Vocabulary Instruction through Blended Learning and Multimedia Software in Iranian ESP Classes

Sadegh Khalili (Corresponding author)
Lecturer, University of Medical Sciences of Isfahan
Mohammad Hassan Tahririan
Professor, Sheikhbahaee University
Setareh Bagheri
Lecturer, Sheikhbahaee University

Abstract
The purpose of this study was to investigate the impact of blended learning and multimedia software on Iranian ESP students' vocabulary learning. To this end, 120 Iranian ESP learners were assigned to two groups: the experimental and control groups. The experimental group received instructions through multimedia software while the control group received traditional instructions. The data were collected through a vocabulary posttest and classroom observations. The results indicated the great level of disparity between the two groups of learners regarding their acquisition of new vocabulary - in other words, multimedia software had positive effect on students' vocabulary learning. In addition, learning with technology also showed positive activity engagement. Based on the current study, suggestions were made on how multimedia software can be adopted and incorporated more effectively in ESP classes.

E-mail: sadeghkhalili2046@gmail.com

Introduction

Preliminaries

Recently application of computers and technology has been increasingly brought to EFL classrooms. Curriculum designers have tried to include computers and technology in educational curricula (Atai & Dashtestani, 2011). The general finding of the numerous studies in this field supports the fact that technology has the capacity to improve teaching and learning another language (Hermans, Tondeur, Van Braak, & Valcke, 2008). However, how to integrate technology in an engaging, effective, and interactive way is still a controversial issue.

Vocabulary knowledge is considered as the most important factor in academic achievement for second or foreign language learners (Bismonte, Foley & Petty, 1994; Evans, 1978; Laufer, 1990; Pellow, 1995; Pouwells, 1992; Tozcui & Coady, 2004; Watts & Bucknam, 1996). But as ESP teachers we see that learning vocabulary is not always easy or enjoyable for students; they constantly complain about their problems in remembering new words. By considering the potential capacities of technology in improving language learning, it is assumed that *blended learning* and *multimedia software* have positive effects on students' vocabulary learning. Therefore, this study is conducted to recognize the impact of blended learning and multimedia software on Iranian ESP learners' vocabulary learning.

Statement of the problem

In the process of foreign language learning, in general, and ESP courses, in particular, many students have difficulty remembering the words they learn. As Cohen and Depetris (2013) believe mastering medical terminology is a difficult task which requires great effort. He states that medical vocabulary is so vast and learning it is like learning the entire vocabulary of a foreign language. ESP students also know the importance of vocabulary and their problems as a result of their poor vocabulary knowledge and they constantly ask for remedies and strategies to master medical terminology. The recommended method addressed almost in all books designed for English for the students of medical courses is to break the words into smaller parts, namely

prefixes, suffixes, and roots, analyze them and guess the meaning. There is no objection to this way of vocabulary presentation but the way this method is applied is usually complained by students and teachers. The students are presented by long, unattractive, and boring lists of prefixes, roots, suffixes, and abbreviations with few examples.

Further problems can be addressed when the concepts of consistency and engagement are focused. According to Thyberg (2010), consistency and engagement are crucial when it comes to language learning. Consistency means that a student must review language materials and practice new subjects daily in order to achieve proficiency. Not all ESP students can attend English classes every day (or even every other day); therefore, they have little exposure to English. Engagement is the active participation of students as they study. As Anderson, Hamilton, and Hattie (2004) state, students often fail in the academic process because they do not engage in class activities. Our classes are usually equipped with traditional media such as books, videos, and tapes which do not require to engage and therefore can be boring and passive resources.

Blended learning, a combination of face-to-face and computer mediated instruction, is seen as one of the most important advancements of this century and a natural evolution of the learning program (Graham, 2006; Thorne, 2003). Graham (2006) believes that blended learning "may even become so ubiquitous that we will eventually drop the word *blended* and just call it learning". But this kind of instruction is not used appropriately in our ESP classes. In addition, as more and more universities and instructors are trying to integrate multimedia and software into their educational programs, it is significant to have more comprehensive studies in this field.

Research question

The present study intends to investigate vocabulary instruction through blended learning and multimedia software in Iranian ESP classes. To this end, the following question was formulated:

- ▪ To what extent can blended learning through multimedia software help Iranian students of medical sciences vocabulary learning?

Literature Review

Computer-assisted language learning and multimedia

Historically, the use of computer technology in the field of language learning dates back to the early 60s and has played an important role in the language education. By the change in technology and its use in the field of language learning, CALL and its use of such technology also has changed (Warshauer & Healey, 1998). As CALL entered the 21st century, it took an integrative approach with the aim of integrating the use of technology into language teaching. Integrative CALL seeks to integrate the use of technology into the basic components of learning, i.e. writing, reading, listening, and speaking. It provides students with the technology to facilitate communication and learning. In this new period in the history of CALL, the use of technology becomes a part of the curriculum presented to the student rather than isolated activity (Warschauer, Shetzer, & Meloni, 2000).

Today, by the widespread use of technology in language teaching, studies on the field of CALL have increased, and the amount of researches is predicted to continue increasing (Hubbard, 2005). The research on CALL covers areas such as software applications, distance learning, Internet activities, as well as computer-aided communication. The research also examines students' attitudes and reactions toward technology and the impact of CALL on education and language learning (Hubbard, 2005).

A key aspect of CALL in language learning is providing an environment where students can interact meaningfully. Classroom discussions can be expanded by the use of electronic interaction and asynchronous discussion board. Campbell (2004) suggests students should be engaged in group discussions using technology while the teacher acts as the facilitator to get them to exchange opinions electronically. According to Campbell and Hegelheimer (2004),

discussion boards are primarily student-centered; however, the teacher plays an important role as s/he monitors students' communication and progress.

Studies on CALL suggests that by integrating technology into language learning, learners are exposed to more authentic input as well as more opportunities to participate in a socio-cultural context. The use of target language can provide the learner with a linguistic and a realistic knowledge of the target language. Furthermore, using technology in language learning provides motivation and autonomy as the learners learn a new language inside and outside the classroom (Chen, 2005).

Blended learning

Blended learning (BL), a combination of face-to-face teaching with computer technology (online and offline activities/materials), has been recommended by many researchers. They have listed the benefits of employing BL in EFL classes such as ability to match learning styles, individually tailored solutions, improving the learning rate, optimizing development cost and time, optimizing business results (reduces travel costs and learning objectives are obtained quicker), ease of revision, personal agency (i.e. learner control and choice), and improving the teaching of large groups (Dewar & Whittington, 2004; Osguthorpe & Graham, 2003; Singh & Reed, 2001). Graham et al., as quoted in Stracke (2007, p.59), have condensed these lists down to three main reasons in higher education which are: improved pedagogy; increased access/flexibility; and increased cost effectiveness. Sharma and Barrett (2007) believe that cost, convenience, and being able to work in your own time and at your own pace are the reasons of employing BL in business, which are also applicable in EFL classes.

A large amount of research in computer-assisted language learning has been devoted to comparing traditional instruction (face-to-face without CALL instruction) and blended instruction (face-to-face together with CALL instruction). Some of the studies reported the significant role of multimedia tools in EFL classes (like Adair-Hauck et al., 1999; Scida and Saury, 2006) while some others indicated the superiority of traditional methods over the blended ones (such as Barr

et al., 2005), and some studies found no significant differences among the two groups (like Chenoweth and Murday, 2003; Echavez-Solano, 2003).

In an Iranian context, Shahrokni (2009) examined the effect of online textual, pictorial, and textual pictorial glosses on the incidental vocabulary learning. The findings of this study indicated that a combination of text and still images resulted in considerably better incidental learning and confirmed the Dual-Coding Theory. In another study, Ghabanchi and Anbarestani (2008) studied whether CALL programs have any effect on the long-term retention in vocabulary learning, and whether CALL programs have a better effect on contextualized vocabulary learning than the common method of learning vocabulary in isolation by the means of bilingual lists. The results pointed out that the control group outperformed experimental group in the immediate test, but the scores on the delayed tests were significantly lower for the control one. In a similar study, Bagheri, Roohani, and Nejad Ansari (2012) investigated the effect of CALL-based and non-CALL based methods of teaching on L2 vocabulary learning. They found that there was no significant difference between the vocabulary scores of the CALL-users and non-CALL users in both short-term and long-term learning.

Two points encouraged the researcher to conduct his study in this area. First, as mentioned above, there are still controversies on using or not using CALL-based instructions in EFL classes in general and English for medical courses in particular. Second, to the best of the researcher's knowledge, no comprehensive study has been done to investigate the use of multimedia software in English for medical courses.

Methodology

Participants

A sample of 120 ESP students participated in this study. They were all students of medicine studying in the Isfahan University of Medical Sciences. The students were divided into two groups; the experimental and control groups. Both the control and experimental groups studied

two books for their course entitled *English for the Students of Medicine* by M. H. Tahririan and B.J. Cohen's *Medical Terminology-An Illustrated Guide* in 2013. Participants' first language was Persian with an age range of 21-25.The selected teachers employed for this study were all PhD holders in TEFL who were all certificated in ICDL (International Computer Driving License); therefore, they were all familiar with employing computers and multimedia in their classes.

Instruments and materials

Vocabulary pretest. To be more cautious and to be confident about the homogeneity of the experimental and control groups a standard Oxford Placement Test was administered before the experiment. The test consisted of 60-item multiple choice pragmatic, vocabulary and grammar subtests. The participants were given 30 minutes to respond to this test. The obtained results from the pretest showed no significant difference among the groups($p>0.05$), which indicated the homogeneity of the groups in terms of their language proficiency.

Vocabulary posttest. At the end of the experiment, to compare the effect of treatments, a teacher-made vocabulary test on the presented words was given to the participants. The reliability of the test was measured with Cronbach's alpha, which was 0.74 ($0.7 \leq \alpha < 0.9$), which showed that the reliability for this test was good.

Classroom observations. Five sessions, when the new words were presented and practiced in the experimental and control groups, were observed by the researcher. Observations were done through videos recorded via cameras. The researcher observed the classes on DVD, completed a checklist and took notes on what went on in the classes. The checklist was adapted from Whitefield School (revised 2010) according to OFSTED style. The items included in the checklist were on "students' engagement", "computer-based assessment", "students' interactions", "computer mediated communication (CMC)", and "class atmosphere". The checklist was piloted with an ESP class before its application.

Multimedia software. To select appropriate software, the researcher asked over 20 teachers to express views on proper vocabulary software. In addition, some reviews on ESP software from different software evaluation websites were examined. At last two multimedia software programs were selected: *Medical Terminology-An Illustrated Guide (7th Edition) DVD ROM*and *Interactive Atlas of Human Anatomy (3rd Version).*

Treatment

The control and experimental groups were introduced to the same new words in this study. However, the methods of clarification were different. Since instructors were supposed to follow the same worksheet, they both taught the same material on the same days. New words were related to the student's course books including the terminology of the Body Structure, the Cardiovascular System, the Respiratory System, the Urinary System, and the Nervous System.

Instructors presented new words through definitions and examples in the control group and through software in experimental group. A clear road map was prepared for the instructor in the experimental group to find the related contents in software as quickly as possible. To review the taught vocabulary, students in the control group were asked traditionally, while they did exercises of the software in the experimental group.

Results

Posttest

To investigate the question, the researcher statistically analyzed the scores on the posttest. The descriptive statistics of participants' performances are presented in Table 1.

Table 1

Group Statistics on posttest score

	Vocabulary Learning	N	Mean	Std. Deviation	Std. Error Mean
scores	traditional method	60	13.0000	4.62945	.96531
	Blended method	60	16.1250	2.89771	.59149

Blended learning group obtained higher mean score on vocabulary posttest compared with traditional group (16.12 and 13.00, respectively, with the standard deviations of 4.62 and 2.89). In order to compare the data statistically, an independent sample t-test was run. The results of the analysis are presented in Table 4.2.

As can be seen from Table 4.2, there was a significant difference in scores for traditional ($M = 13.00$, $SD = 4.62$) and blended ($M = 16.12$, $SD = 2.89$; $t(47) = 2.76$, $p = .009$, two-tailed) methods. The P-value

Table 2

Results of Independent Samples Test on vocabulary posttest

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
scores	Equal variances assumed	2.514	.120	-2.787	45	.008	-3.12500	1.12140	-5.38362	-.86638
	Equal variances not assumed			-2.760	36.676	.009	-3.12500	1.13211	-5.41956	-.83044

was 0.009 (P < 0.05), based on which it can be concluded that the groups' performances were significantly different and the blended learning group outperformed the traditional group.

Classroom observation

Observations were done through audio and visual recordings, therefore, the researcher could analyze the data in depth and observations were completely unobtrusive and free from Hawthorne effect. In blended learning group new words were presented using *Medical Terminology-An Illustrated Guide (7th Edition) DVD ROM* and *Interactive Atlas of Human Anatomy (3rd Version)* through a data show and a laptop. There were some exercises available on software programs through which new words were practiced and reviewed after they were introduced. The same words were presented by the teacher in the control group by giving definitions and examples and were reviewed after their presentation. A summary of what went on in classes is as follows.

Enjoyment. Students in the blended learning group enjoyed using software in their classroom, especially when they did exercises with software. They usually asked the instructor to spend more time on software. On the other hand, the control group sometimes complained about the boring atmosphere of the class.

Engagement. The blended learning class was more student-centered than the control class. Sometimes the software employed pictures to clarify the words which made the students think and guess their meaning. But in the control group students were mostly passive and were just exposed to the words in the lesson. The difference was especially apparent when new words were reviewed and practiced. All the students participated zealously in the experimental group whereas most of the students in control group did not participate voluntarily; the teacher had to require them to participate.

Learnability. It was found from observations that students in the blended learning group learned new words better than those in the control group. While practicing and reviewing new words, most of the students in the blended learning group were ready to answer and they usually answered correctly; whereas the situation was totally different with the control group. The statistical difference between the groups in learning new words from the obtained results of the posttest

(mentioned in the previous section), confirms this qualitative description.

Discussion and Conclusion

Discussion

The present study attempted to investigate the effects of blended learning and multimedia software programs on vocabulary learning of medical students. The results of independent sample t-test revealed that there was a significant difference between learners' performances in the experimental and control groups. In other words, multimedia software programs had a positive effect on students' vocabulary learning. The results of this study were in constant with the findings of Lauc, Matić, and Mikelić (2006) who concluded that multimedia educational software was an effective method of presenting new vocabulary. On the other hand, findings of the present study disagreed with the study conducted by Bagheri, Roohani, and Nejad Ansari (2012), which maintained that there is no significant difference between CALL-based and non-CALL based methods of vocabulary instruction.

Through observations the researcher attempted to investigate the extent to which multimedia software programs can be applied in ESP classes. While the process of vocabulary presentation through definitions and examples was boring and monotonous in the control group, those in the experimental group enjoyed vocabulary instruction through multimedia software. Unlike the control group, almost all students in the experimental group were engaged in class activities and usually volunteered to do the software exercises. In the process of vocabulary instruction, students in blended learning group reacted interactively to the software programs; they competed in guessing the correct meanings of the words and the instructor just explained the ones which were correct. On the other hand, students in the control group were mere passive receivers of new vocabulary. In terms of students' readiness to answer, students in the experimental group were more prepared and alert.

Reviewing the results of this study and other similar studies, a question comes to the mind; why do some studies, like the present one, find CALL-based instruction effective, while others, like some of the aforementioned ones reviewed in the literature, find it indifferent or useless? The answer may lie in two points: 1. the way CALL programs are implemented, and 2. Instructors' knowledge and training in CALL and multimedia. As it was mentioned in methodology section, instructors participated in this study were certificated in ICDL (International Computer Driving License); therefore, they were familiar with the appropriate way of employing multimedia software programs in their classes. In this respect, there is a consensus among researchers that most of teachers' concerns and problems related to implementing computer technology refer to their computer and multimedia training. (Oh &French, 2007; Park & Son, 2009; Rakes & Casey, 2000; Shin & Son, 2007; Son, Robb, & Charismiadji, 2011).

Conclusion

The results of this investigation provided support for the notion that there is a positive relationship between technology use and students' vocabulary learning. In addition, learning with technology also showed positive activity engagement. Based on the results, through technology application, we can have more student-centered classes and more interactive education. However, we should keep in mind that the mere presence of multimedia software programs cannot facilitate learning or bring satisfaction. At first training courses should be provided for instructors in order to know how, when, and where to use multimedia software programs. The second preliminary is to perform a detailed analysis on the software contents and present a clear road map to instructors to apply appropriate multimedia software related to the course objectives; therefore, the application of multimedia software programs will not be time-consuming. Finally, to increase students' engagement and autonomy, they are required to be instructed.

Implications of the study

The findings of this study can have implications for ESP curriculum designers, administrators, and teachers. Curriculum designers should make sure that the curriculum has integrated courses with appropriate software applications. Moreover, they should remind the teachers to teach course contents along with CALL. To achieve this aim, instructors should be provided with clear and well-structured software worksheets to know when to use appropriate software programs in the shortest possible time.

Administrators should also recognize the significance of integrating CALL and multimedia software in ESP classes. Therefore, they should equip classes with CALL facilities. They are also advised to purchase the latest hardware but not software. Because in CALL the 'newer' is not really better. Software programs should be analyzed in detail and among them the most appropriate ones related to the course contents and objectives, should be selected. To this end a team of CALL experts can help. It is also important that administrators consider computer courses for teachers to improve their computer literacy. These courses can be incorporated in teacher training programs.

Since instructors are seen as a bridge between CALL programs and learners, they may play the most important role in achievement of CALL objectives. Thus, taking CALL teacher training courses is the preliminary for the teachers to have rewarding instructions. They also need to make their students fully aware of what CALL adds to the learning process and help them understand the real function of computers in general and software programs in particular. Moreover, on the first day of classes, they are advised to teach their students how to use multimedia software programs on their owns at home. Therefore, students' autonomy will be increased.

References

Adair-Hauck, B., Willingham-McLain, L., & Youngs, B. E. (1999). Evaluating the integration of technology and second language learning. *CALICO Journal,* 17(2), 296-306.

Anderson, A., Hamilton, R., Hattie, J. (2004). Classroom climate and motivated behaviour in secondary schools. *Learning Environments Research, 7*, 211-225.

Atai, M. R., & Dashtestani, R. (2011). Iranian English for academic purposes (EAP) stakeholders' attitudes toward using the Internet in EAP courses for civil engineering students: promises and challenges. *Computer Assisted Language Learning.* DOI:10.1080/09588221.2011.627872.

Bagheri, E., Roohani, A., & Nejad Ansari, D. (2012). Effect of CALL-based and non-CALL based methods of teaching on L2 vocabulary learning. *Journal of Language Teaching and Research*.3 (4), 744-752.

Barr, D., Leakey, J., & Ranchoux, A. (2005). Told like it is! An evaluation of an integrated oral development project. *Language Learning and Technology,* 9(3), 55-78.

Bismonte, A. R., Foley, C. L., & Petty, J. A. (1994).Effectiveness of the possible sentences vocabulary strategy with middle school students in Guam. *Reading improvement 31 (4)*, 194-199.

Campbell, A. P. (2004). *Using live Journal for authentic communication in EFL classes*. Retrieved August 20, 2013, from The Internet TESL Journal Web Site: http://iteslj.org/Techniques/Campbell-LiveJournal.

Campbell, C. A., & Hegelheimer, V. (2004).The language teacher in the 21st century. In Fotos & C.M. Browne (Eds.), *New*

perspectives on CALL for second language classrooms (p. 134-147). London: Lawrence Erlbaum Associates.

Chen, Y. (2005). Computer-mediated communication: the use of CMC to develop EFL learners' communicative competence. *Asian EFL journal, 7*(1), 167-182.

Chenoweth, N. A., & Murday, K. (2003).Measuring student learning in an online French course. *CALICO Journal,* 20(2), 285-314.

Cohen, B., & DePetris, A. (2013).*Medical terminology: An illustrated guide* (7th ed.). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins Health.

Dewar, T. & Whittington, D. (2004). *Blended Learning Research Report.* Retrieved from www.calliopelearning.com/wp-content/uploads/2012/08/blended.pdf

Echavez-Solano, N. (2003). *A comparison of student outcomes and attitudes in technology-enhanced vs. traditional second-semester Spanish language courses.* Unpublished doctoral dissertation, The University of Minnesota.

Evans, B. (1978). *The power of words in language awareness*, (2nd. Edition), New York: St. Martin's Inc.

Ghabanchi, Z. & Anbarestani, M. (2008).The effect of CALL program on expanding lexical knowledge of EFL Iranian international learning. *Journal of Reading Matrix*, 8.2, 82-95.

Graham, C. (2006). Blended learning systems: Definitions, current trends, and future directions. In C.J. Bonk. and C. R. Graham, (Eds.), *The handbook of blended learning: Global perspectives, local designs,* (pp. 3-21). Pfeifer, San Francisco: CA.

Hermans, R., Tondeur, J., Van Braak, J, and Valcke, M. (2008).The impact of primary school teachers' educational beliefs on the

classroom use of computers. *Computers & Education, 51*(4), 1499-1509.

Hubbard, P. (2005). A review of subject characteristics in CALL research. *Computer Assisted Language Learning, 18*(5), 351-368.

Lauc, T. Matić, S. Mikelić, N. (2007). *Project of developing the multimedia software supporting teaching and learning of English vocabulary.* Proceedings of the 1ˢᵗ International scientific conference, The Future of Information Sciences: INFuture2007 – Digital Information and Heritage.

Oh, E., & French, R. (2007). Pre-service teachers' perceptions of an introductory instructional technology course. *CALICO Journal, 24*(2), 253–267.

Osguthorpe, RT & Graham, CR. (2003). Blended learning environments: Definitions and directions. *The Quarterly Review of Distance Education,* 4(3), 227–233.

Park, C. N., & Son, J.-B. (2009). Implementing computer-assisted language learning in the EFL classroom: Teachers' perceptions and perspectives. *International Journal of Pedagogies and Learning, 5*(2), 80–101.

Pellow, R. A. (1995). Thermatic teaching of vocabulary and reading comprehension through description of TV movies. *Reading Improvement, 23* (3), 130-134.

Pouwels, J. B. (1992). The effectiveness of vocabulary visual aids for auditory and visual foreign language students. *Foreign Language Annals, 25* (5), 391- 401.

Rakes, G. C., & Casey, H. B. (2000).*An analysis of teacher concerns toward instructional technology.* Retrieved August 1, 2013, from http://www.ed.uiuc.edu/IJET/v3n1/rakes/index.html.

Scida, E. E., & Saury, E. R. (2006). Hybrid courses and their impact on student and classroom performance: A case study at the University of Virginia. *CALICO Journal,* 23(3), 517-531.

Shahrokni, S. A. (2009). Second language incidental vocabulary learning: The effect of online textual, pictorial, and textual pictorial glosses. *TESL-EJ* 13.3, 1-17.

Sharma, P. & Barrett, B (2007).*Blended Learning*. Oxford: Macmillan.

Shin, H.J., & Son, J. B. (2007).EFL teachers' perceptions and perspectives on internet assisted language teaching. *CALL-EJ Online, 8* (2), 1-13.

Singh, H. & Reed, C. (2001). A White Paper; Achieving success with blended learning. ASTD State of the Industry Report, American Society for Training and Development. *Centra Software*.

Son, J.-B., & Robb, T., & Charismiadji, I. (2011). Computer literacy and competency: a survey of Indonesian teachers of English as a foreign language. *CALL-EJ, 12*(1), 26–42.

Stracke, E. (2007). A road to understanding: A qualitative study into why learners drop out of a blended language learning (BLL) environment. *ReCALL, 19*(1), 57–78.

Thorne, K. (2003). *Blended learning: How to integrate online and traditional learning.* Kogan Page. London: UK.

Thyberg, D. (2010). *Multimedia English Language Learning Software*. Retrieved from http://www.ehow.com/about_6170360_multimedia-english-language-learning-software.html.

Tozcui, A., & Coady, J. (2004). Successful learning of frequent vocabulary through CALL also benefits reading comprehension

and speed. *Computer Assisted Language Learning, 17 (5), 473–495.*

Watts, S. M., & Bucknam, J. (1996).Using vocabulary studies to teach contextual analysis in grade four. *Reading Horizons 37* (2), 170-180.

Warshauer, M., & Healey, D. (1998). Computers and language learning: an overview. *Language Teaching, 31,* 57-31.

Warschauer, M., Shetzer, H., & Meloni, C. (2000). *Internet for English teaching.* alexandria, Va: TESOL Publications.