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Teaching Vocabulary to EFL College Students Online

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Abstract

Technology is not currently used in EFL classrooms at King Saud University. Therefore an attempt was made to use online learning in EFL vocabulary instruction from home, as a supplement to classroom instruction. Comparisons of the pre and posttest mean scores of 53 freshman students showed significant differences indicating that online instruction had an effect on vocabulary development. The posttest scores also correlated with the frequency of using the online course. Active participants made higher gains than inactive participants It was concluded that in learning environments where technology is unavailable to EFL students and instructors, use of technology from home and even as a supplement to traditional classroom techniques helps motivate and enhance EFL students' learning and acquisition of English vocabulary.

Introduction

Vocabulary knowledge is an important element in second language (L2) acquisition. By learning new words, students can increase their listening, speaking, reading and writing vocabularies and can improve comprehension and production in L2. A student can increase vocabulary knowledge formally in the classroom and informally through communication with others and through out of class activities. Many instructional strategies were devised and utilized by L2 language teachers to develop the general and academic vocabulary of students. For example, Woodard (1998) suggested some strategies for teaching vocabulary. Those included teaching word origins

and structural analysis; using semantic mapping/webbing; showing students how to attack analogies; reading aloud; dramatize; showing students how to use the dictionary; using cloze sentences; and using computer programs. Moreover, different forms of technology are being integrated into the teaching and learning of L2 vocabulary. A review of the vocabulary literature has shown that specially designed software, a Tutorial computer-assisted language learning (CALL) program, concordancing, online lessons, animated texts, use of multimedia contexts, interactive multi-modal materials, online dictionaries, e-books and a hypertext/hypermedia environment were used to teach L2 vocabulary. The different learning modes, skills and activities used in vocabulary instruction in CALL environments are reported below.

Several research studies have used self-access, individualized and collaborative instructional modes in CALL learning environments. For example, Van Aacken (1996) used a computer software designed to improve Kanji learning in a self-access learning mode. Findings showed that all the students in an Australian university using the computer to learn Kanji made higher gains and that those most enjoying the experience made the highest gains. In another study, Crozer (1996) used the Individualized Vocabulary Instruction (IVI) program to provide vocabulary instruction to disabled students at California's Los Angeles Pierce College. The IVI program had two modules, each containing 1,125 words. The program performed pre and posttesting of students, provided instruction, presented students with abundant opportunities for practice and repetition, administered regular tests and controlled and monitored students' progress. The modules were divided into "chapters" of 15 words, each divided into 4 lessons. Upon completion of the four lessons in a chapter, the students took a chapter test and upon completion of all of the chapters, a final exam was administered. The IVI program proved to be an effective method for teaching vocabulary and improving students' learning skills. In a third study, Bazeli and Olle (1995) used visual aids that included interactive video, student illustration of vocabulary, computer software packages designed to develop reading skills, activities that involve visual perception, and graphic organizers, including story maps, collaborative rehearsal of new vocabulary, and student-made flash cards in vocabulary instruction. The use of visuals, combined with cooperative learning groups, provided an effective environment for the development of vocabulary. In addition, Cobb & Horst (2001) tested an experimental ESL vocabulary course for academic learners at Concordia University in Montreal and how collaborative on-line databases could be used to meet the need for individualized instruction for academic vocabulary learners intending to do university work in English. They concluded that a collaborative database is a valuable tool for such learners.

Incidental learning and direct instruction were also investigated by some researchers. 24 ESL adult learners enrolled in a listening comprehension class at a major Midwestern university participated in a study by Smidt & Hegelheimer (2004). The participants completed pre, post, and delayed

vocabulary posttests, a CALL activity including an academic lecture on horticulture, and a questionnaire. Results suggested that incidental vocabulary acquisition occurred and that lower-level learners were more likely to resort to the wrong aspects of the lecture in responding to comprehension questions. While engaged in the online CALL activity, advanced learners exhibited both metacognitive and cognitive learning strategies. Intermediate and lower-level learners mostly made use of cognitive strategies. Female learners used more strategies than male learners, and female learners preferred cognitive strategies while male learners used more metacognitive strategies. Similarly, the effect of direct vocabulary learning using CALL on vocabulary knowledge, reading comprehension, and speed of word recognition was investigated by Tozcu & Coady (2004). They found that students who used Tutorial CALL to learn high frequency words did learn a significantly larger number of words than those in a control group. The students in the treatment group studied approximately 2,000 of the high frequency words in English on the computer for three hours per week for eight weeks, whereas the students in the control group spent the same amount of time reading texts and doing reading comprehension exercises. The treatment students showed significantly greater gains in vocabulary.

Furthermore, the effect of using different types of vocabulary tasks and activities in CALL environments on vocabulary acquisition was the focus of some studies. The effect of three annotation types (text-only, picture-only, and a combination of the two) on second language incidental vocabulary retention in a multimedia reading setting, were examined by Yoshii & Flaitz (2002). Results indicated that the combination group outperformed the text-only and picture-only groups on the immediate tests. There was a significant interaction between the annotation type and students' proficiency level for immediate and the delayed tests.

Helping students to resolve lexical ambiguity is an important aspect of vocabulary instruction. Effects of lexical ambiguity in CALL on 181 beginning second-language college learners were examined by Grace (1998). Findings supported the need for beginning vocabulary learning software that renders meaning clearly while promoting deep processing. Also, Kang and Dennis (1995) examined the effect of computer-based, interactive multi-modal materials. This context-embedded approach was most effective in promoting spontaneous use of vocabulary, listening comprehension, and recall of vocabulary definitions by beginning L2 learners. By contrast, learning L2 vocabulary in an animation-based context without any learning support was inefficient in teaching vocabulary to 7-year-old young Chinese students, whereas sentence-level translation and target warming-up were both effective in facilitating L2 learning in a multimedia context (Sun and Dong, 2004). Likewise, a semantic mapping activity proved to be ineffective in vocabulary development, when used in a hypertext/ hypermedia environment for the teaching L2 Spanish vocabulary to 48 high school students who had never studied Spanish (Svenconis & Kerst, 1995). No

significant differences were found between semantic mapping and traditional word listing approaches to vocabulary development.

Concordancing activities, tailored for use with ESL students, were utilized in several studies. In a concordance, language is presented in an authentic context, learners examine a key word in the context of a string of sentences which can exemplify the use of that particular word. In the Cambridge Advanced English course in Australia, Somogyi (1996) used concordancing activities in which the students selected appropriate vocabulary to complete a gapped text. These activities benefited ESL students by providing authentic examples of language in context. Moreover, an online concordancing program was used with an online dictionary by 18 intermediate ESL undergraduates (Kaur and Hegelheimer, 2005). The results indicated a statistically significant transfer of vocabulary knowledge to the writing task.

Providing L2 students with different lexical information proved to be effective. Laufer (2000) incorporated dictionary information into a CALL program consisting of a text, highlighted low-frequency words, and access to different lexical information about these words such as explanation in English, translation into the first language, sound, root, and other information. EFL college students in Hong Kong and Israel were asked to read an on-screen text and understand it in order to take a comprehension test. They could look up unknown words in the CALL dictionary. After task completion, students were unexpectedly tested on meaning recall of target words. It was found that use of multiple dictionary information reinforced retention. Results highlighted the importance of providing different lookup options catering to varying lookup preferences in paper or CALL dictionaries when assigning tasks involving reading comprehension and understanding of unfamiliar words. In a similar study, Hill (1998) used a vocabulary learning program with tertiary Chinese students learning English at the University of Hong Kong. The students accessed a text and a range of information about individual vocabulary items, including English meaning, Chinese translation, and pronunciation and selected the information they needed to help them learn unfamiliar words in context. Upon completion of the tutorial, the students worked on three sets of exercises to assess their knowledge of the target words and feedback was provided. Findings indicated that most students considered the "Words in Your Ear" beneficial in learning new vocabulary items.

In several studies, vocabulary instruction was combined with listening, reading, and writing skill instruction using technology. For example, Davidson, Elcock & Noyes (1996) evaluated the impact of using a computer system that gave prerecorded speech prompts on request on young children's reading attainment. They found that the intervention group made significantly higher gains on three measures of sight vocabulary. Higgins and Hess (1998) conducted a study with 22 third-grade children to determine the effectiveness of e-books for teaching vocabulary with and

without specific supplemental vocabulary building activities. Children in the control group listened to a computer read a page of the e-book, and viewed the animation for two target words. A researcher asked if the child knew the meaning of the word and, if not, the child viewed the animation again. The child was given a synonym of the word if he/she did not understand the word after viewing the animation a second time. Children who received supplemental vocabulary instruction in conjunction with the e-book performed significantly better than those who used an e-book without supplementary instruction.

Finally, a mixed approach to vocabulary instruction was used by few studies such as Hill (1998), Laufer and Hill (2000) and Johnson (1997). Johnson (1997) used three methods of vocabulary instruction (contextual cues, definitions, and a mixed approach) supplemented by computer-assisted instruction (CAI) using a mixed approach. As in Hill and Laufer and Hill's studies, Johnson found that CAI was effective with all the methods used: contextual only, definition only and mixed approaches.

To summarize, different types of instructional modes, approaches, vocabulary building activities and skills proved to be effective in developing children's and college students' vocabulary in L2 CALL environments. Practicing vocabulary in context, combining vocabulary with reading and writing activities, and providing the students with different lexical information about the words under study enhanced children and adult students' vocabulary acquisition. Integration of different forms of technology such as specially designed software, a Tutorial CALL, concordances, online lessons, multimedia contexts, interactive multi-modal materials, online dictionaries and e-books helped the student learn L2 vocabulary better. However, the impact of using online courses on vocabulary acquisition was not investigated by prior studies. In the present study, EFL freshman students used an online course with Nicenet from home as a supplement to in-class vocabulary instruction. The aims of the present study are to investigate the impact of online instruction on students' acquisition of English vocabulary. A mixed approach was used to develop EFL students' vocabulary. A combination of online vocabulary building activities were integrated with reading, writing and study skills activities. The study tried to answer the following questions: (1) Does online instruction have any positive effects on EFL freshman students vocabulary achievement as measured by the posttest? (2) Does the frequency of using the online course correlate with the students' vocabulary achievement level, i.e. are active participants better achievers than passive participants? (3) Does online instruction have any positive effects on students’ attitudes towards vocabulary learning?

To answer these questions, a groups of EFL freshman students participated in the study. They were taught vocabulary using a combination of traditional in-class instruction that depended on the textbook and an online course with Nicenet. The impact of online instruction using a mixed approach on EFL freshman students' vocabulary acquisition was based on quantitative

analyses of the pre and posttests. The effect of online instruction on freshman students' attitudes was based on qualitative analyses of students' responses to a post-treatment questionnaire.

Participants

53 female freshman students were enrolled in their first vocabulary course. All of the students were majoring in translation at the College of Languages and Translation (COLT), King Saud University, Riyadh, Saudi Arabia. They were concurrently taking listening (3 hours per week), speaking (3 hours), reading (4 hours), writing (4 hours) and grammar (2 hours) courses in EFL. The subjects were all Saudi and were all native speakers of Arabic. Their median age was 18 years, and the range was 17-19. They all had 6 years of EFL instruction in grades 6-12 prior to their admission to COLT. All of the students were registered in the online course as the internet service is free in Saudi Arabia. Registration in the online course was optional as all the students had no prior experience with online instruction and due to administrative constraints.

In-class Instruction

The vocabulary course was taught in Fall 2005 for 12 weeks. All the students were exposed to the same traditional in-class instruction. They studied the same textbook: *Vocabulary in Use: Pre-intermediate and Intermediate (3rd Edition), by Stuart Redman (2003)*. The textbook consists of 100 lessons. Only 50 lessons were covered in class. The topics covered in class were: *Classroom language, prefixes, noun suffixes, adjective suffixes, nouns and verbs with the same form, compound nouns, compound adjectives, collocations, idioms and fixed expressions, verbs and adjectives followed by prepositions, preposition + noun, some functions, phrasal verbs (form, meaning, grammar and style), have and have got, make, do and take, give, keep, break, see, leave, catch and let, get (uses and expressions), go (uses and expressions), the senses, partitives, uncountable nouns and plural noun, the physical world, animals and insects, countries, nationalities and languages, the body and what it can do, around the home, the place where you live, money, physical injuries, clothes, food, cooking and restaurants, jobs, in the office, computers and the internet, and global problems. The following skills were emphasized: Pronunciation (recognizing silent letter, hidden consonants, double letters, words with the same vowel but different pronunciation and words with different vowels but same pronunciation, syllabication and stress); spelling changes and spelling variants; part of speech, count/non-count, singular & plural forms; American vs British usage; word synonyms and antonyms; English and Arabic meanings; word formation: prefixes, suffixes, derivatives and compounds; idioms and collocations; word families.*

The students did most of the vocabulary exercises in class. While doing the exercises, the author monitored their work and provided individual help. Only errors related to the rule or topic under study were highlighted. Feedback was provided on the presence and location of errors but no correct forms were provided. The students had to check the rules and examples in the book by themselves. Extra credit was given to students who could do all the items in an exercise correctly and within the designated time.

As for assessment, students were given two in-term tests and several pop-quizzes. The following skills were covered by the tests: Recognizing silent letters recognizing hidden consonants, recognizing double letters, recognizing words with the same vowel but different pronunciation and words with different vowels but same pronunciation, identifying the part of speech, count/non-count, recognizing singular & plural forms, American vs British usage, word synonyms and antonyms, adding prefixes, suffixes, recognizing derivatives and compounds, idioms and collocations, capitalization, giving the English definition, giving the Arabic meaning, and using words, idioms and phrasal verbs in sentences. All the tests were graded and returned to the students with comments on strengths and weaknesses. Words of encouragement were given. Answers were always discussed in class.

Treatment (Online Instruction)

In addition to the traditional in-class instruction, the students used an online course with Nicenet, because using the Nicenet Online Course Management System did not require any special license or registration fees. It was easy to use. The students used their own PC's and the Internet from home, as the internet was inaccessible from COLT. The students were given the class key and they enrolled themselves.

Prior to online instruction, the students' computer literacy skills were assessed by a questionnaire. A tutorial was given to them for reference. The online course components were described and instructions on how to use certain course components were also posted in the “Conferencing” area. Online instruction was initiated by posting a welcome note and by starting a discussion topic.

Every week, vocabulary websites (hyperlinks) related to the vocabulary topic covered in class were added in “Link Sharing”. The links contained explanations, examples, exercises and quizzes and a daily vocabulary lessons. The students checked the specific vocabulary links posted, answered the quizzes and were encouraged to check the daily vocabulary lesson. 50% of the websites were posted by the students. Examples of the vocabulary websites posted are:

- One Look Dictionary
- Cambridge Dictionary
- spell check: http://www.spellcheck.net/
- English Language Activities, Exercises and Tests: http://www.world-english.org/
- Beginner vocabulary: http://esl.about.com/library/courses/blcourses_beginner_vocabulary.htm
- ESL Vocabulary: http://depts.gallaudet.edu/englishworks/reading/main/vocabulary.htm
- English Vocabulary from English Club: http://www.englishclub.com/vocabulary/index.htm
- Language Tools: http://www.itools.com/lang/
- Power Words: http://www.executive-vocabulary.com/
- Learning Vocabulary Can Be Fun: http://www.vocabulary.co.il/
- Countries & Nationality: http://www.englishclub.com/vocabulary/world-countries-nationality.htm

Questions that required the students to write a paragraph using the vocabulary items studied in the textbook were posted in "Conferencing". The discussion threads covered exercises from the textbook such as: *Jobs, The Design of a House, People Who Help Me When I Do Something, Prices of Things, Around the Home, Wounds & Injuries, The story About A man, A Description of My Home.* The students also posted the Arabic Meaning of vocabulary items, idioms and phrasal verbs; word derivation; word families; classified words such as weather vocabulary and Ramadan vocabulary by concept. They posted topics of their choice such as *"Going to USA", "My Mother", "My Ramadan Memories", "Harry Potter"*, in addition to study skills activities that focused on vocabulary problems, test anxiety and factors that lead to success.

Throughout the semester, the author served as a facilitator. She provided technical support on using the different components of the online course, and responded to individual students' needs, comments and requests for certain sites. The author sent public and private messages to encourage the students to interact and communicate. She had to look for relevant websites and post them in the “Link Sharing” area. She had to post questions and discussion topic and write model responses. The author did not correct spelling and grammatical mistakes. She would point out the type of errors they made especially in the vocabulary threads and ask the students to double-check their posts or ask students to correct each other's mistakes. Using the online course was optional. Students were given extra credit for using the online course as it was optional for lack of administrative support.

Procedures

Before instruction, the students were pretested. The pretest consisted of questions covering the vocabulary skills and themes to be studied. At the end of the semester, the students took a 250-word vocabulary posttest that covered all of the vocabulary skills and topics studied throughout the semester such as: *Recognizing the different pronunciations of the same vowel or vowel digraphs and silent letters; recognizing suffixes, abstract and uncountable nouns, compounds; changing words into adjectives or nouns by adding suffixes; giving the plural & singular forms, Past Participle forms, synonyms, opposites, the name of the group, and the American equivalent; adding a verb to form a collocation; adding prepositions to form idioms and phrasal verbs; giving the Arabic and English meanings of words and phrases, completing sentences and using words and phrases in sentences; changing verbs into nouns by rewriting the sentence; and describing words by adding adjectives and adverbs.* Most of the questions required production. The pre and posttests were blindly graded by the author. The students wrote their ID numbers instead of their names. An answer key was used. Questions were graded one at a time for all the students. Marks were deducted for spelling mistakes.

At the end of the course, all of the students answered an open-ended questionnaire, which consisted of the following questions: *(1) Why did you register in and use the online course? (2) What did you like about it? What did you not like? (3) Did your English vocabulary improve as a result of using the online course? In what ways? (4) Did it make any difference in learning English vocabulary? (5) If you did not post any responses or paragraphs in the online course, Why? (6) What problems or difficulties did you face in using the online course? How were those problems solved? (7) How often did you use the online course? (8) How much time did you spend using and browsing the online course? (9) Would you register again in a similar course in the future? Why? (10) Which links did you find most useful?*

Test Validity and Reliability

The posttest is believed to have content validity as it aimed at assessing the students' achievement in vocabulary. The tasks required in the posttest were comparable to those covered in the book and practiced in class. In addition, the test instructions were phrased clearly and the examinee's task was defined. Concurrent validity of the posttest was determined by establishing the relationship between the students' scores on the posttest and their course grade. The validity coefficient was .98. Concurrent validity was also determined by establishing the relationship between the students' scores on the posttest and their scores on the second in-term test. The validity coefficient for the vocabulary test was .89.

Since the author was the instructor and the scorer of the pre and posttests, estimates of inter-rater reliability were necessary. A 30% random sample of the pre and posttest papers was selected and double-scored. A colleague who holds a Ph.D. degree scored the pre and posttest samples. The scoring procedures were explained to her, and she followed the same scoring procedures and used the same answer key that the author utilized. The marks given by the rater were correlated with the author's. Inter-rater correlations was .99 for the posttest. Furthermore, examinee reliability was calculated using the Kuder-Richardson formula 21'. The examinee reliability coefficient for the posttest was .69.

Data Analysis

The pre and posttest raw scores were converted into percentages. The mean median, standard deviation, standard error and range were computed for the pre and posttest scores. To find out whether the students had made any progress as a result of online instruction, a within group paired T-test was computed using the pre and posttest mean scores. To find out whether there is a relationship between the students' posttest scores and frequency of using the online course, a student's posttest score was correlated with the number of responses she posted in the "Conferencing" area using the Pearson correlation formula. An independent T-test was also used to compare the means scores of active and inactive students (as a group). Posttest scores could not be correlated with the frequency of using the hyperlinks posted in the Link Sharing tool as such statistics is not provided by the Nicenet system.

Results

Effect of Online Instruction on Achievement

Effect of Online Instruction on Achievement

Table 1 shows that the typical EFL female freshman student scored higher on the posttest than the pretest (medians = 60% and 24% respectively) with lower variations among student scores on the pretest than the posttest (SD =3.32 and 9.39 respectively). This means that the students made higher gains as a result of vocabulary instruction. However the median and mean scores do not show whether the improvement in scores was significant or not. Therefore, the pre and posttest scores were compared using a T-test. Results of the paired T-test revealed a significant difference between the pre and posttest mean scores at the .01 level, suggesting that student achievement significantly improved as a result of using a combination of online and traditional in-class vocabulary instruction (T = 23.56; df = 52).

Table 1: Distribution of Posttest Scores in Percentages

&npbs;	N	Mean	Median	Standard Deviation	Standard Error	Range
Pretest	53	23.92%	24 %	3.32	.46	6-38%
Posttest	53	60.74%	60%	9.39	1.29	22-98%

Effect of Usage Frequency on Vocabulary Achievement

To find out whether the students made the same gains as a result of using the online course, the total number of discussion messages posted by each student (usage frequency) and by all the students and the percentage of active participants were calculated. It was found that 28 students (53%) were active and 25 (47%) were inactive. Active participants are those who responded to the conferencing topics. They posted a total of 350 posts (mean = 6.6 and the range = 0 to 44). The frequency of using the online course by each student was correlated with her posttest score. A significant positive correlation was found between the posttest scores of the students and the frequency of using the online course. The correlation coefficient was .83 and it was significant at the .01 level. This suggests that a student's achievement in the vocabulary course correlated with the number of contributions she made to the discussion topics and questions posted in the online course. Active and inactive participants were also compared as a group. Results of the independent T-test showed significant difference at the .01 level (T = 4.57; df = 51). This means that high and low usage frequencies of the online course correlated with high and low achievement levels as measured by the posttest. It can be concluded that using the online course did contribute to the students' overall performance level in vocabulary.

Effect of Online Instruction on Attitudes

Analysis of the student comments and responses to the post-treatment questionnaires revealed positive attitudes towards online learning and the vocabulary course under study. All the students found the online vocabulary course useful and fun, and considered it a new way of leaning English vocabulary and doing homework. It heightened their motivation and raised their self-esteem. It created a warm climate between the students and instructor and among the students themselves. They found the exercises posted in "Link Sharing" useful, as they provided extra practice, gave instant feedback and provided an opportunity to improve their classroom test scores. The exercises

helped clarify difficult points and helped the students review for the in-terms. They could use the online course any time and as many times as they needed. It made the class material easier.

Some of the negative aspects of online teaching in the present study are that 53% students did not post any responses if not prompted by the instructor and if the instructor does not post new topics and post a sample response. Some students start a new thread dealing with the same topic instead of posting a response under that topic. Some wrote “Thank you” notes and compliments instead of real responses. Others just browsed and read rather than post messages.

Inadequate participation in the online course was probably due to inadequate computer competence among some students. Hands-on practice could not be provided due to lack of computers in the classroom and internet connectivity at COLT. Some students did not take online instruction seriously as it was not used by other instructors and students at COLT. The author could not make the online course mandatory and could not allocate a proportion of the course grade to it for administrative reasons. Using the internet as a learning tool was not part of some students' culture. Some were so used to traditional instruction that depended on the book. They indicated that they were not net browsers and preferred to read books. They also believed that online courses should be used for fun not for credit and serious studying. Many Saudi college students do extra work for grades only. If online learning is not part of tests and grades, they will not participate. The author did not have sufficient time in the classroom to brainstorm the conferencing topics before and after posting and could not go through the material in the hyperlinks in class. Other shortcomings are due to the Nicenet online course design. The instructor could not design her own tests and exercises and could not upload graphics and Powerpoint presentations.

Discussion and Conclusion

Significant difference were found between active and inactive students in vocabulary achievement as measured by the posttest suggesting that achievement in active students improved as a result of exposure to online instruction. This means that use of online instruction proved to be a powerful tool for improving students' achievement in vocabulary. Online instruction raised the good and average student performance, and the performance of the lowest-performing students as well. This finding is consistent with findings of prior studies using other forms of technology in vocabulary instruction such as Van Aacken (1996), Crozer (1996), Johnson (1997), Hill (1998), Laufer and Hill (2000), Yoshii & Flaitz (2002) and Kaur & Hegelheimer (2005).

Unlike Frigaard's study (2002) in which high school students preferred to learn Spanish vocabulary and grammar in the classroom rather than in the computer lab, students in the present study showed interest in learning vocabulary online.

Moreover, the present study revealed positive effects of online instruction on students' attitudes towards online instruction and the vocabulary course. This finding is also consistent with findings of other studies. For instance, Van Aacken (1996) found that all the students in an Australian university using the computer to learn Kanji had better scores and that those most enjoying the experience had the highest scores. Lin (2004) also found that international students' attitudes towards ESL were positively related to their attitudes toward computers. Their attitude towards ESL was also positively related to their perceived computer competency improvement and their experience in ESL was positively related to their perceived computer competency improvement. In Chen's study (2004), freshmen and sophomores students in Taiwan expressed significantly positive attitudes toward educational technology use in EFL instruction. Moreover, Felix (2001) reported that on the whole, students were positively inclined to working with the web and found it useful, with the majority preferred to use the web as a supplement to face-to-face teaching. Furthermore, intermediate level community college ESL students and teachers expressed very positive attitudes toward using LEE (Schnackenberg, 1997). As in Schnackenberg's computer software LEE, online vocabulary instruction in the present study provided additional vocabulary practice, a self-paced and non-threatening learning environment. The students enjoyed using the online course and felt it helped them learn.

Finally, the present study recommends that online instruction be extended to other language courses and other college levels. Students of different college levels (i.e., lower and upper class students) enrolled in courses focusing on the same skill such as vocabulary building, reading or writing can share the same online course together with their instructors. To encourage the students to participate, the instructor has to prompt and motivate them and rules for using the online course should be made clear. The minimum number of posts may be specified. Administrative support is also required to make online teaching a mandatory part of vocabulary instruction, in order for the students to take it course seriously. The effect of vocabulary instruction delivered fully online using course materials and quizzes designed by the instructor is still open for further investigation

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