



## **Web-Based CALL to Listening Comprehension**

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### **Abstract**

This paper reports on a study which investigated the effectiveness of Web-based computer assisted language learning (CALL) on tertiary students' listening comprehension. Both students' academic performance and attitudes were examined at the end of the Web-based CALL. While t-tests were used to analyze the results of students' academic performance, descriptive statistics interpreted students' attitudes toward this learning. Although there was no significant difference between the students employing the Web-based CALL and the students using the traditional method, the students responded to the Web-based CALL positively, and the lower-level students, compared to their higher-level peers, were more motivated to practice listening comprehension under the Web-based CALL environment. This paper ends with discussions of potential issues that need to be taken into account and recommendations for future implementation and studies.

*Keywords:* listening, CALL, web-based

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**Current Issues in Education**

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### Web-Based CALL to Listening Comprehension

Traditional tertiary English education in China placed an emphasis on reading. The ultimate goal was to cultivate students' abilities in reading and translating materials written in English. Most college teachers implemented the grammar translation teaching method in the classroom to meet the expectations of National College English Teaching Syllabus. As China strengthens its economic development and accelerates its steps into the world, the function of English education is shifting from linguistic competence to communicative competence. More employers, especially those in joint-venture businesses, consider communicative competence in English as a crucial factor in hiring (Huang & Xu, 1999). The national syllabus for tertiary English teaching was under serious criticism for not preparing college students with an adequate level of communicative competence to meet the actual needs. The Ministry of Education, thus, undertook the revision of the old syllabus. The revised syllabus emphasizing communicative competence also stipulated the national standardized College English Tests (CET) as a means to evaluate college students' English levels. College students are required to pass CET level 4 (CET4) before graduation.

Despite many years of effort, most college English learners in China are still not able to use the language to communicate. According to Zhao's (2004) analysis, insufficient input, lack of practice, ineffective feedback, and lack of motivation are four major challenges faced by English learners in China. However, traditional face-to-face, teacher-led instruction fails to respond to these challenges. Faced with the disappointing outcomes, China has launched a reform of the traditional mode in English education at all levels. One of its major efforts in the reform is to maximize modern technology in English education because it is believed that the advancement of information and communication technology should make it possible to devise a

language environment that delivers high-quality language education (Zhao, 2004). The technology-integrated approach is also expected to remove two major teaching barriers, poor resources and lack of teaching professionals, in teaching college English listening and speaking.

Theoretically, Web-based CALL seems a suitable environment for tertiary students in China to improve listening skills; its effect, however, remains unclear. In spite that many studies have reported positive effects of Web-based CALL on language learning, successful models from one context may not produce a desirable result in another context. Thus, this study was designed to investigate effects of Web-based CALL on language learning with a focus on English listening to understand how Web-based CALL facilitates tertiary students' listening comprehension in the context of China and what the students' attitudes are toward this learning. The results of this study should also provide more insight into the nature of Web-based CALL to language learning.

## **Theoretical Background**

### **Web-based CALL**

Computers have been used in language learning since 1960s. Since its first introduction, computer-assisted language learning or simply CALL has involved through three major phrases: Structural CALL (1970's-1980's), Communicative CALL (1980's-1990's) and Integrative CALL (21<sup>st</sup> century). Each phrase corresponds to the main language acquisition theories and advancement of computer technology. The present phrase of CALL, Integrative CALL, has been made possible by the development of powerful PCs that support rapid use of the Internet, LANs, multimedia, and linked resources known as hypermedia (Lee, 2007). A significant feature of integrative CALL is a shift from language-learning software and CD-ROMs to Web-based activities that allow learners flexible, self-paced access to information (Fotos & Browne, 2004).

The powerful Web offers a range of new opportunities for learners to develop their language proficiency. The use of multimedia, such as sound, pictures, and video, in addition to text, facilitates language learning (Al-Seghayer, 2005). Not only does the Web make it possible for easy access to an assortment of language experience, but it also allows repeated practice with a variety of authentic materials that can supplement and transcend what students receive in class or in their local communities (Hubbard, Kessler, & Madden, 2004). The Web-based practice tools also create different learning and assessment contexts, and produce flexible approaches to instruction and evaluation (Lee, 2007). Such flexible approaches allow learners to receive timely feedback for their improvement and adjustment.

Moreover, Web-based CALL can be a great means for achieving independent learning and better learning results in the long run because through computer technology learners can 1) access huge amounts of relevant information, 2) explore and browse through different choices, 3) expose themselves both to linguistic input and socio-cultural knowledge, and 4) eventually make their own evaluations and suggestions regarding what works for them, what can be improved and how (Sheerin, 1997; Sturdrige, 1997). This, in turn, increases learners' engagement, willingness, motivation as well as autonomy (Rowell & Libben, 1994).

Due to its wide use, effects of CALL and Web technology on second and foreign language education have been concerned and studied. Numerous researchers and practitioners (e.g., Warschauer & Healey, 1998; Watts & Lloyd, 2001; Chang & Lehman, 2002; Cobb, 2002; Bang & Cantos, 2004; Murray & McPherson, 2004; Breen, 2005; Son, 2007) have asserted that the integration of CALL and Web technology is beneficial in the area of second and foreign language acquisition.

### **Technology and Listening Comprehension**

Listening has long been labeled as the major and fundamental skill in language acquisition. Not only is it a key language and communication skill in its own right, but it also provides a channel through which new language can be received and become intake (Brett, 1997). The features that computer and Web technology possess, in terms of their flexibility and variety of content, approach and media, provide a solid basis and platform for acquiring English listening because the integration of Web-based CALL enables students' learning of listening not to be restricted by time, space, content, and environment; large number of students can have access to the Web-based listening learning opportunities. It allows students to practice listening in a simulated and concrete learning environment. Also, Web-based CALL promotes learning interests as the Web allows students to search for the relevant information instead of being restricted in a pre-designed course model (Wijekumar, 2005).

A number of research studies have proved that with the utilization of computer and Web technology, listening comprehension can be taught much more efficiently and effectively. For example, a research study conducted by Brett (1997) to investigate the effectiveness of computer-based multimedia applications for developing listening skills shows that multimedia enhance listening comprehension greatly. In a similar study, Klassen and Milton (1999) demonstrate that CALL can be an efficient medium whereby learners can improve their listening skills significantly. Smidt and Hegelheimer (2004), in a study of examining how Web-based video assists listening comprehension, conclude that online academic lectures supported by multimedia increase listening comprehension. Corresponding to Smidt and Hegelheimer's findings, Zhou and Yang (2004), in their study of the effects of visual aid on EFL listening comprehension, support the use of multimedia in enhancing listening comprehension. They also point out that viewing-assisted functions are especially helpful to learners with low-level English

competence. Wong (2006), in her study of evaluating a Web-based listening program for Chinese University non-English majors, indicates that the Web-based instruction, when integrated appropriately, can add a valuable dimension to face-to-face teaching. She further points out that the Web-based listening program is suitable for self-access, which fully incorporates significant factors (e.g., learner differences and modified interaction) in second language acquisition into its task design.

### **Learner Attitudes**

Learner attitudes toward CALL play a crucial role influencing effectiveness of CALL to language acquisition. Smith (2000), in a study examining students' response to CALL as a language learning approach, concludes that students' positive response to CALL helps them benefit more from technology in language learning. Aacken (1999) as well as Lasagabaster and Sierra (2003), in their studies, report a positive relationship between student attitudes to CALL and effective language learning. Likewise, many other studies (see Klassen & Milton, 1999; Ayres, 2002; Greenfield, 2003) also confirm the relationship between students' reaction to CALL and language learning results.

Even though most studies prove that students have a general positive attitude toward CALL, a few studies question the effectiveness of CALL integration into language learning due to negative learner attitudes toward CALL. As Bloom (1985) indicates, students' resistance to the use of CALL into language learning is related to their anxiety or computer phobia. Susses (1998) also points out that students, especially those of lower proficiency, may not have developed the navigational skills needed to find what they want or the skills for how to exploit the material. Thus, they may feel CALL is an "unwanted" change. Because engaging in CALL

requires time and commitment particularly during the transitional stage, some learners may not accept it.

As learners potentially contribute to the development of the language tools, a number of researchers (e.g., Hulstijn, 2000; Lynch, 2000; Lasagabaster & Sierra, 2003) recommend taking students' opinions into consideration when evaluating CALL in language learning. Thus, this study also aims to identify the relationship between learner attitudes toward Web-based CALL when examining the effectiveness of Web-based CALL on students' listening comprehension.

### **Methods**

All the first year non-English majors (N = 556) from School of Humanities and School of Education, who were taking College English as required courses at Guangzhou University in 2005, were asked to participate in this study. They were randomly assigned to two groups. The experimental group contained 296 students and the control group consisted of 260 students. To ensure that the two groups had the same level of listening competence, both groups took the traditional English classes in the first term (about 4.5 months) in which the students learned the text first (e.g., main point, vocabulary, and structure of sentences) and listened to the text read by a native speaker of English on a tape recorder. In the end of the term, listening scores in the University's standardized English test from both groups were analyzed by using SPSS, and the results are as follows.

According to Table 1, both the means (10.68 vs. 10.88) and standard deviations (2.46 vs. 2.51) of the two groups are very close. From the two-tailed t-test, the *P*-value (0.35) is greater than 0.01, which indicates no significant difference between the two groups in their first-term final English test scores in listening. In other words, the listening levels between the two groups before the experiment appeared to be the same.

Table 1: Comparison of all students' first-term final English test scores in listening between the experimental group and the control group

<b>First Term</b> (before the experiment)	Group	N	Mean	Std. Deviation	t	P-value	df
	Control	260	10.68	2.46	0.93	0.35	554
	Experimental	296	10.88	2.51			

$P > 0.01$ , t-test not significant (two-tailed)

Students with lower listening abilities were also compared. These students were identified based on their first-term final English test scores in listening. The bottom 30% of the students whose scores in the listening test were below average was drawn. We compared the listening score differences between the students in the experimental group and those in the control group; Table 2 shows the results. The means (7.89 vs. 8.13) and standard deviations (1.29 vs. 1.53) of the two groups are close to each other; and the *P*-value (0.26) from the two-tailed t-test is greater than 0.01 and thus is not statistically significant. All of these indicate that the listening abilities in the two groups had no difference before the experiment.

Table 2: Comparison of lower-level students' first-term final English test scores in listening between the experimental group and the control group

<b>First Term</b> (before the experiment)	Group	N	Mean	Std. Deviation	t	P-value	df
	Control	79	7.89	1.29	1.12	0.26	168
	Experimental	91	8.13	1.53			

$P > 0.01$ , t-test not significant (two-tailed)

Our study started at the second term, which, like the first term, took another 4.5 months. In this term, students in the control group continued the traditional classes. As to the experimental group, listening was not taught in class, but the students were required to use a Web-based computer-assisted listening system to practice their listening comprehension during

the term. While students were free to arrange their time, the Web connection was a must; otherwise, they could not log into the system. Information including the frequency of log-ins, numbers of students on line, the study time each student spent on the Web-based CALL, number of activities each student completed, and students' test scores was recorded and transmitted to the server. Teacher interventions were provided whenever necessary.

After the second term, both groups took the University's standardized English test. Their performance in listening was compared by using the t-tests. The experimental group was also asked to complete a questionnaire which surveyed their approval of the Web-based CALL to listening comprehension. The results were analyzed by using descriptive statistics. In order to facilitate our investigation, we formulated the following research questions:

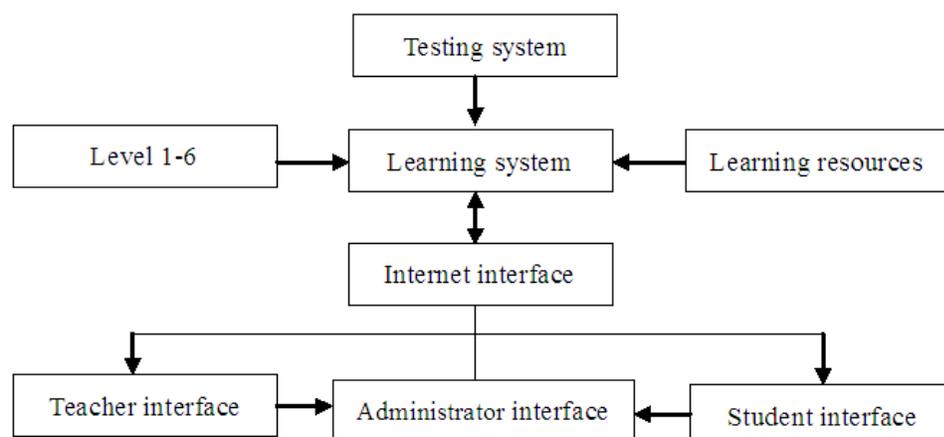
- 1) Does the experimental group perform better than the control group?
- 2) Do the lower-level students in the experimental group outperform those in the control group?
- 3) How do students respond to the Web-based CALL?

We adopted a learning system, The New Era Interactive English, developed by Tsinghua University Press and approved by the Ministry of Education. This system, designed to reflect the challenges of English learning for non-English majors in China, contains four main components that are closely integrated with each other. The online learning material, through authentic videos, flexible control mechanisms, advanced speech recognition technology and automatic feedback mechanisms, provides students with individualized and flexible access to authentic language and cultural materials and practice opportunities with instant feedback. The audio CDs offer students extended access to authentic language and cultural materials. The companion book provides students with the opportunity to study language and cultural materials in more depth.

The learning system also includes links to a variety of media-based materials, e.g., English movies, sound files, etc., to provide students extensive access (Zhao, 2004). The actual learning material was installed on a local computer but had to be accessed through the Web so that the students' learning process and performance could be transmitted to the server. The administrator assigned a login name and password to every student, so he/she could log into the learning platform. The learning material, with about 13 theme-specific units in each level, fairly matched the students' linguistic competence by categorizing listening into six levels. Within a unit, the students could do the study and practice as many times as they wanted as long as they did not submit their study report and go to the next unit. In the end of each unit, there was a test to assess students' learning. If a student failed to reach a score of 70 out of 100, he/she had to repeat the same unit. After three units, a review test followed. When the students finished all units at a level, there was a final test to assess their overall learning.

We used the following ways for the teachers and students to interact with each other. While the students worked on the listening course on their own, the teacher, via the Web, could learn of each student's learning progress and performance and communicate with the student (see Figure 1). The teacher could also schedule classroom meetings to provide academic reporting and, if desired, guidance to the students to help them make the best use of their time.

Figure 1: Main components of the Web-based CALL



## Results

Question 1: Does the experimental group perform better than the control group?

The students' academic performance results after employing the Web-based CALL are shown in Table 3. The experimental group has a lower standard deviation (1.86) than the control group (2.44). This indicates the experimental group has a more homogeneous dispersion of the scores than the control group. That is to say most of the students' scores in the experimental group, while not identical, are more similar. In contrast, a wider dispersion or greater heterogeneity in the listening ability exists in the control group. Although this is a pleasing finding, the *P*-value (0.15) from the t-test is greater than 0.01 and is not significant. This means the experimental group did not perform better than the control group.

Table 3: Comparison of all students' second-term final English test scores in listening between the experimental group and the control group

<b>Second Term</b> (after the experiment)	Group	N	Mean	Std. Deviation	t	P-value	df
	Control	257	13.96	2.44	1.45	0.15	548
	Experimental	293	14.22	1.86			

$P > 0.01$ , t-test not significant (one-tailed)

Question 2: Do the lower-level students in the experimental group outperform those in the control group?

The results of the comparison of the students with lower English competence are shown in Table 4. The t-test ( $P$ -value  $0.06 > 0.01$ ) is not statistically significant, meaning the experimental group did not demonstrate higher listening comprehension than the control group after the Web-based CALL.

Table 4: Comparison of lower-level students' second-term final English test scores in listening between the experimental group and the control group

<b>Second Term</b> (after the experiment)	Group	N	Mean	Std. Deviation	t	P-value	df
	Control	76	13.16	2.95	1.88	0.06	165
	Experimental	91	13.87	1.87			

$P > 0.01$ , t-test not significant (one-tailed)

Question 3: How do students respond to the Web-based CALL?

According to the survey results, 83% of the students were in favor of the Web-based CALL; 79% of the students indicated that compared to the traditional learning, the Web-based CALL made their learning more autonomous; 83% of the students revealed that the Web-based CALL was more interesting than the traditional learning. The students commented on strengths of the Web-based CALL as self-paced learning, flexibility, easy access to information, instant feedback on their performance, and ability to work on their own. However, some students had

concerns of their comfort and confidence levels in utilizing the Web and computers, accessibility of computers and the network, and issues of teacher facilitation and support.

According to the participation information recorded under the server, students in general participated in the Web-based CALL regularly and actively. However, the participation rate started to decline when CET4 was approaching. Participation of the students after their pass of CET4 dropped dramatically; more than half of them did not participate in the rest of the Web-based CALL after they passed CET4. Compared to their higher-level peers, the lower-level students logged into the learning platform more frequently, spent more time on the learning activities, and completed more unit tasks.

### **Discussion and Recommendations**

This study examined the effectiveness of the Web-based CALL on listening comprehension and learner attitudes toward this learning. In contrast to the literature, the study did not show that the Web-based CALL improved listening comprehension. Nevertheless, the students generally responded to the Web-based CALL learning positively.

The results of this study reveals that integration of Web-based CALL is quite context dependent. Although it has been commonly reported that CALL is effective to language learning, a successful model from one context cannot be imported into another context without modifications. Based on this, we recommend further studies investigating factors influencing the implementation of Web-based CALL, e.g., CET4, should be conducted to help understand how to implement the Web-based CALL into the context of China.

Although the lower-level students employing the Web-based CALL did not demonstrate higher listening comprehension than those using the traditional method, our record from the server shows that the lower-level students, compared to their higher-level peers, spent more time

practicing listening and completed more unit activities under the Web-based CALL environment. This is a pleasing finding because in class the lower-level students are usually less motivated to practice listening. When they are less motivated to learn, it is hard to improve their listening skills. This study reveals that if given a proper opportunity, lower-level students can be self-disciplined and motivated to improve their listening skills. Because it generally takes more time to see lower-level students' progress than higher-level students', a longitudinal study is encouraged to understand effects of the Web-based CALL on lower-level students' listening comprehension over longer-term scales.

Overall, the students responded to the Web-based CALL positively. Over 80% of the students were in favor of the Web-based CALL. They viewed the Web as a helpful tool and the CALL as a useful way for acquiring listening. About 80% of the students reported the CALL made their learning more autonomous. The students listed the best features of the Web-based CALL as self-paced learning, flexibility, easy access to information, instant feedback on their performance, and ability to work on their own. As the self-paced learning allows the student to control the pace of their learning process, each student has the same level of participation in the learning process. In addition, the Web-based CALL offers instant feedback on the students' performance and exercise errors so that they are able to understand their weaknesses and make necessary adjustments. While the CALL program can be seen to constitute the first step to promoting the students' autonomy in acquiring listening, the Web further fosters the students' autonomous learning. Via the Web, the students can access their learning at any time and complete their activities at their own pace. The flexibility allows them to set their learning goals, arrange their time, and assess their learning. In this way, the students can monitor their own learning and work on their own. This result, corresponding to many other findings (e.g., Rowsell

& Libben, 1994; Hayati, 2005; Pala, 2005; Wong, 2006), shows that students when using computer technology become motivated and interested in improving their listening comprehension. This, in turn, promotes learner autonomy.

However, about one-fifth of the students disliked their Web-based CALL experience. Some of them were not satisfied with the availability of computers and connectivity of the network. Inaccessibility, poor performance, and slow speed impede the success of the Web-based CALL. For this, we strongly recommend the institution to make necessary arrangements and financial investments in the computer labs (e.g., coordinating with different departments and units to open their computer labs or otherwise establishing more public computer labs for the students) and in upgrading all the remaining hubs with newer, faster network technology. In addition, some students expressed their lack of comfort and confidence in using the Web and computer technology. Such a problem particularly occurred to frustrate the students from remote, less-developed areas. These students had less access to the Web and computer technology and thus lacked necessary computer skills for task completion. This finding emphasizes the importance of taking students' computer skills into consideration before the Web-based CALL is implemented. We recommend the institution assess students' computer skills, offer necessary training and instructions to help students obtain essential computer skills, and provide students with adequate onsite and online technology supports. The other finding also supports that the teacher role as a facilitator is an important variable in the success of the Web-based CALL (Stepp-Greany, 2002).

In this Web-based CALL, like any CALL activity at any level of proficiency, for a variety of cultural or psychological reasons, some students had a more passive learning attitude than the others. Although the learning environment offered ways for the teacher to provide input

to the students during their learning process, some students still felt they needed more physical teacher facilitation and support (e.g., in developing their learning strategies and in navigating the Web). This reflects Jones' (2001) argument when he examines CALL and teachers' responsibilities. According to Jones, the Web is an immensely seductive resource for EFL learners. While it offers genuine opportunities for self-directed learning, the sheer wealth of material places more responsibility on the teacher.

All of these reveal that the teachers' role in the Web-based CALL environment cannot be minimized. Teachers need to be called on to provide assistance in training students in adopting effective independent learning strategies and in the use of the Web for learning. In addition, we recommend teachers add one-on-one conferences with individual students in the early stages of the Web-based CALL and whenever necessary to better understand individual learners' special needs.

### **Conclusion**

The study does not correspond to the recent research that proves the use of Web-based CALL facilitates students' acquisition of English listening. This finding explains that the relationship between Web-based CALL and listening comprehension is complex. Successful models from one context cannot be imported into another context without modifications. Nevertheless, this study shows that lower-level students are more motivated to practice their listening skills under the Web-based CALL environment and learners have positive attitudes to the Web-based CALL. Despite these two pleasing findings, this study also reveals a variety of issues, including accessibility of technology, students' comfort level to technology, the role and responsibilities of teachers, and the institution's support, which may occur to impede the effectiveness of the Web-based CALL.

The findings of the study should serve as a basis for additional research that will examine more closely the effects of Web-based CALL on listening comprehension. Since the results may be context dependent, further studies in different ESL and EFL contexts are encouraged to better understand the influence of computer and Web technology on listening comprehension. We also recommend longitudinal studies investigating effects of Web-based CALL on lower-level students to understand how Web-based CALL really affects lower-level students' listening comprehension over longer-term scales. Since learner engagement serves as an important indicator for how Web-based CALL functions, we encourage additional studies to examine factors affecting learner engagement or motivation under the Web-based CALL environment.



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