
8	من یک دفترچه یادداشت دارم و هر لغت جدیدی را که با آن مواجه می شوم در آن (...):/ nose: بینی face: یادداشت می کنم (مثلاً صورت				
9	در دفترچه یادداشت خودم فقط لغت، مترادف و معنی آن را (eat: have: می نویسم. (مثلاً خوردن				
10	در دفترچه یادداشت خودم لغت، معنی یا مترادف، و یک مثال که آن لغت در یک جمله به کار رفته باشد را یادداشت میکنم.				
11	در دفترچه یادداشت خودم لغت، معنی یا مترادف لغت، همچنین تلفظ لغت و یک مثال که آن لغت در آن استفاده شده است را در یادداشت می کنم.				
12	در دفترچه یادداشت خودم لغت، معنی یا مترادف آن، تلفظ و نقش دستوری (مثال، اسم، صفت، فعل) و یک مثال که لغت در آن استفاده شده را یادداشت می کنم.				
13	لغت، معنی یا مترادف تلفظ و نقش دستوری لغت (اسم، صفت، قید و...) و یکجمله که آن لغت در آن استفاده شده است و دیگر لغاتی را که از نظر گرامری با آن مرتبط هستند را یادداشت میکنم.				
14	من نقش دستوری لغت (اسم، صفت، قید و...) را بررسی میکنم.				
15	من به دنبال لغات هم ریشه با لغت جدید انگلیسی در زبان فارسی میگردم.				
16	من لغات را به صورت لیست وار حفظ میکنم (لیستی از لغات که معادل فارسی آن نوشته شده است).				
17	من برای به یاد آوردن لغات جدید از روش فلش کارت (کارت های یادگیری لغت) استفاده میکنم.				
18	لغت را به تجربه شخصی خود ربط میدهم و از این طریق آن را یاد میگیرم.				
19	من لغت جدید را از طریق "هم آبی" کلمات یاد میگیرم معنی لغاتی که با آن make homework doing, لغت تکرار میشوند را با هم یاد میگیرم. (مثلاً a mistake, make a decision (...)				
20	من لغت را به مترادف و متضاد آن ربط میدهم.				
21	لغات جدید را به لغات دیگر که در یک حوزه معنایی قرار دارند ربط میدهم (مثلاً میل، صندلی، تخت).				
22	وقتی معنی لغات در طیفی از صفات قابل درجه بندی از لحاظ معنایی قرار (hot, warm, cold, icy), (سوزان، داغ، گرم، سرد، یخ دارد) ، از این روش استفاده میکنم. (burning)				
23	( استفاده میکنم معنی لغات را با قرار دادن آنها در محل های (loci) من از روش خاص در ذهن به خاطر می آورم (در ذهن خود آنها را فایل بندی میکنم).				
24	لغت جدید را هنگام صحبت کردن در جمله به کار میبرم.				
25	من لغت جدید را از طریق نوشتن در جمله به کار میبرم. (I saw him last night)				
26	من املاهای لغات جدید را بررسی می کنم و آن را چندین بار مینویسم.				

				من بر روی فرم آوایی لغت یعنی تلفظ تمرکز می کنم.	27
				لغات جدید را برای چندین بار به طور شفاهیتکرار میکنم	28
				یک تصویر از معنای لغتمیسازم	29
				از روش کلید واژه استفاده میکنم( من به لغتفارسی که به لغتجدید انگلیسی شبیه است فکر می کنم سپس با ترکیب معنای دو لغتیک تصویر ذهنی واحد میسازم که به معنی نا مرتب است را یک زبان آموز فارسی ممکن <b>shabby</b> مثلا لغت است به لغت <b>شبی</b> به معنی یک شب ربط دهد سپس بین معنی دو لغتی انگلیسی و فارسی یک رابطه برقرار کند بدین صورت که تصور کند که مردم در شب <b>(شبی) هستند. shabi</b> معمولا در موقع خواب معنی لغات جدید را تفسیر میکنم.	30
				معنی لغات جدید را تفسیر میکنم.	31
				. من تمام لغات یک اصطلاح را با هم یاد میگیرم	32
				که به <b>jump</b> از اعمال فیزیکی استفاده میکنم مثلا برای یادگیری لغت معنی پریدن میباشد ، عمل پریدن را انجام میدهم تا لغتدر ذهنم بماند.	33
				لغات جدید را در کلاس یادداشت می کنم.	34
				از قسمت واژگان که در کتابم وجود دارد برای یادگیری لغات استفاده میکنم.	35
				من لغات جدید را نادیده میگیرم یا از آن ها میگذرم.	36
				لغات یا عبارات انگلیسی را از طریق به یاد آوردن محل آنها در صفحه ، تخت سیاه یا تابلوی واقع در خیابان به یاد می آورم.	37
				اگر لغت درست را در زبان انگلیسی ندانم واژه جدیدی ابداع میکنم	38
				در طول روز چند بار لغات را مرور میکنم.	39
				لغات جدید را با جستجو در اینترنت و سایت های مختلف انگلیسی یاد میگیرم.	40
				لغات جدید را از طریق گوش دادن به برنامه رسانه های زنده انگلیسیزبانمانند یا از طریق تماشای فیلم ها و کانال های انگلیسی زبان یاد <b>VOA</b> و <b>BBC</b> میگیرم.	41
				از طریق خواندنکتاب ها و روزنامه ها و مجلات انگلیسی لغات جدید را یاد میگیرم.	42
				لغات جدید را هنگام استفاده از بازی های کامپیوتری یاد میگیرم	43
				لغتجدید را نقاشی میکنم.	44
				لغات را با گوش دادن به شعر یا آهنگ های انگلیسی یاد میگیرم.	45