USE OF INTERACTIVE WEB-BASED EXERCISES FOR ENGLISH AS A FOREIGN LANGUAGE LEARNING: LEARNERS' PERCEPTIONS

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Abstract

The study investigated the learner perceptions of a CALL component in a blended language learning context. 52 Taiwanese college students attended instructional classroom sessions and did weekly online assignments in the form of interactive web-based exercises over one semester. Their learning performance was measured by means of two computer-based language assessments at the mid-point and final part of the semester. Learners' perceptions of the interactive web-based exercises were elicited by a computerized survey conducted at the end of the semester. The results reported on the survey revealed that participants perceived the interactive web-based exercises as interesting but only modestly so. This was probably attributable to the difficulty level of the created exercises and a lack of diverse exercise formats. Even so, having easy access, receiving immediate feedback, allowing multiple attempts, and enabling self-paced learning were mentioned as benefits of the constructed exercises. More importantly, most participants reported the effectiveness of these exercises in improving their reading comprehension and vocabulary leaning. This confirmed language assessment results that demonstrated significant gains in reading comprehension and vocabulary knowledge. Implications include suggestions for language teachers and program developers for improving the way web-based learning activities are created and implemented.

Keywords: CALL, interactive web-based exercises, learner perception, foreign language learning

1. Introduction

The rapid development and growth of computer science has brought about the application of computer technology in all areas. In pedagogical settings, Computer-Assisted Instruction (CAI) has led to a shift in teaching and learning modes from routine lectures in the classroom to computer-assisted learning beyond the classroom. In addition, technology-enhanced learning activities have evolved from those of a

didactic nature focusing on drill and practice toward those which involve interactive learning learner control and engagement (Lefever-Davis & Pearman, 2005).

In the second/foreign language (L2/FL) pedagogy, Computer-Assisted Language Learning (CALL) has expanded rapidly over the past decade and has become a competitive alternative for language teaching and learning. Beatty (2003) defines CALL as "any process in which a learner uses a computer and, as a result, improves his or her language" (p. 7). Hubbard (2009) states that CALL helps learners to improve their language proficiency by providing:

- learning efficiency to pick up language knowledge or skills faster and easier,
- learning effectiveness to retain language knowledge or skills longer,
- easy access to obtain various kinds of materials,
- learning convenience to allow studying and practicing with flexible time and place,
- learning motivation to engage learners in the language learning process.

2. Previous studies into Web-based instruction

Presently many language learners have experienced learning with technology or participated in technology-integrated instruction. Learners' experiences with CALL shape their perceptions of CALL use in language learning. These perceptions in turn further influence the success or failure of language learning outcomes as well as the courses in which computer technology is incorporated (Sagarra & Zapata, 2008; Wang & Wang, 2010).

A considerable number of studies have investigated learners' perceptions of or attitudes toward CALL applications, with mostly positive results including increased motivation, promoted self-confidence, and improved language skills (e.g., Beauvois, 1994; Felix, 2001; Lee, 2005; Sagarra & Zapata, 2008; Suh, 2002; Ushida, 2005; Wang & Wang, 2010). For example, a large-scale study conducted by Felix (2001) to investigate student perspectives on the potential of the Web as a medium of language instruction found that Web-based learning was appealing for most learners. In addition, time flexibility, reinforced learning, privacy and wealth of information were reported to be advantages of using the Web for language learning. In Suh's (2002) study, 19 Korean EFL university students took computer-mediated writing classes where they searched information through the Internet, wrote drafts, evaluated peers'

essays via e-mail, and revised their work. Suh's results showed that students viewed CALL as an effective writing tool which stimulated their learning interest, allowed for easy and convenient information gathering, and provided exposure to various English texts. Moreover, Ushida (2005) explored thirty students' motivation and attitudes in second language study within an online language course context, concluding that second language learners participating in online language courses were in favor of using CALL in L2 learning. Similarly, Sagarra and Zapata (2008) reported that L2 courses incorporating CALL in combination with classroom instruction led both to significant learning gains in grammar and to learners' positive attitudes toward the use of the online workbook in terms of accessibility to the material, user-friendliness, and instant error feedback. In a more recent study, Wang and Wang (2010) investigated 112 Taiwanese EFL university students' perceived views on a collaborative CALL environment, coming to the conclusion that the majority of the students held positive attitudes on the implemented CALL course and they reported increases in English linguistic knowledge, associated content knowledge as well as motivation for EFL learning.

Despite mostly positive results of the reviewed studies in support of L2/FL technology-enhanced courses or technologically enhanced activities, some negative aspects of CALL classes or activities were also raised. For instance, more than half of the 358 L2 Spanish learners (52%) in Stepp-Greany's (2002) study preferred conventional instructor-led, whole-class instruction to technology-based, learner-centered learning, and the majority of the students (89%) felt that the presence of the instructor was necessary to facilitate language learning. In addition, Stracke (2007) investigated the reasons why three L2 students dropped the blended language learning classes which combined face-to-face classroom instruction and computer-assisted language learning. Stracke found that the reasons for dropping out were related to lack of support and connection between face-to-face instruction and CALL components, lack of print materials, and rejection of the computer medium. These studies indicate that the use of CALL does not necessarily result in student satisfaction. It is carefully-planned, well-organized CALL courses or programs with teacher guidance, material use and appropriate integration between classroom lectures and computer-assisted learning that ensure the success of this type of instruction (Neumeier, 2005; Stracke, 2007).

To conclude, investigations of learners' perceptions of CALL applications in L2/FL classes demonstrate conflicting findings. More empirical studies dealing with learner perspectives of CALL and the influence of such perspectives on achievement are clearly needed. Due to the increasing advances in computer technology, learners' perceptions of or attitudes toward educational technology use for L2/FL instruction may vary over time. Therefore, there is a need to continue exploring learners' reactions to the use of various computer technologies in language learning.

3. The study

3.1. The aim of the research

The present study attempts to contribute to the body of the research literature by examining learners' attitudes regarding learning with computer-assisted technology. More specifically, this study aims to determine Taiwanese college students' perceptions of a particular CALL component of one regular language class in which interactive web-based exercises were created and used as class assignments through two online language assessments and one computerized survey.

The following research question directed the study: "What are Taiwanese EFL college students' perceptions of the use of the interactive web-based exercises?" By listening to the voices of learners, language teachers can reflect on their instructional methods and creation of CALL materials, then refine their teaching practices to meet the needs and interests of learners.

3.2. Participants

The research participants were 52 undergraduate Taiwanese students learning English as a foreign language at a technological college in northern Taiwan. They were non-English majors enrolled in the course entitled *Business English* and aged 19 to 20. Their entry ability of English proficiency varied from elementary to pre-intermediate according to their score results on a TOEIC (Test of English for International Communication) simulation test administered at the beginning of the semester. Table 1 displays the means and standard deviations of the scores on the listening and reading sections of the TOEIC simulation test.

Table 1. Descriptive statistics on language proficiency test scores.

Listening section		Reading section	
M	SD	M	SD
173.65	21.943	150.87	18.910

Note: Scores on each of the two sections range from 5 to 495 points.

3.3. Design and procedure

The course discussed in the present study was offered once a week for two 50-min sessions throughout one semester. The course entitled *Business English* was an elective course for second-year college students and was designed to develop specific language skills in listening, speaking, reading and writing Business English. This course blended face-to-face classroom instruction with weekly online assignments. Individual students were required to attend two instructional sessions and complete one set of online assignments per week for a total of 16 weeks (excluding the weeks for the mid-term and final exams). Instructional components included main readings, audio-visual activities, pair/group discussions, and writing practice. Technical difficulties and time constraints resulted in the creation of online assignments focused on one area only, reading. Each online assignment was comprised of ten reading texts followed by multiple-choice comprehension questions and vocabulary questions in the form of interactive web-based exercises.

At the mid-term and end of the semester, two different computer-based language assessments were administered to the participants in order to assess their computer-assisted EFL learning. In addition, a computerized survey followed the final language assessment. It was designed to elicit participants' views on the interactive web-based exercises that were created for and implemented during the course.

3.4. Materials and instruments

To create interactive exercises, the Hot Potatoes suite, the web-based exercise application produced by Half-Baked Software, was employed. In the present study, a total of 355 online reading texts along with appended multiple-choice comprehension and vocabulary questions were created specifically for the particular course to serve as course assignments (see Figures 1 and 2). The online reading texts centered exclusively on Business English and involved such themes as interviewing, job offers,

rescheduling a meeting, making a reservation, making a speech, taking a business trip, airport announcements, product defects, and staff meetings. Due to easy access, interactive feedback, multiple attempts and no time limit for exercise competition, these interactive web-based exercises were supposed to create a more learner-centered condition for language learning in which students were able to learn at their own pace, gain extensive practice, learn from errors, but also enhance learning efficiency. Above all, the exercises were to increase language exposure and extend language learning outside the classroom.

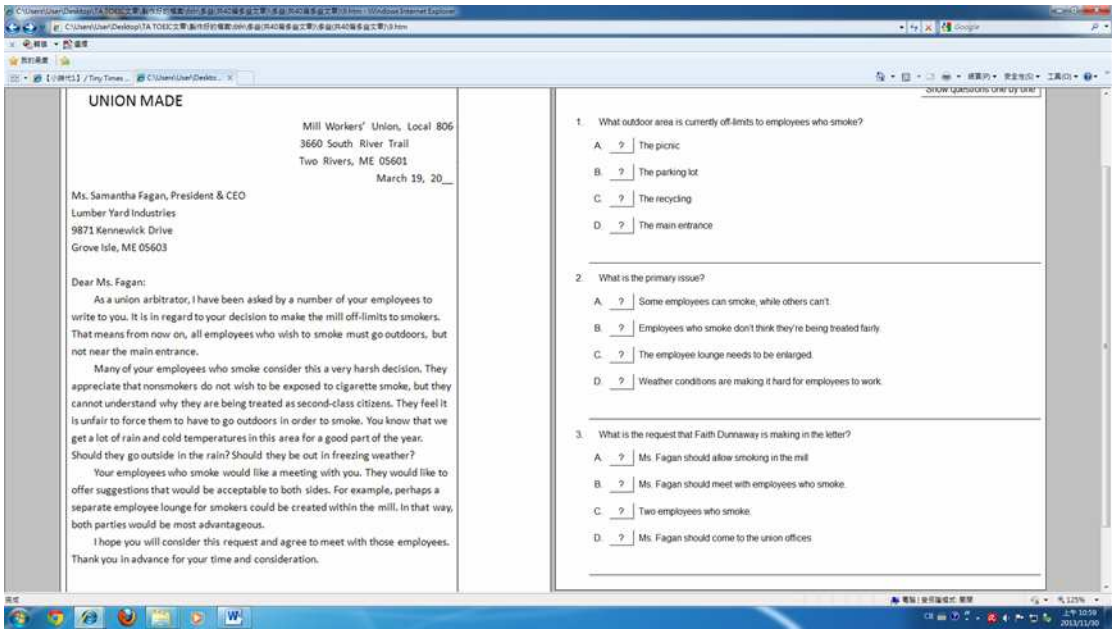

Figure 1. An interactive web-based exercise.

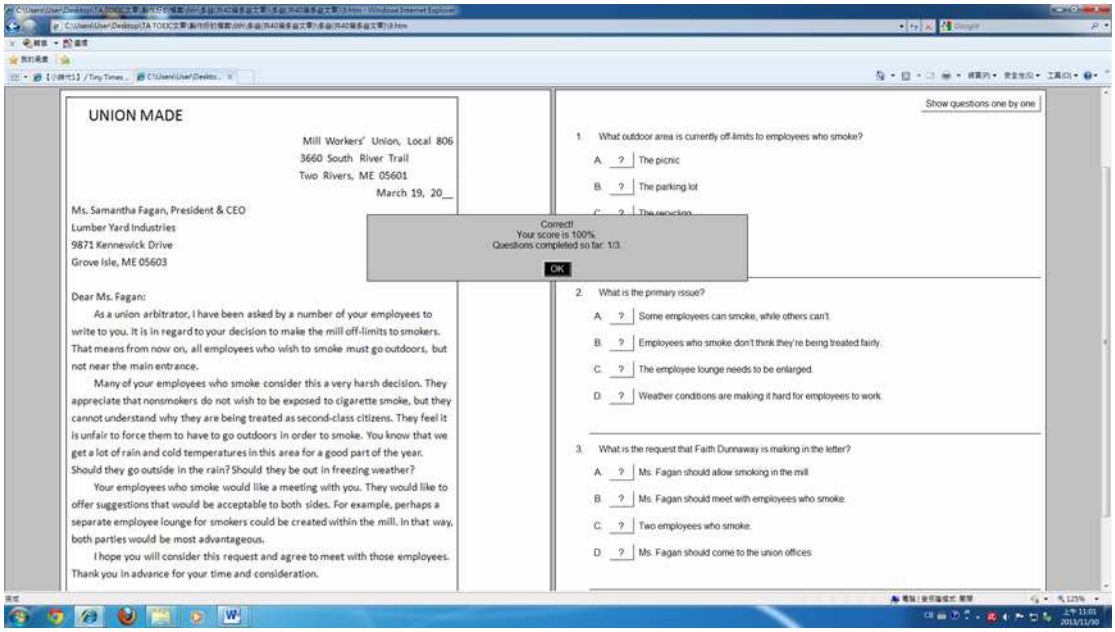

Figure 2. An interactive web-based exercise with immediate feedback

The mid-term and final exams served as the language assessment tests to measure participants' learning through classroom instruction along with weekly online assignments. Each of the two language assessments was computer-based in the form of interactive web-based exercises containing five English texts, each of which was followed by 5 reading comprehension questions and 5 vocabulary questions for a total of 50 questions. Every comprehension and vocabulary question was of the multiple choice format with four options. The reading comprehension questions involved main idea questions and specific detail questions regarding the information given in the text. The vocabulary test was a meaning recognition test that required learners to identify the meaning of the particular words appearing in the text.

A computerized survey with 6 retrospective questions on a scale of 1 to 5 focusing on student reported perceptions of the interactive web-based exercises was constructed to have participants rate the extent of their satisfaction with each of the question items specific to the overall design and learning effectiveness of the interactive web-based exercises. The reliability of the survey on student perceptions was (Cronbach's Alpha) 0.88, and the professional content validity was established by one TESOL lecturer who had previous experience teaching English through the use of computers and who reviewed the question items to indicate their appropriateness.

3.5. Results and findings

With regard to the language assessment tests, each correct answer to either comprehension questions or vocabulary questions in one assessment was awarded two points and scored respectively with the highest possible comprehension score or vocabulary score being 50. The comprehensive score for one language assessment was 100 grade points. Also, the Paired-Samples T-Test was conducted to test for statistically significant differences between the mean scores in the two language assessments. As for the learner perception survey regarding the interactive web-based exercises, a descriptive analysis was adopted using means.

3.5.1. Results of the language assessments

Table 2 illustrates the score results of the two language assessment tests. Reading comprehension mean scores increased from the mid-term language assessment (M = 23.88, SD = 6.166) to final assessment (M = 31.69, SD = 4.759). Table 2 also shows that the difference in comprehension mean scores between the mid-term test and final test compared using the Paired-Samples T-Test was statistically significant at the .001 level, demonstrating a significant level of progress on the reading performance of the target learners who had experienced language learning with the use of the interactive web-based exercises over one semester.

Table 2. Results of the language assessments

Test	n	Reading comprehension				Vocabulary			
		Mean	**SD**	**t**	**p**	**Mean**	**SD**	**t**	**p**
Mid-term language assessment	52	23.88	6.166	-13.922	.000**	21.08	5.156	-22.192	.000**
Final language assessment	52	31.69	4.759			28.69	4.496		

Notes: 1. The potential maximum total score on either the comprehension section or vocabulary section was 50 points with a comprehensive score of 100 grade points for one language assessment.
2. *p < .01 **p < .001

In terms of vocabulary learning, as shown in Table 2, participants improved their overall vocabulary knowledge with an increase of 7.61 points in mean score

obtained in the final language assessment test. Also, the significant gain (t = -22.192, p <.001) was achieved by the participants with a mean value 21.08 and standard deviation 5.156 in the mid-term test and 28.69 (SD = 4.496) in the final test, suggesting that computer-assisted EFL learning with the interactive web-based exercises had a positive effect on the vocabulary performance of the target learners.

3.5.2. Results of the survey on learner perceptions

With regard to learner perceptions of the interactive web-based exercises, Table 3 summarizes the results of the questionnaire survey. In terms of the exercise design, question 1 required participants to rate the extent of their interest in using the interactive web-based exercises on a scale of 1 to 5 with 5 defined as the highest degree of interest. The results showed that participants' interest in the exercises had a mean of 3.5, indicating that learners' overall enjoyment in carrying out the web-based, self-paced interactive exercises was modest.

Moreover, the mean result of 4.6 on the challenge level of the web exercises indicated that learners generally perceived the exercises to be quite challenging. Exercises required careful reading and full textual understanding. This difficulty level could account for the result obtained for question 1 where participants indicated the exercises were moderately interesting.

As for participants' perceived benefits of the interactive web-based exercises, the results revealed that the exercise features of easy access, interactive feedback, multiple attempts, and no time limit for exercise competition had a mean of 4.0, 4.8, 4.8, and 4.2 respectively, demonstrating participants' high satisfaction with each of these features embedded in the interactive web-based exercises. The features of receiving interactive feedback and having multiple attempts were perceived by learners to have substantially high value, and the feature of self-paced learning without time limit was rated second highest.

When asked what they thought about the limitations of the interactive web-based exercises, lack of various exercise formats (mean = 4.2) and insufficient visual aids (mean = 3.1) were reported by participants. Such results might also partly account for the finding that participants found the interactive web-based exercises to be moderately interesting.

In response to questions about the effectiveness of the interactive web-based exercises, participants were to rate the usefulness of the exercises for improving text comprehension. The results showed that they deemed the constructed exercises highly effective in improving their reading comprehension with a mean of 4.5. Also, learners' positive reactions to question six demonstrated the perceived value of the interactive web-based exercises in fostering vocabulary learning (mean = 4.3). The results of an analysis of the survey data regarding the learning effectiveness of the created exercises confirmed the findings derived from the quantitative measures of the two language assessments: The interactive web-based exercises contributed to improvement in participants' English reading comprehension and vocabulary knowledge.

Table 3. Results of the survey

Perceptions of the design of the interactive web-based exercises	Mean
1. How interesting are the interactive web-based exercises? (1= very boring, 5= very interesting)	3.5
2. How challenging are the interactive web-based exercises? (1= very easy, 5= very challenging)	4.6
3. What do you think about the benefits of the interactive web-based exercises? (1= strongly disagree, 5= strongly agree)	
1. Easy access	4.0
2. Interactive feedback	4.8
3. Multiple attempts	4.8
4. No time limit for exercise completion	4.2
5. Other _____	
4. What do you think about the limitations of the interactive web-based exercises? (1= strongly disagree, 5= strongly agree)	
1. Lack of variety of exercise formats	4.2
2. Insufficient visual aids	3.1
3. Other _____	
Perceptions of the effectiveness of the interactive web-based exercises	
5. What is the effectiveness of the interactive web-based exercises on your reading comprehension? (1= not helpful at all, 5= very helpful)	4.5
6. What is the effectiveness of the interactive web-based exercises on your vocabulary learning? (1= not helpful at all, 5= very helpful)	4.3

3.6. Discussion

This study examined the effect of interactive web-based exercises on learner perceptions of a particular CALL application. The results of the survey revealed that participants perceived the interactive web-based exercises to be interesting but at only a modest rate. Some students may not have enjoyed working with the exercises because of the difficulty level of the created exercises and a lack of diverse exercise formats, as indicated by the study participants. These findings should be considered by material developers and language instructors when creating CALL materials in second/foreign language classes. Despite the limitations, such aspects as easy access, instant feedback, multiple attempts, and self-paced learning were considered to be the advantages of the constructed exercises with high value. These findings are in line with the beneficial features of technology-mediated learning highlighted by researchers (Felix, 2003; Singh, 2003).

In addition, most participants acknowledged the educational value of exposure to the interactive web-based exercises on their reading comprehension and vocabulary. Significant improvements in both reading comprehension and vocabulary were noted between the mid-term and end of the semester. The benefits of learning with technology on L2/FL have been documented in a number of studies (e.g., Akbulut, 2007; Chun & Plass, 1996; Gettys, Imhof & Kautz, 2001; Huang & Liou, 2007; Murphy, 2007; Nagata, 1999; Torlakovic & Deugo, 2004; Wang, 2014; Wang, Tsao & Chen, 2013; Wang & Wang, 2010). The present study adds to the existing research in that it demonstrates positive results for learner perceptions AND language learning after exposure to the interactive web-based exercises.

Participants achieved better scores on the final language assessment, demonstrating their improved reading comprehension and vocabulary knowledge and responded positively when questioned about the design and effectiveness of the constructed interactive web-based exercises. These findings are in line with those of previous studies reporting a positive impact of web tasks/exercises on L2/FL learning (e.g., Felix, 2001; Lee, 2005; Lunde, 1990; Ushida, 2005; Wang, 2014; Wang et al., 2013; Wang & Wang, 2010; Zapata & Sagarra, 2007). Furthermore, it can be postulated that learners' overall positive perceived views about the created exercises along with significantly improved learning performance may result in more involvement with and use of the interactive web-based exercises. Continued use of reading texts and appended comprehension and vocabulary questions that provide

easy access, immediate feedback, and multiple attempts without time limit would in turn lead to more learning gains.

4. Conclusions

The research study explored learner perceptions of exposure to the created interactive web-based exercises involved in one language course with traditional and computer-assisted blended instruction. The 52 college students attended instructional classroom sessions and did weekly online assignments in the form of interactive web-based exercises over one semester. Their learning performance was measured by means of two computer-based language assessment tests at the mid-term and end of the semester. Their perceptions of the use of the interactive web-based exercises were elicited by a computerized questionnaire survey conducted at the end of the semester. The language assessment results showed significant gains in reading comprehension and vocabulary learning. In addition, the results drawn from the survey of student perceptions indicated that the interactive web-based tasks were appealing for most learners in terms of design and effectiveness of the created exercises. However, students generally thought that the exercises were quite challenging, and lack of variety of exercise formats and visual aids were mentioned as features which limited the efficacy of the constructed exercises. Accordingly, online learning activities created in the future should incorporate various formats accompanied by images and ought to match the level of students' language proficiency.

To conclude, the findings of the study inform our understanding of learner perceptions about web-based exercises for foreign language learning and provide suggestions for language teachers, developers of pedagogical materials, and designers of educational software. Moreover, the study findings demonstrating learning gains and learner satisfaction also suggest language teachers should consider integrating CALL components into regular face-to-face classroom instruction to advance and motivate student learning.

Some cautions related to the generalizability of the findings remain. The present study used a questionnaire survey to acquire the data, and responses were restricted by the closed-ended, fixed answer choices. Also, the data sampling was limited to the students in one Taiwanese technological college. Some of the study findings, therefore, may not be generalized to other Computer-Assisted Language Learning courses or programs, and they may not be generalizable to different groups of

language learners, either. Future research could apply multiple data collection methods combining questionnaires with more open-ended interviews and/or observations and include language learners in a variety of instructional settings, in order to produce deeper, more valid and comprehensive results. In addition, as mentioned earlier, more empirical studies are needed to better understand learners' perceptions of various CALL applications and the connection between perceptions and learning. Findings from such studies will provide insights for teachers into how to improve instruction mediated by technology.

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