

COMPARATIVE USEFULNESS OF ONLINE AND TRADITIONAL VOCABULARY LEARNING

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ABSTRACT

Acquiring vocabulary in L2 is rather a difficult and demanding process and most of the language learners wish to know which vocabulary learning method and/or activity is more beneficial or even the best one; however, the responses to this question vary and there is no clear-cut answer though there are some various suggestions and conclusions drawn from the studies related to vocabulary acquisition such as keeping a notebook, regularly reviewing and using vocabulary items in context. This study compares the usefulness of online vocabulary teaching and the traditional methods used in upper-intermediate Academic English class. The control group students practiced vocabulary items in ten reading passages through vocabulary notebooks and cards. The learners in the experimental group practiced the same vocabulary items in the passages through *WordChamp*. Furthermore, with both groups, the vocabulary items were regularly reviewed. The usefulness of the two methods was evaluated via the post-test. The study showed that the learners in the experimental group outperformed the learners in the control group and that the experimental group students better remember the words studied online, evidenced by a follow-up post-test given 3 months later.

INTRODUCTION

"I do not fear computers. I fear the lack of them."
Isaac Asimov

Vocabulary teaching and learning is a very challenging and demanding process while learning any foreign language. As such, learners try to find out which vocabulary learning method is more beneficial or even the best one. However, not surprisingly, their first approach is to try to memorize every word that they do not know. According to the studies, beginners prefer learning words separately, that is, using a list of words to memorize, whereas advanced students, although there are some exceptions, try to learn words in context (Ellis, 1994, p. 553). Likewise, vocabulary teaching is generally restricted on presenting new items as they appear in any activity without preparing the learners through activation of prior knowledge or helping them regularly revise the previously learned vocabulary items until they are thoroughly learnt. In order to overcome this restriction and provide learners and teachers with better opportunities and a variety of activities, computers and the Internet have been put into use in the foreign language instruction and the positive effect of computer-assisted instruction on developing reading comprehension skills and vocabulary acquisition has been reported in numerous studies. Computer-assisted vocabulary acquisition can have its different instantiations, ranging from Web-based reading tasks with glossing support, through dedicated vocabulary learning software to online personal vocabulary learning systems like *WordChamp*. Due to the fact that computer-assisted vocabulary instruction undertaken in the present study had a wide range of components, various approaches to vocabulary learning with computers need to be reviewed at this point.

LITERATURE REVIEW

Web-based reading comprehension and vocabulary instruction

Levine et al. (2000), when investigating the issue of the development of EFL critical reading skills in a computer-networked environment, reported that the computerized learning environment contributed to the

development of EFL critical literacy skills much more than the conventional learning environment. The computer environment influenced the teacher-student relationship, changing the nature of the EFL teacher's as well as the EFL student's role in the academic reading class. At the same time, Levine et al. (2000) claim the computer-networked environment is particularly effective when it combines the security and support of the language learning classroom and exposure to authentic reading material. The computerized environment enabled teachers to provide assistance only when appropriate and necessary, without interfering with the students' choice of materials and pace of work. This empowerment of learners in the reading instruction leads to independence in using computerized resources in reading also beyond the language learning classroom (Peterson, 1997).

Johnson and Heffernan (2006) draw attention to the need to lead students from the exposure to graded materials to authentic ones, which was undertaken in the online reading environment of the Short Readings Project, a new online activity used in conjunction with English Trailers (www.english-trailers.com). The authors claim that building an enjoyable, confidence-building experience is essentially created by using relatively short but complete segments of materials, providing students with multiple contacts with the necessary vocabulary, and arming them with appropriate strategies.

The issue of joining multiple resources into the online hypertext environment facilitating reading and vocabulary learning has been amply addressed by researchers. To start with, Dreyer and Nel (2003) integrated the features of printed interactive study guide, contact sessions with the lecturer and the added value of a custom-made Varsite online environment to create a computerized learning context. The findings suggested that students benefit from strategic reading instruction offered in a technology-enhanced learning environment, developing reading comprehension and reading strategy use. Horst et al. (2005) reported the use of concordancing, dictionary and online quizzes in the process of familiarizing students with a variety of research-based strategies for learning and retaining new vocabulary. The activities of examining concordance examples, consulting an on-line dictionary, reading hypertext, using the quiz feature of the on-line Word Bank, and entering texts into the cloze-passage maker were integrated with reading passages to reinforce reading comprehension and vocabulary retention. Similarly, Web-based vocabulary activities of various types (multiple-choice, fill-in, cloze passages), when combined with reading passages, automatic scoring, e-mail feedback and randomization, were reported to succeed in improving developing a memory connection between the form and meaning of the word (Nelson, 1998), successfully addressing placing new words in a meaningful context and using mechanical techniques to help memorize new words.

Vocabulary practice software

Effective design of computer-assisted vocabulary learning software, which would succeed in presenting, practicing and testing vocabulary in a self-study mode, has received on-going attention of researchers. Multimedia vocabulary learning environments would attempt to help learners construct connections between the verbal and visual representational systems (Mayer and Sims, 1994), resulting in an increase in vocabulary knowledge and exercising a positive effect on reading comprehension and the rate of speed for frequent word recognition (Tozcu & Coady, 2004).

Such multimedia vocabulary learning environments may take different shapes, depending on the teaching context and learners' needs. In their study, Chun and Plass (1996) combined video as a visual organizer to the reading text with annotation of individual vocabulary items consisting of both visual and verbal information. Following the Tutorial CALL pattern with the study, practice and review approaches, Tozcu and Coady (2004) aimed at enabling individualized vocabulary practice by allowing students to add words to an individualized list for further study or setting reminders to help words by synonyms, antonyms, translation or paraphrase. When authoring a vocabulary learning environment geared at young learners, Sun and Dong (2004) showed the importance of appealing framework for vocabulary study (a popular Disney cartoon), however, pointing out to the fact that without providing proper learning support (e.g., in the form of sentence-level translation and target warming-up) the appeal of the learning environment will not guarantee more effective L2 vocabulary learning. Also Chun and Plass (1997) warn that multimedia-assisted reading comprehension and vocabulary learning may meet with a lower amount of invested mental effort than the use of static pictures, and, as a result, students who used the text and picture annotations scored higher on the follow-up vocabulary test than students who used text and video annotations (Chun and Plass, 1996).

The investigation of the usefulness of CALL vocabulary software in teaching and learning collocations has led Nesselhauf and Tschichold (2002) to formulate general guidelines for English vocabulary environments used independently of a specific (school) book or dictionary:

- better specification of the proficiency level the program aims at (and/or a division into different levels of difficulty);
- consistent context-embedding of the items learned;
- more flexibility of feedback (at least so that alternative correct answers are not rejected);
- at least some variety in the exercises;
- an inclusion of sections that teach besides sections that test.

Groot (2000) adds to the list the importance of constructing computer-assisted vocabulary learning environments in accordance with the widely accepted notions of how words are acquired, so that the words learnt are stronger embedded in the memory needed for long term retention. This has led to the development of a computer assisted word acquisition programme which intends to encompass noticing various properties of the new word (morphological and phonological, syntactic, semantic, stylistic, collocational); storage in the internal lexicon in networks of relationships and consolidation of the storage by means of further exposure to the word in a variety of contexts which illustrate its various properties. Moreover, according to Ma and Kelly (2006), the design of computer-assisted vocabulary learning software should enable both explicit and implicit vocabulary learning, training learners to become good vocabulary learners, among others, by being instructed in useful learning strategies. A visual advanced organizer contextualizing the topic (Chun & Plass, 1996) and vocabulary presentation in a mini-dictionary with glosses including meanings, collocations, example sentences and usage are followed by reading to practise and rehearse selected vocabulary in context. The learner training component can include, as was the case with Ma and Kelly (2006), introduction of vocabulary learning strategies relating to verbal association, imagery, rhyming or alliteration and tips on how to memorize the word (with the option to display the L1 translation).

Hypertext-based glossing in foreign language learning

Vocabulary look-up in the computer-assisted reading process is significantly facilitated by hypertext-based glossing, or the practice of providing brief definitions for unfamiliar words somewhere in the text (Rott, Williams and Cameron, 2002), either devised by teachers for selected words or enabled for all the words in the text in a dictionary look-up system like *WordChamp* Web Reader.

As Koren (1999: 6) stresses it, “hypertext technology enables a quicker and more convenient access to the meanings, as well as other visual and interactive advantages”, thus creating a more interesting and efficient environment for working on foreign language vocabulary. The use of glossing has been researched in numerous studies, most specifically multiple-choice glosses to increase the likelihood of retention (Rott et al., 2002); multimedia links with the target word’s printed textual definition, pronunciation, and meaning demonstrated via a still picture or video (Lomicka, 1998; Al-Seghayer, 2001); text-only, picture-only, and a combination of the two (Yoshi, Flaitz, 2002; Yoshi, 2006); also employing the learner’s mother tongue in glosses (Taylor, 2006).

When comparing the usefulness of highlighted glosses and unhighlighted links, de Ridder (2000; 2002) found that the invisible links enhanced L2 reading, perhaps because of the additionally thoughtful choices that learners needed to make, which is an argument for using vocabulary hypertext programs like *WordChamp* Web Reader to provide support to all words in the text. Roby (1999) makes an important point claiming that the design of a computer-assisted environment should encompass learners to gloss for their own benefit, enabling them to annotate electronic hypertext on their own, mark words and automatically compile them into printable lists. This feature of selected online vocabulary management systems including *WordChamp* is in line with the current emphasis on learner autonomy and cooperative learning.

When giving the rationale for the use of glossed texts, Taylor (2006) reviews the results of meta-analytic experimental research conducted on the effects of native-language (L1) glosses on second-language (L2) reading comprehension, which have revealed a significant difference between groups of studies with traditional and computer-assisted L1 glosses. Learners provided with L1 computer glosses comprehended significantly more text than learners with traditional, paper-based L1 glossing aids. Lomicka (1998) points out that while comparing participants who read the text under one of three conditions: full glossing, limited glossing, or no glossing, it was observed that the number of causal inferences generated for students who had access to full glossing increased. Thus, computerized reading with full glossing may promote a deeper level of text comprehension.

However, arguments have also been voiced against glossing, most notably that glossing may discourage guessing from context, while inferred meanings are said to be more memorable than meanings provided by glosses (Koren, 1999; Rott et al., 2002). Moreover, as is claimed by de Ridder (2002), vocabulary support

software should prevent the reader from excessive clicking (called "click happy behavior" by Roby, 1999, p. 98) which could lead to a more superficial, short-term learning. To solve the problem, Hulstijn (1992) proposed to combine the advantages of inferring and glosses into multiple-choice glossing, arguing that such an approach reduces the difficulties presented by insufficient context as well as the possibility of incorrect inferences.

Online vocabulary learning systems

A growing tendency to use the Internet as a means of delivering computer-assisted vocabulary acquisition has led to the shift of focus onto the design and implementation of online vocabulary-oriented learning management systems. Intentional study of vocabulary, based on learner-made word lists supported by accompanying interactive vocabulary exercises, all create appropriate conditions for learners to improve their language skills in the target language (Spiri, 2007).

As Chun (2001) demonstrated, reading and vocabulary learning in a Web-based environment can be facilitated by a program-internal glossary, an online bilingual dictionary and an audio narration of the text. An important feature exploited by Chun in the research was tracking the use of online multimedia support resources to provide more individualised study support. In the mobile-assisted learning context, analysing learner access logs to the vocabulary activities led to the formulation of a personal learner profile in terms of the vocabulary that they had difficulty with, so that these items could be presented to the learners more frequently than items that were less likely to cause learners problems (Stockwell, 2007).

Dreyer and Nel (2003) describe an even more elaborate vocabulary environment, termed Varsite (i.e., a Learning Content Management System), a multiuser environment where lecturers can create, store, reuse, manage, and deliver digital learning content from a central object repository, equipped with the features of dynamic delivery interface, an automated authoring system, track and report progress tools and the learning object repository.

A more open character of an online vocabulary learning system was emphasized by Ariew (2006), who describes the design and use of a software template to generate hypermedia texts for use by foreign and second language students, with the aim of generating teaching materials and providing an easy way to display target or native language annotations of all kinds, including text, graphics, audio recordings and video as needed to illustrate the meaning of the text.

Horst et al. (2005) advocate building a set of online tools for vocabulary learning in an ESL course, encompassing concordance, dictionary, cloze-builder, hypertext, and a database with interactive self-quizzing feature (all freely available at www.lex Tutor.ca). It is assumed that the tools would aid retention by engaging learners in deep processing, offering them more to study than words and definitions only.

As Zapata and Sagarra (2007) stress it, online workbooks promote the acquisition of L2 grammatical and vocabulary knowledge by allowing learners to proceed in a self-paced manner with the material, thus meeting their individual needs and allowing them to "manufacture rather than receive knowledge" (Collentine, 2000, p. 44; after Zapata and Sagarra, 2007, p. 154). In addition, online workbooks help learners create and test hypotheses about the target language by providing immediate feedback and allowing multiple access attempts. When putting such an example online vocabulary management system (termed A New Global Environment for Learning – ANGEL), Zapata and Sagarra (2007) found no significant differences between the online and the paper workbook groups after one semester of instructional treatment, but the online workbook group proved better than the paper workbook group in the second semester.

In a preliminary study, Spiri (2008) checked the effectiveness and viability of the application of the *WordChamp* vocabulary management system study in university English Communication courses, comparing *WordChamp* drilling with paper study of frequency word vocabulary. While both methods of intentional study of vocabulary, *WordChamp* and paper study, are effective for acquiring vocabulary, the former is more effective than paper.

The use of *Wordchamp* vocabulary management system has also been the focus of the research by Loucky (nd.), who examined several online programs available to help learners reach higher levels of vocabulary and reading proficiency as rapidly as possible. Loucky advocates the use of *WordChamp* for improving vocabulary learning and comprehension of any online reading, by using it for pre-reading or after-reading vocabulary development exercises or to obtain and save bilingual glosses while reading any document online. The integration of quick corpus analysis, making online flashcards, quizzes and collaborative conversations, according to Loucky (nd.), are most effective in acquiring more difficult vocabulary.

Training vocabulary learners – vocabulary strategies instruction

Out of a whole array of language learning strategies on the metacognitive, cognitive and socio-affective level (O'Malley, Chamot, 1990; Hedge, 1993), vocabulary learning strategies facilitate the acquisition of new lexis in the second/foreign language as they aid in discovering the meaning of a new word and consolidating a word once it has been encountered (Schmitt, 1997). Research shows that most learners actually do, even if they might not be aware of it, use specific strategies for vocabulary learning (Schmitt, 1997). As Nassaji (2003) found, different strategies contribute differently to learners' success so it is necessary to adapt strategies to each learner's needs. Additionally, it has been found that students who apply multiple learning strategies are more successful in learning (Chamot, 2004; after Johnson and Heffernan, 2006).

A number of attempts have been undertaken to propose a comprehensive taxonomy of vocabulary learning strategies. Schmitt (1997) distinguishes the five groupings of determination, social, memory, cognitive and metacognitive, with the total of 58 different operations facilitating the acquisition of new vocabulary. Loucky (2006) distinguishes 40 vocabulary learning strategies mapped onto an eight-fold scale of major cognitive phases (assessing, accessing, archiving, analyzing, anchoring, associating, activating, anticipating, reassessing, and relearning/remeeting new terms). Examples of learning strategies applicable in a reading context include dictionary use, also accessed via hyperlinked texts, utilization of contextual clues in the surrounding text, note taking, rehearsal, and encoding (Gu, 2003). Above all, the strategy of 'expanded rehearsal' (Horst et al., 2005) supported by computerized activities can be taught as a pre-requisite to more effective reading comprehension and vocabulary instruction.

It is assumed that successful learners intentionally select, consciously monitor and evaluate the strategy they use for the fulfillment of their aim. The unsuccessful learners, on the other hand, employ learning behaviors similar to their peers without being conscious but also without having an aim (Gu, 2003). However, as Dreyer and Nel (2003) stress, many students are unprepared for the reading demands that are placed upon them in higher education, and under the pressure of the reading task, they often select ineffective and inefficient strategies with little strategic intent (Dreyer, Nel, 2003), due to low level of reading strategy knowledge and lack of metacognitive control.

Strategy instruction for vocabulary acquisition in the computer-assisted environment helps learners become more effective learners, by individualizing the language learning experience and raising the awareness of strategies which they can use to learn on their own after they leave the language classroom (Atay & Ozbulgan, 2007). This self-direction is essential in active development of learners' abilities (Cohen, 1996; Oxford, 1990), empowering EFL learners with a wide range of strategies and making conditions for fostering their autonomy in learning vocabulary. Nunan (1997) reports the study which aimed at investigating the effect of strategy training on such key aspects of the learning process as motivation, knowledge of strategies, the perceived utility of strategies, and the actual deployment of strategies by students, with the results indicating that the experimental groups significantly outperformed the control groups in terms of motivation, knowledge, and perceived utility, while there was no significant difference in the area of deployment.

When considering strategy instruction procedure, Atay and Ozbulgan (2007) propose the following stages: discovering the meaning of a word through different contexts, recalling it via different memory strategies, focusing on the whole array of strategies, letting students choose the most effective one(s) for them. Winograd and Hare (1988; after Carrell, 1998), on the other hand, put forward the following five elements as constituting complete teacher explanation of the strategy:

- (1) what the strategy is,
- (2) why a strategy should be learned,
- (3) how to use the strategy,
- (4) when and where the strategy should be used,
- (5) and (5) how to evaluate use of the strategy.

In general, teachers should show students how to evaluate their successful/unsuccessful use of the strategy, including suggestions for fix-up strategies to resolve remaining problems.

METHODOLOGY

Purpose

The purpose of the study was to find out whether online vocabulary teaching would be more effective than the traditional instruction.

Research Questions

The research questions addressed in the study are as follows:

1. Is online vocabulary learning more effective than the traditional instruction as measured by the learners' post-test results?
2. Is online vocabulary learning more effective than the traditional instruction as measured by the participants' follow-up post-test results?

Participants

The participants were 38 students from different departments in a private university in Ankara, Turkey, studying English in order to pass the proficiency exam conducted by their own university. They were aged between 17 and 19. None of the participants had had any experience of participating in this kind of experiments.

Data Collection Instruments

Pre and posttests were used in the study developed using the questions that were asked in previous proficiency examinations. The tests consisted of 10 academic reading passages and 5 multiple choice questions assessing the vocabulary items in those passages. Scores for both the pre and post test were defined looking at the number of correct items. A correct answer were be rated 1 and an incorrect answer 0.

Variables in the study

The independent variables for the study were the teaching methods (online vocabulary learning and the traditional instruction). The dependent variables are the post and follow-up post-test results.

Data Collection Procedure

On the first day of class, an Informed Consent Form was presented and participants were briefly informed about the aim of the study. After students signed the form and agreed to participate in the study, the instructors administered the pre-test. With the results obtained from the test, and by means of an independent sample T-test, it was possible to establish whether or not there were significant differences between two groups of participants at the 0.05 alpha level (see Table 1 & 2).

Table 1. Group Statistics (Pre-test)

	Group	N	Mean	Std. Deviation	Std. Error Mean
pretest	control	20	16,7000	3,68639	,82430
	experimental	18	16,1111	4,25495	1,00290

Table 2. Pre-test results

	Group	N	M	SD	SEM	F	t	df	Sig.
pretest	control	20	16,70	3,68	,824	2,057	,457	36	,160
	experimental	18	16,11	4,25	1,002				

According to the pre-test results, the significance level was higher than 0.05 ($t=,457$; $df=36$; $p=0.160$), which lead to the conclusion that there were no significant differences between the two groups before the implementation of the study. At there were no significant differences, the study was carried out with these two groups. During the five weeks, One class (control group) practiced vocabulary items in ten reading passages through traditional instruction using vocabulary notebooks, cards and paper dictionary, while another class (experimental group) practiced the same vocabulary items in the passages through *WordChamp*. Furthermore, with both groups, the vocabulary items were regularly reviewed. The sample consisted of 20 participants in control group and 18 participants in the experimental group. The training lasted for 5 weeks and the same instructor met the groups three hours each week. On the last day of class, the instructor administered the post-test to both groups. The scores obtained by pre and post tests were statistically analyzed to see whether there was a statistically significant difference between these two groups.

DATA ANALYSIS AND RESULTS

To test the relevance of the null hypothesis – There will be no difference between the scores of the learners in the experimental and control group- the t-test was run to compare the post-test scores of the two groups. The post-test scores obtained by experimental and control groups were analyzed using the SPSS software package using the independent sample T-test to establish whether there were significant differences between two groups of participants at the 0.05 alpha level (see Table 3&4).

Table 3. Group Statistics (post-test)

	group	N	Mean	Std. Deviation	Std. Error Mean
posttest	control	20	32,7500	4,92977	1,10233
	experimental	18	38,3889	6,21326	1,46448

Table 4. Post-test results

	Group	N	M	SD	SEM	F	t	df	Sig.
pretest	control	20	32,75	4,92	1,10	1,167	-3,114	36	0,004*
	experimental	18	38,38	6,21	1,46				

* $p < 0.01$

Considering the analysis used to address the first research question (Is online vocabulary teaching more effective than the traditional instruction as measured by the learners' post-test results?), the significance level was lower than 0.05 ($t = -3,114$; $df = 36$; $p = 0.004$), which led to the conclusion that there was a statistically significant difference between the two groups. In other words, the participants in the experimental group using *WordChamp* while studying vocabulary items performed significantly better than the participants in the control group who practiced traditional vocabulary learning activities.

The follow-up post-test scores obtained by experimental and control groups were analyzed using the independent sample T-test to establish whether there were significant differences between two groups of participants at the 0.05 alpha level (see Table 5&6).

Table 5. Group Statistics (Follow-up Post-test)

	group	N	Mean	Std. Deviation	Std. Error Mean
followup	control	20	29,3500	5,21410	1,16591
	experimental	18	36,1111	6,13465	1,44595

Table 6. Follow-up Post-test results

	Group	N	M	SD	SEM	F	t	df	Sig.
pretest	control	20	29,35	5,21	1,16	,620	-3,672	36	0,001*
	experimental	18	36,11	6,13	1,44				

* $p < 0.01$

As for the analysis used to address the second research question (Is online vocabulary teaching more effective than the traditional instruction as measured by the participants' follow-up post-test results?), the significance level was lower than 0.05 ($t = -3,672$; $df = 36$; $p = 0.001$), which led to the conclusion that there was a statistically significant difference between the two groups even after the follow-up post-test was given two months later.

DISCUSSION

The post-test results showed that the participants in the experimental group using *WordChamp* while studying vocabulary items performed significantly better than the participants in the control group who practiced traditional vocabulary learning activities. This result of the study is in alignment with Nelson (1998), Horst et al. (2005), Spiri (2008) and Loucky (nd.), in that various vocabulary activities help improve developing a memory connection between form and meaning of the word. Moreover, the participants had the opportunity to review and benefit from different activities and strategies while acquiring vocabulary items, rather than limiting themselves to just paper related activities. Online vocabulary teaching can further individualize the language learning experience and raising the awareness of strategies which they can use to learn on their own after they leave the language classroom as suggested by Atay and Ozbulgan, (2007).

The follow-up post-test showed that as in the previous post-test results, there was a statistically significant difference between the two groups even after the follow-up post-test was given two months later. This result was not in alignment with the arguments against glossing (Koren, 1999; Rott et al., 2002) claiming that glossing may discourage guessing from context, causing meanings provided by glosses to be less memorable. However, in this study, the participants benefiting from glossing provided by *WordChamp* reader remembered more words. It is

worthy to note that all the participants were guided while using *WordChamp* or the traditional paper-based activities. They were encouraged to benefit from different strategies such as guessing meaning from the context. The participants in the experimental group did really enjoy the glossing feature in *WordChamp*; however, this did not lead them to ‘click happy behavior’ (Roby, 1999) or a superficial, short-term learning compared to other participants.

CONCLUSION

This study has attempted to prove that an online glossing tool, *WordChamp* helped learners to acquire vocabulary items in academic reading passages when compared to other traditional or paper-based strategies or activities. In addition to helping vocabulary learning, *WordChamp* seems to be effective in enhancing learners’ autonomy, and motivation. More importantly, as research shows that most learners use specific strategies and different strategies contribute differently to learners’ success, this study should be seen as further evidence to the idea that learners should be provided with a whole array of strategies, letting students choose the most effective one(s) for them, rather than limiting them to the strategies that are thought to be working for all without considering the individual differences.

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