

## **Cognitive and Metacognitive Vocabulary learning strategies across fields of study**

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### **Abstract**

The purpose of this study is to shed light on the frequency of the use of cognitive and metacognitive vocabulary learning strategies employed by undergraduate students. To achieve this, a vocabulary questionnaire developed on the basis of Oxford's (1990) SILL, Wenden's (1987) classification of strategies, and Johnson and Gu's (1996) VLQ was administered to 231 TEFL and non-TEFL undergraduate university students. The analyses of the questionnaire indicated that on the whole Iranian university students favor cognitive strategies in the process of vocabulary learning. It was also found that students' major has a significant main effect on the choice of strategies. The results suggest language practitioners teach strategies to EFL learners and motivate them to use these strategies in their language learning process to promote learning.

**Key Words:** learning strategies, vocabulary learning strategies, cognitive strategies, metacognitive strategies.

## **1. Introduction**

Vocabulary has been considered central to the development of language proficiency. The most pressing need of people learning another language is vocabulary ( Laufer & Sim, 1985). They need to have a pool of lexical items in order to express themselves. However, in most cases they do not know how to master the essential lexical items. It seems, therefore, necessary that language learners should be given instruction on how to learn lexical items better by using a limited number of strategies that good language learners report using. This is possibly a convincing reason that vocabulary instruction has been regarded very important and teachers use various techniques to familiarize students with the use of these strategies. Continuing this line of research, the present study will look at the cognitive and metacognitive vocabulary learning strategies employed by TEFL and non-TEFL undergraduate university students and the effect of their field of study on the choice of strategy. In the following sections, brief accounts of the role of vocabulary in language acquisition and vocabulary learning strategies are followed by a description of the methodology employed in this study. The findings and discussions are presented in the third section and finally conclusions and implications for classroom teachers are offered.

## **2. Background to the study**

Although “vocabulary is central to language and of critical importance to the typical language learner” (Zimmerman, 1997: 5), it was marginalized by the importance that practitioners, researchers, and language teachers bestowed on syntax and phonology.

Language has been traditionally divided into grammar and vocabulary. For a long time attention was diverted to grammar and it was believed that once certain grammatical rules are learned, learners can acquire as many words as they need in order to communicate. Only a few scholars realized

the fallacy of such beliefs. Wilkins (1972: 110) suggests “ the belief that vocabulary acquisition can be delayed until a substantial proportion of lexical items are learned is tenable only when the learner is not likely to have a pressing need to use the language”. In fact it is widely accepted that communicating adequately and efficiently in another language is strongly dependent on a good command of vocabulary items. Virtually, without vocabulary, it is very difficult, if not impossible, to engage in meaningful interaction with others. This has been highlighted in Wilkins’s (1972: 111) historical comment “while without grammar very little can be conveyed, without vocabulary nothing can be conveyed”.

Poor vocabulary has seemingly created communication problems for language learners. Language learners without adequate knowledge of vocabulary are generally impeded in their academic activities. Vocabulary knowledge is also instrumental in reading comprehension(Read, 2000, Richards, 2000, Qian, 2002). It is shown that knowledge of vocabulary is closely related to reading comprehension and hence as Vermeer (2001) suggests it can be used as one of the best estimates of language proficiency at school. The results of a survey of L2 learners by Leki and Carson (1994) have also revealed that university students consider insufficient knowledge of vocabulary items as the most important factor impeding their progress in writing tasks.

Zimmerman’s (1997: 5) complain that “the teaching and learning vocabulary have been undervalued in the field of second or foreign language acquisition throughout its varying stages and up to present” requires serious consideration. Reviewing language teaching methods, he concludes that vocabulary instruction has not received a proper attention in teaching methods. As Seal (1991) comments only in Grammar Translation and Direct Method a slight emphasis is given to these building blocks of language.

### **3. Reasons for the neglect of vocabulary**

Laufer (1986) refers to the following three factors as possible reasons that contributed to lack of attention to vocabulary:

- 1- Linguists' concern with grammar and phonology: grammar and phonology are closed systems, therefore, they can be studied and generalized more easily than vocabulary that constitutes an open set.
- 2- Dominant beliefs in language psychology: it was believed that vocabulary learning is not rule governed and takes place as a result of imitation, practice, and reinforcement.
- 3- The interest of methodologists: language teachers tend to believe that focus on grammar helps language learners acquire means that could accelerate their learning and vocabulary teaching can be delayed until advanced stages. Therefore, materials were developed that mainly focused on grammar rather than vocabulary.

In addition to these reasons, the difficulty of teaching vocabulary and teachers' beliefs and experiences also contribute to the neglect of vocabulary

The difficulty of teaching vocabulary items and scarcity of vocabulary teaching theories have diverted teachers' attention to grammar. In many cases, language teachers' personal beliefs seem to account for what goes on in teaching lexical items. First, teachers' observations show that the instruction of vocabulary items does not account for the number of words learners need to acquire in order to communicate successfully. Such observations have discouraged teachers from looking for more effective ways of teaching vocabulary. Second, some teachers influenced by the incidental vocabulary learning hypothesis proposed by Nagy and Herman (1985) seem to believe that lexical items are learned when learners are engaged in reading different texts. Based on this hypothesis, learners acquire a lexical item when they encounter it in different texts. Words occurring more frequently are

learned sooner than words occurring less frequently ( Nation, 2000).

According to the critics of this view, however, learners who guess the meaning of words successfully in specific contexts are less likely to learn their exact meaning because of the ability to comprehend the text without knowing the meaning of words. Therefore, exposure to a word in a context is not the only reason for its acquisition. Nation and Hsueh-chao (2000) cite Chall (1987) who suggests that the relationship between reading and vocabulary knowledge changes at different times. At first, native speakers' vocabulary knowledge supports comprehension of texts, while after some years, reading is used as a means of expanding vocabulary knowledge. Third, the tendency of teachers to teach with the same methods and procedures that they were taught has also had a great role in the neglect of vocabulary. Many teachers have learned the language they teach at a time when attention was given to abstract grammatical rules and vocabulary was considered periphery. It is, therefore, natural to expect them to continue the same trend and focus on grammar rather than vocabulary.

In sum, these observations have given rise to a great interest in vocabulary acquisition in L2 learning. This renewal of interest in vocabulary acquisition resulting from the new communicative trends in teaching language has compelled teachers and researchers to investigate factors that influence the acquisition and retention of lexical items. In this regard the use of strategy is suggested as one of the important factors (Oxford, 1990; O'mally and Chamot, 1990; Wenden, 1987).

#### **4. Vocabulary learning strategies: general beliefs**

There have been significant shifts of emphasis in the field of Second Language Acquisition over the past few decades. We have witnessed “ the reemergence of interest in one area of language study, vocabulary, and the appearance of a newly recognized aspect - learner strategies” ( Schmitt,

1997: 199). The appreciation of the role and significance of these areas have motivated many scholars to investigate this issue more closely.

Research in the nature of language learning strategies began in 1970s as a reaction to teacher-centered education. It appears that the greater emphasis on learners and learning resulted in changes mostly reflected in the amount of attention given to learning strategies.

Scholars motivated by the desire to familiarize learners with language learning strategies have offered several definitions of strategies. For example, O'mally and Chamot (1990: 1) defined learning strategies as "the special thoughts and behaviors that individuals use to help them comprehend, learn, or retrieve the information". Rubin (1987: 22) believed that language learning strategies "contribute to the development of the systems which the learner constructs and affects learning directly". Wenden (1987) considered language learning strategies as behaviors learners employ in order to learn and regulate the learning of another language. Finally, Oxford (1990: 8) regards language learning strategies as "specific actions taken by the learners to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations".

These definitions make it clear that the effects and usefulness of these strategies are recognized. Oxford (1990) stresses that language learning strategies

- 1- are learner generated.
- 2- Contribute to the development of communicative competence.
- 3- motivate learners to assume responsibility for their own learning and become more autonomous and self-directed.
- 4- enhance the learning of another language.
- 5- support and enhance self-esteem of learners and consequently play an important indirect role in learning.
- 6- are employed consciously by learners.

7- can be taught. Teachers can make their students sensitive to strategies and teach them how to use strategies that successful language learners employ.

8- are influenced by factors such as task requirements, language proficiency, age, sex, ethnicity, motivation,....

The research on language learning strategies, at first, attempted to identify useful strategies. After the identification of strategies the next step was developing a framework for the categorization of these strategies. O'mally and Chamnot(1985) divide language learning strategies into metacognitive( strategies for regulating learning), cognitive (strategies used in manipulation of information in specific tasks) , and social affective (strategies dealing with interpersonal relationship). Oxford (1990) classified language learning strategies into direct and indirect strategies. Direct language learning strategies consist of three subcategories of cognitive (strategies that involve manipulation or transformation of target language and are used for understanding and producing language), memory (strategies used for storing and retrieving information and compensation strategies), and compensation (strategies used for overcoming limitations in linguistic knowledge).

Indirect strategies comprise three strategy types; affective strategies that are employed for overcoming inhibitions, anxiety associated with language learning, and managing emotions in general represent the first category. Social strategies exploited by learners in different interactions to ask questions, cooperate, and empathize with others compose the second category and metacognitive strategies that make language learners more CAPA-able represent the third category (Oxford, 1990). Metacognitive strategies help learners to notice the gap in their linguistic knowledge and employ appropriate techniques to become more proficient. They include three subcategories of “centering your learning, arranging and planning your learning, and evaluating your learning”(Oxford,1990: 136).

Centering strategies assist learners to focus their attention on certain tasks, activities, and skills. Planning strategies guide learners in planning their learning and discovering what they need to do in order to achieve their goals. And finally strategies used in monitoring and checking progress in the process of language learning constitute the third category – evaluating strategies that help language learners discover errors and detect appropriate means of eliminating them.

In the process of identification of language learning strategies, researchers realized that many of these strategies deal with vocabulary learning (Schmitt, 1997). Despite this awareness, very few studies have dealt with the issue in depth and few vocabulary learning strategies have been investigated until recently.

The importance of vocabulary learning strategies according to Oxford and Scarcella (1994: 236) lies in the fact that they “make learners more independent of the teacher and serve as useful tools that can be used both inside and outside of the class”. Leake and Shaw (2000: 272) also argue that “vocabulary continues to be a major area for language learning into higher education, and therefore it is important that the learners have effective strategies in this area”. As Gu and Johnson (1996: 646) put “vocabulary learning strategies add to the acquisition of vocabulary through extensive reading; they lead to increased retentions of the new vocabulary and increased availability of these items for active use”.

The use of strategies for vocabulary retention varies among learners. Learners adopt strategies that are in line with their previous learning experience and consistent with their beliefs about vocabulary and vocabulary learning (Abraham & Vann, 1979; cited in Gu and Johnson, 1996). The results of the research by Gu and Johnson (1996) indicated that EFL students prefer extensive use of dictionary, metacognitive, note taking, rehearsal, encoding, and activation strategies. The results indicated that participants do not favor memorization strategies; also mnemonic devices are not regarded



very effective by Chinese subjects. The other interesting finding of their study was the significant correlation of metacognitive strategies with English proficiency and vocabulary size.

In a similar vein, Tahmasebi (1999) found that subjects' choice of strategies is influenced by their beliefs about vocabulary learning; Those who believed that words can be learned independently of the context used memorization and visual-encoding strategies; others used dictionary, self-initiation, activation, and guessing strategies. He also noticed that the level of language proficiency influences the choice of vocabulary learning strategies; at elementary and intermediate levels students use more repetition strategies. His findings, therefore, support the conclusion that the type and number of vocabulary learning strategies varies across different learners with different backgrounds, interests, and proficiencies.

Since few studies have dealt with vocabulary learning strategies and even those researchers who addressed it have limited themselves to the identification, description and classification of the best strategies for vocabulary retention, distinctive approaches to vocabulary acquisition, and the relationship between proficiency and vocabulary learning strategies, the present study aims to look at it from a different perspective. It tries to address vocabulary learning strategies within the framework of language learning strategies proposed by Oxford (1990).

### **5. Research questions:**

- 1- Which subcategory of vocabulary learning strategies is used more frequently by Iranian TEFL and non-TEFL learners ?
- 2- Which category of cognitive vocabulary learning strategies is used more frequently by TEFL and non-TEFL learners?
- 3- Which category of metacognitive vocabulary learning strategies is used more frequently by TEFL and non-TEFL learners?

4- Is there any significant difference between the English Language majors and non-English majors in terms of cognitive and metacognitive vocabulary strategy use?

## **6. Method**

### **Participants**

The total number of participants in this study was 231 undergraduate university students at University of Tehran, Allameh Tabatabaee University, Islamic Azad University Ghom Branch, Islamic Azad university Ghazvin Branch. The respondents were divided into two groups based on their field of study. The first group consisted of 147 male and female students of English Literature and English translation.

The second group comprised of 84 male and female students of computer engineering and electronics. By the time of this study they were passing their General English Course. They were heterogeneous with respect to their English language proficiency and background.

### **Instrumentation**

A questionnaire was developed to obtain information regarding the frequency of the use of vocabulary learning strategies. The questionnaire was developed on the basis of Oxford's (1990) classification of language learning strategies, Wenden's (1987) classification of strategies, and Gu and Johnson's (1996) Vocabulary Learning Questionnaire (VLQ). Thus, the questionnaire written in Persian consisted of three parts. The first section elicited the respondents' demographic information as their age, gender, field of study, grade point average, and university. The second part included 26 items representing four subcategories of metacognitive strategies namely: direct attention, planning, centering, and evaluating strategies. The third

section consisted of 30 items representing highlighting, dictionary, guessing, repetition, translation, and note taking strategies.

### **Procedure**

As mentioned above, based on already existing questionnaires and a comprehensive review of literature, a vocabulary learning strategy questionnaire was developed in Persian. To validate the questionnaire in terms of the appropriacy, wording, and classification of items university professors were consulted. The questionnaire was also given to instructors whose students were to participate in the study. They were also the informants into the questionnaire validating procedure. They explained to the students how to complete the questionnaire. The participants were asked to complete the questionnaire in 30 minutes. They were asked to make their judgments along the following scale:

1	2	3	4	5
“strongly agree”	“agree”	“Fairly agree”	disagree”	“strongly disagree”

### **Data Analysis**

Confirmatory factor analysis was used to examine the construct validity of the questionnaire. Factor analysis according to Backman (1990: 262) is “a commonly used procedure for interpreting a large number of correlations...”. The common objective as Hatch and Lazaraton (1991: 490) state is to summarize a set of observed variables and “reduce a large number of variables to one or more values that will still let us reproduce the information found in the original variables. The new values are called components or factors.” Among various techniques of Factor Analysis, Principal Component Factor Analysis was used. A two-factor solution was performed as two major strategies, i.e., cognitive and metacognitive were investigated in this study. The result is presented in Table 1.

**Table 1: Rotated Component Matrix**

	Component	
	1	2
IT_51TRA	.681	
IT_23TRA	.661	
IT_50TRA	.643	
IT_55TRA	.632	-.349
IT_52TRA	.628	
IT_47NT	.568	
IT_43REP	.531	
IT_28HI	.529	
IT_42REP	.529	
IT_49NT	.508	
IT_41REP	.501	.332
IT_46NT	.482	
IT_44REP	.462	
IT_30DIC	.456	
IT_56REP	.424	
IT_29HI	.419	
IT_35EVA	.400	
IT_27HI	.394	
IT_48NT	.364	
IT_26HI	.330	
IT_13CEN		
IT_24EVA		.525
IT_31DIC		.497
IT_11CEN		.494
IT_39GUE		.490
IT_16CEN		.489
IT_8EVA		.489
IT_15GUE		.485
IT_14CEN		.462
IT_9CEN	.356	.458
IT_17PLA		.433
IT_36EVA		.431
IT_21EVA		.418
IT_19PLA		.400
IT_33DIC		.388
IT_45NT	.336	.361
IT_1PLA		.355
IT_2PLA		.350
IT_18PLA		.345
IT_20DA		.341
IT_38GUE		.338
IT_37GUE		.338
IT_40GUE		.331
IT_32DIC		.328
IT_12CEN		.326
IT_25EVA		.322
IT_53DA		.305
IT_4PLA		
IT_22EVA		
IT_3PLA		
IT_34DIC		
IT_10HI		
IT_6DA		
IT_5DA		
IT_7DA		
IT_54DA		

PLA=Planning  
 REP=Repetition  
 TRA=Translation  
 NT=Note taking  
 GUE=Guessing  
 CEN=Centering  
 EVA=Evaluation  
 DIC=Dictionary  
 HI=High light  
 DA=Direct attention

**Extraction Method: Principal Component Analysis.**  
**Rotation Method: Varimax with Kaiser Normalization.**  
**a Rotation converged in 3 iterations.**

As table 1 shows 20 items out of 22 items loaded under factor one. This implies that factor one tends to explain the construct of cognitive strategies. Items loading on factor two are those that account for the techniques learners employ for the management of learning in general. The item that loaded on under this factor characterize metacognitive strategies of evaluation, planning, and centering. These interpretations were motivated by Hatch and Lazaraton's (1991: 494) recommendation that "a loading of 0.30 or above is considered to be a substantial link of a factor or test." The results of factor analysis reveal a clear pattern that tends to explain the underlying constructs of the questionnaire.

In order to determine the reliability of the data-elicitation instrument Cronbach's alpha was used. The obtained estimate of reliability (0.88) indicates that there is a relatively strong consistency among the items of the questionnaire.

Having established the general requirements of the instruments, i.e., reliability and validity, the participants' total scores in different sections of the questionnaire were standardized. Then the following statistical analyses were performed.

A descriptive statistics of the variables is presented in Table 2. A higher mean of cognitive strategies indicate that Iranian university students favor using cognitive vocabulary strategies.

**Table 2 : Descriptive Statistics**

Metacognitive Strategy	N	Mean	SD
	231	71.22	9.51
Cognitive Strategy	231	75.68	10.84

As the results suggest, university students preferred cognitive vocabulary learning strategies. This is hardly surprising as cognitive strategies are task dependent and directly involved in specific tasks.

A look at Table 3 representing descriptive statistics on each subcategory of vocabulary learning strategies corroborates this finding. Table 3 indicates that the most frequently used strategies are highlighting ( $M=81.68$ ,  $SD=16.12$ ), guessing ( $M=80.50$ ,  $SD=15.59$ ), and translation ( $M=78.18$ ,  $SD=21.28$ ) that represent cognitive strategies. As Table 3 shows, students also tend to use metacognitive strategies, but their ranking is very low in comparison to the cognitive ones. However, the lower standard deviations in metacognitive strategies show that participants were more homogeneous in employing these strategies.

**Table 3:** Descriptive Statistics

Strategies	Mean	Std. D	Variance
cognitive strategies highlight	81.68	16.12	259.775
cognitive strategies guessing	80.50	15.59	243.155
Cognitive strategies translation	78.18	21.28	452.958
Metacognitive Strategies centering	73.42	13.14	172.746
Cognitive strategies notetaking	73.42	19.49	379.749
Metacognitive strategies direct attention	72.91	12.63	159.583
cognitive strategies dictionary	70.89	15.12	228.610
Metacognitive strategies evaluation	69.93	12.95	167.653
cognitive strategies repetition	69.39	19.45	378.316
Metacognitive strategies planning	69.18	14.05	197.289

The respondents' predominant belief that highlighting words in the texts results in better learning of vocabulary items is in line with the results of the study by Leeke and Shaw (2000) who demonstrated that adult postgraduates highlight new vocabulary items in academic texts.

The rank ordering of the frequency of each subcategory of vocabulary learning strategies is different from the findings of Gu and Johnson (1996) who report dictionary strategies as the most frequently used strategy by

Chinese learners. The results as presented in Table 3 identify repetition ( $X=69.39$ ) as the least frequently used strategy. In this respect the present study supports the conclusions reached by Gu and Johnson (1996) who identified memory strategies as the least frequently used vocabulary strategy among Chinese.

Table 3 also shows that guessing the meaning of unknown words is the second most frequently used strategy by Iranian university students. This ranking is hardly surprising when the infinite number of words in English language is taken into account. It seems that average second language learners face a serious challenge in trying to master the words they need in order to communicate in the language. Therefore, they will be inclined to guess the meaning of unknown words. This appears to be the only possible way for acquiring an unlimited number of vocabulary items. While the debate over the usefulness of guessing strategy is heated, scholars such as Laufer (2001) have shown that one of the major problems of guessing is that learners' guesses are unreliable.

Unlike what is documented in the literature, as Table 3 shows, planning strategies are not the most frequently used strategies. This study identified them as the least frequently used metacognitive vocabulary learning strategies. Therefore, this finding challenges Oxford's (1990) assertion that planning strategies are the most frequently employed strategies. This study ranked evaluation strategies higher than planning strategies. This partially supports Schmitt's (1997: 216) assertion that "testing one self gives input into the effectiveness of one's choice of learning strategies, providing positive reinforcement if progress is being made or signal to switch strategies if it is not". This, therefore, logically explains the precedent of evaluation strategies over planning strategies; it is usually the outcome of the evaluation that leads to the modification of learning programs.

#### 4. Field of study and Vocabulary learning Strategies

It is generally accepted that students can be trained to use strategies (Oxford, 1990, O'mally and Chamot; 1990). Since the majority of participants in this study were university students majoring in English, it was expected that they would use strategies more frequently as they had more exposure to English written discourse and received intensive training in comparison to other participants. In order to find out whether there is a difference between these two groups of participants in terms of cognitive and metacognitive strategy use and their subcategories, two Repeated Measure ANOVAs were performed for cognitive and metacognitive strategy use. Repeated Measures ANOVA, as Hatch and Lazaraton (1991: 345) state, are used when "the data are taken from the same data source. That is, data are from the same students at different points in time or on a set of different tasks at one time". The results of ANAOVA appear in Table 4.

**Table 4:** Repeated Measures ANOVA between group results for cognitive strategy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	7468787.811	1	7468787.811	11012.412	.000
FIELD	6709.196	1	6709.196	9.892	.002
Error	155311.329	229	678.215		

**Table 5:** Repeated measures within group results for cognitive strategy use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Cognitive strategy	27539.170	5	5507.834	22.763	.000
Cognitive strategy * field	7716.347	5	1543.269	6.378	.000
Error(COGSTRA)	277052.807	1145	241.968		

As the figures in Table 4 show field of study has a significant main effect on the use of cognitive vocabulary learning strategies ( $F_{(1, 229)} =$



11012.41,  $p < 0.0005$ ). There is a significant difference between the participants with respect to cognitive strategy use. A further pair-wise comparison of the means of respondents revealed that participants whose major was not English, employed cognitive strategies more frequently than those majoring in English. Also, as Table 5 shows, there is a significant interaction between the field of study and cognitive vocabulary learning strategies. This means that the pattern of strategy use was influenced by participants' field of study; while TEFL students' use of note taking, translation, and repetition strategies decrease, non- TEFL students' uses of these strategies increase. The differential use of these strategies can be explained by their language proficiency. It can be argued that the more proficient students are, the less they rely on note taking, translation, and repetition strategies as means of learning new vocabulary items.

As Table 6 shows, the two groups were not different with respect to metacognitive strategy use ( $F_{(1, 229)} = 12221.14$ ,  $p < 0.0005$ ). This implies that the frequency of the use of strategies was not influenced by the field of study of the participants.

**Table 6:** ANOVA Tests of Between-Subjects Effects for Metacognitive strategy use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	4336862.469	1	4336862.469	12221.140	.000
FIELD	265.515	1	265.515	.748	<b>.388</b>
Error	81264.231	229	354.866		

Table 7, however, shows that there is a significant main effect for the use of subcategories of metacognitive strategy suggesting that participants employ them differently. The table also illustrates that the interaction between field of study and strategy use is significant. This implies that the field of study influences the choice students make. The difference is, especially, significant with respect to direct attention strategy. As its use

increases by TEFL students, its employment by non-TEFL students decreases.

**Table 7: ANOVA Tests of Within-Subjects Effects**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
MCU	2318.631	3	772.877	6.950	.000
MCU * FIELD	2440.043	3	813.348	7.314	.000
Error (MCU)	76402.337	687	111.212		

MCU: metacognitive strategy use

## 5. Discussion

This study profiled vocabulary strategies of TEFL and non-TEFL Iranian university undergraduates. The results indicated that, on the whole, Iranians use cognitive strategies more frequently. The findings, supporting Brown's (1994) justification, implies that cognitive vocabulary strategies are employed more frequently as learners' attention is focused on doing a particular activity and achieving a specific goal. This finding raises teachers' awareness as to the importance of familiarizing students with the techniques they can employ for enhancing vocabulary-learning process.

It was also found that field of study has a marked effect on the frequency of strategy use. Participants majoring in fields other than English tended to use more cognitive vocabulary learning strategies. On the other hand, those majoring in TEFL were not frequent cognitive strategy users. This can be attributed to the differences in proficiency level and the needs of students. As longitudinal exposure to language is expected to increase language awareness and learning, it was assumed that those majoring in other fields would not be as proficient as those studying English. They wanted to pass their course and, therefore, to get a passing score they paid more attention to different techniques their teachers introduced. On the other hand, those

studying English were more proficient and did not consider vocabulary learning as an important component of their success.

The study also revealed that the field of study of participants influences the type of strategy used; TEFL students do not use note taking, translation, and repetition strategies as frequently as non-TEFL students. The differential use of these strategies by TEFL and non-TEFL students can, in part, be explained by their language proficiency. It seems that the more proficient students are, the less they use these strategies.

The fact that those majoring in English used metacognitive strategy of direct attention implies that TEFL students' longitudinal exposure to language has raised their consciousness; they were able to realize which lexical items are essential for comprehension and which are not. On the other hand, those majoring in other subjects were not able to recognize words that are necessary for comprehension so they used fewer metacognitive strategies. This issue is a reflection of the role of awareness and personal beliefs about the impact of strategies. It also mirrors the usefulness of strategy training models. The differential uses of strategy by students can be a reflection of their indirect training in the use of learning strategies that O'mally and Chamot (1990) have suggested. As they argue in direct strategy training models learners are informed about the value and purpose of learning strategies whereas in embedded strategy training they receive "guidance in the use of learning strategies that is embedded in the task materials but not explicitly defined or directed to learner as strategy instruction" (pp. 229-230)

Also the results identified metacognitive strategy of planning as the least frequently used strategy. This finding is in sharp contrast to studies that have identified planning and evaluation strategies as more frequently and least frequently used strategies respectively. The reverse ordering of metacognitive strategies in this study might be a reflection of the educational

system of the country that has motivated learners to be more concerned with results of their learning. In this way they are more concerned with the degree of their learning rather than “How” of their learning.

## **6. Conclusions, Implications, and Suggestions for further research**

The findings of this research supported Oxford’s (1990) claim that cognitive strategies are used more frequently than metacognitive strategies. The cognitive strategies most frequently used were highlighting, guessing, and translation. The metacognitive strategies of centering and direct attention were more frequently used than evaluation and planning strategies.

This research showed that university major has a significant main effect on the use of cognitive and metacognitive strategies in vocabulary learning. This leads language teachers to think about their teaching styles and consider different techniques that can be imparted to students to promote vocabulary learning. It is suggested that by incorporating different texts and materials into syllabus teachers can make students aware of techniques by which vocabulary acquisition and retention can be influenced.

This research also pointed to the importance of strategy training. As far as the results of this study are concerned, it was found that students use more cognitive strategies. The frequent use of cognitive strategies by non-TEFL Participants can be attributed to their indirect strategy training. Since they had a pressing need to bypass a course with limited language proficiency, they employed different techniques to compensate for their lack of language proficiency. TEFL students, on the other hand, did not use cognitive strategies frequently because they were not under pressure. This points to another factor influencing the choice and use of strategies, namely: students’ needs. Therefore, analyzing students’ needs at the beginning of each course is of crucial importance as it helps language teachers familiarize students with strategies and enable them to achieve their goals.

The goal of advocating the use of vocabulary learning strategies is to promote learner autonomy; students should become aware that by the use of strategies they can learn independently of teachers. To achieve this end, teachers need to identify the strategies students use. This is necessary as once the most and the least frequently used strategies are identified, teachers can encourage learners use strategies that promote learning.

The final implication of this study goes to teacher-training programs. The aim of such programs should be familiarizing teachers with the beneficial effects of using strategies on learners' progress. In this way, teachers' awareness of the role of strategy encourages them to look for more efficient techniques to familiarize students with learning strategies.

The present study was limited in scope. Another study can be repeated with a greater number of students who study English at Institutes. In this way, the effect of educational setting on the use of strategy can be investigated.

In this study, the factor of language proficiency and age of the participants were not taken into account. Therefore, a possible line of research can focus on the effects of language proficiency and age on the use of cognitive and meatcognitive vocabulary learning strategies.

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