

Glossing Mode in Self-regulated Vocabulary Learning, and its Relationship with Gender, Age, and Field of Study

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Over recent years, the study of self-regulation has replaced the study of learner strategies as it constitutes a process-oriented approach. The present study was an attempt to identify the Iranian EFL learners' use of self-regulated vocabulary strategies (SRVS) in texts with L1 and L2 marginal glosses and those accompanied by technology-enhanced materials on the computer. The study also compared strategy use across gender, age, and field of study. There were three experimental groups in the study each of which received different type of vocabulary instruction. Experimental group 1 was taught new vocabulary items in the form of printed textual definition coupled with still pictures. Experimental group 2 was taught via marginal glosses in L1 and experimental group 3 was taught via marginal glosses in L2. All the participants were asked to fill out the self-regulating capacity in vocabulary learning scale (SRCvoc). The results of a one way ANOVA showed significant differences, and the Tukey *post-hoc* test showed that there was a significant difference only between the texts with still pictures and those with L1 and L2 marginal glosses. Regression analyses indicated that vocabulary strategy use was influenced by individual variables.

Key words: self-regulated vocabulary strategies; computer-mediated learning; L1/L2 glosses; gender, age, field of study

INTRODUCTION

According to Cohen and Dörnyei (2002), learners are not empty vessels that need to be filled with the wise words of the teacher; rather they have specific characteristics that differentiate one from the other. One of the important learner characteristics is the strategies they employ in approaching a task. The study of strategies began with the work of Naiman, Frohlich, Stern, and Todesco (1978) who examined the characteristics of good learners. While research in this area has provided some illuminative views about the characteristics of good learners, it has been unable to persuade scholars that the application of strategies by good language learners is in a fruitful direction. Scholars have come to recognize that what makes strategic learners special is “the actual strategies and techniques they apply to enhance their own learning” (Tseng, Dörnyei, & Schmitt, 2006, p. 79). As a result of this paradigm shift, the study of learners’ self-regulated behavior has become an important part of educational psychology.

The new concept of self-regulation is a multidimensional construct which encompasses different processes such as cognitive, metacognitive, motivational, behavioral, and environmental (Dörnyei, 2005). Therefore, self-regulated vocabulary strategies can be employed to teach students multiple cognitive and metacognitive processes to facilitate and enhance performance in both academic and nonacademic contexts. The obvious goal is that of teaching students to monitor and regulate their thinking and learning processes.

Tseng et al. (2006) introduced five broad aspects of self-regulation in vocabulary learning: commitment control, metacognitive control, satiation control, emotion control, and environmental control. Although the taxonomy of self-regulated vocabulary learning strategies have been researched by Tseng et al. (2006) in traditional learning environments, there has been no attempt so far to reassess the above mentioned taxonomy in computer-mediated learning environments. Computer-mediated learning has opened new avenues for researching self-regulated learning (Boekaerts, Pintrich, & Zeidner, 2000). Some researchers showed that the importance of the environment and its influence on personal factors is in keeping with social cognitive views of self-regulation (Artino, 2008). Benson

and Samarawickrema (2009) argued that the role of context in learning is an undeniable factor if learning is seen as grounded in the learners' experience (p. 5). The contextual factors assume a much more important role in learning when there is a tendency to use technological advances in the language classrooms. Several contextual factors can affect the success or failure of learning such as issues related to technological access, pedagogical support, and the skills and responses of students to the use of various technologies, especially when students with diverse backgrounds may be in the same class. In the design of CALL programs, this suggests a need to consider the specific implications of the range of contexts in which learning might take place. Enhanced self-regulation becomes even more important in technology-based environments because the use of technology implies autonomy on the part of the user. If the self-regulated learning skills are important to the success of learning in the traditional face-to-face classrooms, it can be expected that these self-regulated learning skills will play an even more important role in the recent technology-enhanced environments. In sum, the academic achievement of learners is closely related to their self-regulated capacities (Nota, Soresi, & Zimmerman, 2004; Schunk & Zimmerman, 1998; Zimmerman & Schunk, 2001).

The context of learning has been suggested as a factor influencing the way students approach their learning. The effects of technology-enhanced environment on learning have often been examined in empirical research (Severiens, Ten Dam, & Wolters, 2001). But there has been no attempt, as far as we are aware of, to investigate the effect of technology-enhanced environment on the use of self-regulated strategy use. Neither has there been any research examining the effects of individual variables on the employment of self-regulated strategies. Therefore, further research is warranted to compare the self-regulated vocabulary skills of learners in traditional environments and technology-enhanced classrooms.

LITERATURE REVIEW

This section is based on a brief overview of the recent approaches in vocabulary learning and the effect of some individual variables such as age, gender, and field of study on the self-regulated abilities of the learners.

Vocabulary Learning Approaches

With the increasing use and popularity of computer assisted language learning (CALL), many English language teachers have shifted their focus from teacher-centered instruction to student-centered instruction. The use of recent information technologies suggests that vocabulary learning does not merely involve memorizing and monotonous practicing, but other learner-centered activities can enhance understanding and retention. Scholars argue that vocabulary learning is important not only in the CALL programs but also in the traditional programs (Abraham, 2008; Brown, 2011; Li, 2010; Mizumoto & Takeuchi, 2009; Qing & Kelly, 2006). There are several new features used in CALL, one of which is the use of multimedia glossing. In order to make input more comprehensible, “the integration of multimedia gloss into L2 reading material has been suggested as an effective way of fostering vocabulary acquisition due to its authenticity, salience, and nonlinearity” (Yun, 2011, p. 39). The increasing use of multimedia materials for second language teaching poses issues regarding the effectiveness of hypermedia environments for language learning. One area that has received attention is the impact of using multimedia glosses on vocabulary learning. The following section will review some of the glossing options examined by scholars in this area.

Textual Glossing

According to Nation (1990), glossing is defined as “a method of providing the definition/explanation about an unknown word or concept while students are reading for comprehension” (p. 44). There are different types of glosses used in

reading materials such as placing the glosses in the margin of the texts or at the bottom of a written text. In other words, text-based glossing introduces verbal and textual information along with annotating words in a hypermedia environment. There might be different types of verbal information such as L1 glossing (translation in the native language), L2 glossing (definition, synonym or antonym), L1 multiple-choice glossing (where learners are asked to select the best translation from a set of alternatives), L2 dictionary definition, use of sentence contexts (which illustrate how the target word is used in a sentence designed to provide clues to its meaning), cultural notes, questions or references and so on. The effectiveness of text-based glossing in hypermedia environments especially for incidental learning has been emphasized by scholars (Al-Seghayer, 2001; Chun & Plass, 1996; Stewart & Cross, 1991). Stewart and Cross (1991) investigated the use of margin explanation glosses on the incidental and intentional vocabulary learning of students. The results signified positive effects for the use of margin explanation glosses in the short-term. The study revealed that the long-term acquisition of vocabulary items necessitated the instruction of glosses.

The results of other studies have indicated the effectiveness of L1 glosses in vocabulary learning (e.g., Davis & Lyman-Hager, 1997; Hulstijn, et al., 1996; Lomicka, 1998; Nagata, 1999; Yoshii, 2006). Hulstijn, et al. (1996) carried out a study which compared the efficiency of L1 marginal glosses with the use of bilingual dictionaries. The participants were Dutch students who were learning French as an L2. The results of the study showed that having access to L1 marginal glosses was more effective than using bilingual dictionaries or, similarly, having no access to dictionaries or marginal glosses.

Yoshii (2006) attempted to compare the effectiveness of L1 and L2 glosses in a multimedia environment with Japanese university EFL students. The study revealed that there were beneficial effects for both L1 and L2 gloss types. However, the results showed that in the long run, L1 glosses were more effective than L2 glosses or L2 glosses plus picture annotations due to the rate of vocabulary acquisition.

Multimedia Glossing

Jones (2000) believes that the availability of information technologies provides various opportunities for making texts more comprehensible to the students. In fact, one of the recent developments in making texts more comprehensible to the learners is the use of multimedia glosses or annotations. In a multimedia environment, teachers can introduce new words using support from different types of visual information. These may include pictures, video clips, and animations. Research has shown positive effects for multimedia glossing on vocabulary acquisition. In an in-depth study, Al-Seghayer (2001) compared three different types of glosses: printed L2 textual definition alone, printed L2 textual definition coupled with still pictures, and L2 textual definitions coupled with video clips. The results of this study showed significant effects for the printed textual definitions coupled with video clips over the use of textual definitions coupled with still pictures.

Iranian EFL Payame Noor University learners' use of self-regulated learning strategies (SRLS) in print-based and computer-based environments was the focus of a study by Farajollahi and Moenikia (2010). As expected by the researchers, the findings showed that computer-based students outperformed print-based participants. The authors attributed this observation to the fact that "students feel autonomous in computer-based learning environments, so their SRLS are promoted" (p. 3,692).

Despite the significance of the multimedia environment in fostering the vocabulary retention and language learning, little research has been conducted in this area. Therefore, further empirical research is needed to answer a number of questions that are still unaddressed. As far as this study is concerned, we are interested in finding the link between self-regulated vocabulary learning strategies and type of gloss used for teaching vocabulary on the one hand, and the relationship between gender, age, field of study and the use of SRVS on the other.

Self-regulation and Gender

Several studies have shown that gender is a significant factor when trying to explain academic achievement and vocabulary learning. However, the results of these studies have been inconsistent. Some studies show that women set lower expectancies of success than men in achievement areas (cf., Crandall, 1969; Maccoby & Jacklin, 1974). Accordingly, it is assumed that women set lower goals and choose to deal with much easier tasks. One study by Strube et al. (1986) showed that 75.8% of women and only 49.4% of men preferred easy tasks over difficult ones. This means that women tend to set lower goals and seem to manifest less efficient self-regulated behaviors. However, not all studies point to the same findings. Studies (e.g., Beyer, 1998; Beyer & Bowden, 1997) that examined gender differences in three types of task including masculine, feminine, and neutral, led to interesting findings: there was a gender bias only in masculine tasks (such as mathematics, physics, and technical problems) and no gender difference was found in feminine or neutral tasks. It seems that there are still no conclusive findings on gender differences in self-regulated behaviors and there is a need for more direct investigations of self-regulated processes and gender differences.

Self-regulation and Age

The misconception that children are so similar to one another that there is no real need to focus on individual differences (ID) in the field of English Language Learning (ELL) is widespread. Such a misconception is true not only of attitudes, motivation, learning styles, and aptitude, but also of self-regulated capacity, something that has only recently been recognized as worth researching in learners. Research suggests that the age of the learners partly determines their self-regulated behaviors (e.g., Benson & Samarawickrema, 2009). According to Benson and Samarawickrema (2009), approaches that emphasize the significance of the learner's experience and recognize the multiplicity of contextual factors which can influence learning are especially relevant when the learners are adults who are taking advantage of the flexibility offered by e-learning.

The above concerns call for a comprehensive study of self-regulated behaviors of both young and adult language learners; however, there does not seem to have been any attempts of systematic analyses investigating the relationship between age and self-regulated strategies. Given the paucity of research examining the relationship between learners' age and their self-regulated behaviors, there does seem to be a need for conducting a study investigating the link between SRVS and learners' age.

Vocabulary and Field of Study

There has been very limited research to investigate the field of study of the learners as one of the important individual variables to affect vocabulary learning. One available study is that of Gu (2002), who investigated the relationship between academic major and students' use of vocabulary learning strategies. Gu examined the adult Chinese students majoring in Arts and Science and found that academic major was a less determining factor in vocabulary learning. Gu concluded that Science students had a better performance than Arts students with regard to vocabulary acquisition, while Arts students outperformed the Science students with regard to proficiency. Strategy differences were also found between the two majors.

In another study, Siriwan (2007) investigated the type of strategies that university students with different fields of study used to deal with the vocabulary learning task. The study also examined other individual variables such as gender, previous language learning experience, type of academic program of study, and level of vocabulary proficiency. To this end, 1481 undergraduate students participated in the study. The findings revealed that the frequency of students' overall reported use of strategies varied significantly according to the gender of the students, major field of study, previous language learning experience and level of vocabulary proficiency.

In the present study, the university participants' different fields of study are investigated in order to understand whether field of study can affect the self-regulated vocabulary strategy use of Iranian EFL learners. Fields of study in the present research consist of English language teaching (ELT), Persian linguistics, and economics.

RESEARCH QUESTIONS

The main purpose of this study was to investigate the relations between the learners' use of self-regulated vocabulary strategies and the types of the gloss used. The specific questions addressed in the present research are:

1. What is the relationship between the types of gloss (computer-mediated glosses vs. traditional L1/L2 marginal glosses) and the use of self-regulated vocabulary strategies?
2. What is the relationship between the learners' gender and the use of self-regulated vocabulary strategies?
3. What is the relationship between the learners' age and the use of self-regulated vocabulary strategies?
4. What is the relationship between the learners' field of study and the use of self-regulated vocabulary strategies?

A significance level of 0.05 was set to test the relevant hypotheses and the following procedures were employed to provide answers to them.

METHOD

This research study was a quantitative study in nature. The dependent variable of the study was self-regulated vocabulary learning strategies and the four independent variables were the types of gloss, gender, age and field of study. To provide answers to the questions posed in the earlier section, six classes of EFL students took part in different phases of the study as explained in detail below.

Participants

Data was collected from 94 high school and 85 university Persian-speaking learners of English. All of the participants were EFL learners who were taking formal classes in different language centers in Tehran, Iran. The high school participants were homogeneous in terms of age and English education background.

In general, their ages ranged from 11 to 17 (young learners) and they had all received English instruction at the same language center. They were all junior and senior high school students at the time of the study. None of them had lived in an English speaking country prior to participating in the study.

The university participants were students in different fields of study such as economics, ELT, and Persian linguistics and they had not lived in or travelled to an English speaking country before. They had studied English formally in junior and senior high schools for a total of six years before entering university. Also, their ages ranged from 18 to 25 and they were categorized as adult learners in the present study. The criterion for grouping learners into young and adult categories was based on whether they were secondary school/senior high school students (aged up to 17) or tertiary education/university students (18+).

Six intact classes served as three experimental groups to whom the vocabulary glosses were taught. Experimental group 1 (n = 80) consisted of a class of 40 young (aged between 11 to 17) female high school students and another class of 40 university male students between the ages of 18 to 25 years. Experimental group 1 participants were taught new vocabulary items using printed textual definition coupled with still pictures shown on the computer screen. Experimental group 2 (n = 52) included a class of 25 high school female participants and another class of 27 male university students. They were taught the new vocabulary items via marginal glosses in L1. And experimental group 3 (n = 47) was made of a class of 24 female high school participants and another class of 23 male university students who were taught the lexical items via marginal glosses in L2. Table 1 shows the distribution of the participants in the study.

TABLE 1
Characteristics of Participants in the Study

Classes	N	Age	major	Gender	Educational background
Class A (experimental group 1)	40	11- 17		female	high school
Class B (experimental group 1)	40	18- 25	ELT	male	university
Class C (experimental group 2)	25	11- 17		female	high school
Class D (experimental group 2)	27	18- 25	Persian linguistics	male	university
Class E (experimental group 3)	24	11- 17		female	high school
Class F (experimental group 3)	23	18- 25	Economics	male	university

Instruments

SRCvoc Scale

The instrument used for eliciting data on learners' strategies was the self-regulating capacity in vocabulary learning scale (SRCvoc) developed by Tseng et al. (2006). The instrument was based on a theoretical construct from the area of educational psychology developed by Dörnyei (2005). There is no mention by the designers of the instrument or in the literature as to its sensitivity to gender, age and field of study and this study was indeed meant to find out whether candidates with different age-ranges, gender and fields of study performed differently on this questionnaire. This system consists of five facets (Tseng et al., 2006):

- 1) Commitment control: this helps to preserve or increase the learners' original goal commitment (e.g., keeping in mind favorable expectations or positive incentives and rewards, focusing on what would happen if the original intention failed);
- 2) Metacognitive control: this involves the monitoring and controlling of concentration, and the curtailing of any unnecessary procrastination (e.g.,

identifying recurring distractions and developing defensive routines, focusing on the first steps to take when getting down to an activity);

- 3) Satiation control: this helps to eliminate boredom and to add extra attraction or interest to the task (e.g., adding a twist to the task, using one's fantasy to liven up the task);
- 4) Emotion control: it is concerned with the management of disruptive emotional states or moods, and the generation of emotions that will be conducive to implementing one's intentions (e.g., self-encouragement, using relaxation and meditation techniques); and
- 5) Environmental control: this helps to eliminate negative environmental influences and to exploit positive environmental influences by making the environment an ally in the pursuit of a difficult goal (e.g., eliminating distractions, asking friends to help and not to allow one to do something). (pp. 85-86)

The SRCvoc is a 6-point Likert scale (6 = strongly agree; 1 = strongly disagree) questionnaire. Each of the five facets in the scale included four items. The reliability of the questionnaire as used in the present study was computed using the Cronbach Alpha and turned out to be 0.85. The instrument was used in its original form without any modifications.

Proficiency Tests

Two types of proficiency tests were administered to the participants with regard to their educational background. The proficiency tests were administered to have homogeneous participants in each experimental group. An adapted Institutional TOEFL test was administered to adult/university learners since they had six years of previous English education at school. The young participants, however, were given an adapted Institutional PET, which is a simpler test compared to TOEFL, and which is therefore more suitable for high school participants. The listening and grammar parts were excluded from both proficiency tests for practicality considerations. Both tests were scored on a scale of 1-100. Table 2 displays the

mean values, the number of items, and standard deviations for the proficiency tests used in the study.

TABLE 2
Number of Items, Means and Standard Deviations of Proficiency Tests

Tests	N (number of items)	Mean	Std. Deviation
Adapted TOEFL	50	64.12	18.18
Adapted PET	35	58	14.8

Reading Materials

Nine reading passages of about 300 words each were used. They were selected from *Intermediate Steps to Understanding* (Hill, 1980a) and *Advanced Steps to Understanding* (Hill, 1980b) taking the participants' educational background into consideration. The texts coming from the former book were intended for young candidates and those coming from the latter were used for adult learners. Text difficulty level (unfamiliar words to the students), interest, and text suitability were adjusted to the participants of the study. The topics which were practiced in the classroom were of a general content and were deemed suitable for the participants. These reading passages were the basis according to which the new vocabulary items were taught.

Procedure

Before the experiment, the participants were surveyed for age, years of studying English, and courses attended. Those participants who were given the TOEFL test were adult (aged 18 to 25) university learners of similar educational background. And those participants who were given the adapted Institutional PET were male and female young learners (aged 11 to 17) of similar educational background. All of the participants spent the same time attending to the passages. Experimental group 1 was taught via printed materials accompanied by a computer and the two other groups were taught via printed materials for nine weeks and then the

participants filled up the SRCvoc questionnaire. Participants in experimental group 1 were taught those vocabulary items that were identified by the teacher to be outside of the students' vocabulary knowledge. And in this process, the participants in experimental group 1 were instructed the new items via employing pictures depicted on the computer screen. The participants in the other experimental groups were taught the new vocabulary items using marginal L1 and L2 glosses in their books. That is, while participants in experimental group 1 were taught the new items using the computer screen, participants in the other groups were taught using marginal glosses in their books.

The scores from the five facets of SRCvoc were used for the test of differences between the groups as reported in the results section.

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 17 for personal computers was used to compute descriptive statistics and perform reliability analyses, ANOVA, and Regression.

RESULTS

What follows are the quantitative analyses of the elicited data. First, the role of glossing type in self-regulated vocabulary use is presented. Then, the relationship between variables of gender, age and field of study is examined with the SRVS.

Glossing Mode

Table 4 shows descriptive statistics as far as the first question is concerned.

TABLE 4
Descriptive Statistics for Self-Regulated Vocabulary Strategy Use
Regarding Glossing Mode

Groups	N	Mean	Std. Deviation
Experimental group 2 (L1 gloss)	52	1.8750	.80623
Experimental group 3 (L2 gloss)	47	2.0000	.66667
Experimental group 1	80	3.6500	.67082
Total	172	2.5636	1.08463

According to the mean scores, experimental group 1 outperformed the other groups. A one-way analyses of variance (ANOVA) was employed to check whether these differences were significant (see Table 5).

TABLE 5
ANOVA Results for the Self-Regulated Vocabulary Strategy Use

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	37.227	2	18.614	36.803	.000
Within groups	26.300	176	.506		
Total	63.527	178			

The results of ANOVA revealed statistically significant differences ($F = 36.803$, $p = 0.000$) in the overall use of strategies by participants. In other words, the self-regulated vocabulary strategy preferences of groups who received different forms of vocabulary instruction varied greatly. However, in order to see the exact points of variations among the groups, a Tukey *post-hoc* test was run. The Tukey test showed that the significant difference was between experimental group 1 ($M = 3.6500$, 95% CI) and the other two groups. Experimental group 1 gave significantly higher preference ratings for the use of vocabulary strategies than the other groups. The comparisons between experimental group 2 ($M = 1.8750$, 95% CI) and experimental group 3 ($M = 2.0000$, 95% CI) were not statistically significant at $p < 0.05$.

Individual Differences

In order to examine which individual variables (i.e., gender, age, and field of study) were indeed a better predictor for the learners' use of self-regulated vocabulary strategies, multiple regression analyses were conducted. Before running multiple regression analysis, assumptions of independency, normality, and linearity were examined; scatter plots of residuals against predicted values were drawn to confirm that the latter three assumptions were met. In interpreting partial regression coefficients, the possibility of multicollinearity between the independent variables was a concern. However, there were relatively low values of Variance Inflation Factor (VIF), indicating that there may be no serious multicollinearity. As the correlation coefficient (R) in Table 6 indicates, there is a strong correlation between the dependent variable and the independent variables. Also, the adjusted R squared ($R = 0.435$) shows that the 43.5 percent of the variation in the use of self-regulated vocabulary strategies can be accounted for by the linear composite of independent variables tested here. In other words, the independent variables predict approximately half of the variations in the dependent variable.

TABLE 6
Multiple Regression Analysis Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.683a	.467	.435	.81513

a. Predictors: Constant, proficiency, age, gender

Table 7 shows which individual variable is a strong predictor of the variations in the independent variable and also shows the correlations between them.

TABLE 7
Results of Hierarchical Multiple Regression Analyses of Relations between Individual Variables (independent variables) and Variables Relevant to the Use of Vocabulary Strategies (dependent variables)

Variable	B	SE B	β
(Constant)	4.670	.498	
Gender	1.604	.409	.731
Age	.167	.225	.078
Field of Study	1.758	.420	.752

As shown in Table 7, gender and field of study ($p < 0.05$) were stronger predictors of the use of vocabulary strategies. The other individual variable was found to be non-influential.

The finding of a presence of gender differences overall was expected since most of the studies have shown gender difference in participants' self-regulated strategy use. The field of study of the students was also influential in the use of self-regulated strategies.

DISCUSSION

The results of this research showed that students who received computer-mediated vocabulary instruction outperformed those who received traditional methods of instruction. The finding that computer-mediated instruction brought about better results than traditional methods is in compliance with the findings of other studies (e.g., Abraham, 2008; AbuSeileek, 2011; Farajollahi & Moenikia, 2010; Orhan, 2007; Perry et al., 2006). The results confirm the assumption that computer-based learning requires autonomy on the part of the learners and thus leads to an increase in their self-regulation and management of learning. Computer-based environments might encourage the development of shared self-regulated system which may eventually benefit learners if it permits them to best make use of their limited self-control resources over time (Fitzsimons & Finkel, 2011).

Computer-based learning can also lead to the acquisition of what Ellis (1995) calls implicit and explicit learning processes. Ellis (1995) summarized several aspects of vocabulary acquisition which involve qualitatively different learning processes. He argues that the acquisition of word orthography requires implicit processes while the acquisition of word meanings requires explicit learning processes and “to the extent that vocabulary acquisition is about meaning, it is an explicit learning process” (p. 123). Therefore, according to Ellis, CALL can provide a perfect environment for the implicit acquisition of orthography and also the explicit acquisition of meanings.

The study was also an attempt to investigate whether the participants’ age, gender, and field of study could predict their vocabulary learning as far as use of self-regulated strategies was involved. The results of multiple regression analysis indicated that gender and field of study were the best predictors of the use of strategies. With regard to gender, females employed more self-regulated strategies than males. Therefore, the results of this study are in contrast with the assumption that females set lower goals than males (e.g., Kurman, 2001; Strube et al., 1986).

Regarding the students’ field of study, ELT students reported more frequent use of strategies to discover the meaning of new vocabulary items and to self-regulate their vocabulary learning in a situated manner than either those majoring in economics or Persian linguistics did. As was mentioned above, very few studies have been conducted to explore the possible effects of field of study on the vocabulary learning strategy use of learners. The research on the *language learning* strategies in relation to field of study has showed contradictory results. Politzer and McGroarty (1985), for example, found that learners specializing in engineering/science used strategies more frequently than those majoring in social sciences/humanities. Oxford and Nyikos (1989) came to the conclusion that humanities/social sciences/education majors employed learning strategies much more frequently than their technical or business peers. The study conducted by Gu (2002) examined the differences between science and arts students but found no conclusive evidence of significant differences between them with regard to vocabulary learning strategy use. Based on a study by Peacock and Ho (2003), among the learners of eight disciplines (Building and Construction, Business,

Computer Studies, Engineering, English, Maths, Primary Education, and Science), learners of English demonstrated the highest frequency of strategy use especially cognitive, metacognitive and social strategies. The findings of the present research are in line with the findings of Oxford and Nyikos (1989) and Peacock and Ho (2003). However, at present, very few empirical research studies strategies have been carried out in the field of vocabulary learning based on which a firm conclusion may be offered. Consequently, more research is needed to arrive at more conclusive results in this regard.

Researchers have also examined the use of strategies by young and adult learners and found that younger learners adopt different sets of strategies in comparison to older learners (Chamot & El-Dinary, 1999; Nikolov, 2005, 2006; Wharton, 2000). Young learners' learning and communication strategies were examined by either focusing on how they perform certain tasks or by examining their classroom behavior in larger groups. Intervention studies are the exception rather than the norm in researching young learners' strategies. In tasks based on interaction between peers on spot-the-difference tasks, Pinter (2006) analyzed what strategies 10-year-olds used and how, and compared them to adults on similarly low levels of English working on the same tasks. She found that young learners used similar strategies to adults: they were able to respond to each other, clarify messages, keep tally of the differences and they interacted confidently. However, the adult learners used the strategies more often. Likewise, the results of the present study showed that there were no differences between young and adult learners and the age factor could not predict the students' use of self-regulated vocabulary strategies.

CONCLUSION

As Nikolov and Mihaljević Djigunović (2011) put it:

The state of the art of ELL is definitely a colorful tapestry. As more and more learners start learning FLs in different educational contexts and under so many varying conditions, many of the issues identified in previous studies are still on the

agenda, but new ones have also surfaced... One of the obvious consequences is that the most widely applied ELT instruction methods may turn out to be less motivating and cognitively challenging after a few years (p. 30).

This can be sensed by the appearance of new online age which is gradually replacing the traditional classrooms. The integration of technology and ELT may help learners progress, but teacher education must keep in line with the emerging needs. Thus, it is important to study how well students and teachers adapt to these new learning environments. Students have expectancies in computer-mediated classrooms, including detailed and interactive content, peer-to-peer collaborative activities, and speedy feedback (Oliver et al., 2009). Teachers can make use of some visual or dynamic content elements with the non-visual texts common in computer-mediated instruction to accommodate learner differences (Watson, 2007). However, the results of CALL studies in the developing world should be approached with care. One should note that open/distance learning (ODL) methods are already used in most countries and until online access becomes universal and common, we should be satisfied with print-based content to serve them (Baggaley, 2009). In conclusion, Lewthwaite (2001) highlights the role of new media as follows: "New media creates both new opportunities and new restrictions not only in terms of accessibility, but also in terms of self-identity and action" (p. 32). Considering the learners' needs, the objectives of instruction, and the facilities available, educators are strongly recommended to intentionally develop students' self-regulatory skills in vocabulary learning through the use of multimedia learning environment.

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