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THE EFFECTS OF COMPUTER-ASSISTED LISTENING INSTRUCTION ON VIETNAMESE TEACHERS AND STUDENTS OF ENGLISH

by

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Education

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ABSTRACT

The study probes the effects of a Computer-Assisted Listening Instruction (CALI) intervention on the development of listening and language-related skills of English as a Foreign Language (EFL) students, and on attitudes towards computer use in learning and teaching of both EFL students and teachers in a Vietnamese university. A quasi-experimental research designed was adopted.

The treatment sample of this study consisted of four teachers of listening and their students (in total of 100). The study was conducted in two phases, the baseline and intervention, with the former lasting for three weeks, and the latter sustained over approximately four months. In the baseline, data of students’ listening scores, since their admission to the university, and teachers’ opinions about teaching listening skills and computer use were collected in the form of pre-intervention teacher questionnaires and informal conversations. In the intervention phase, the teachers were invited to a training workshop on computer skills, and received weekly coaching sessions on selecting and using online resources for listening instruction in class. The intervention classes were taught with these supplementary online resources while the comparison classes (the other four classes) were taught in the traditional way (i.e. listening classes were supplemented with extra listening books selected by their teachers). Comparisons in terms of students’ listening performance were made between the two groups.

Data from the baseline and intervention showed that the students in the intervention classes performed better in terms of language-related skills and listening skills than the comparison students. Both the intervention students and their teachers were highly
motivated and had positive attitudes toward computer use in listening classes. Besides that, the students in the intervention classes were observed to have increased their autonomy. In addition, the intervention teachers became more confident in using computers and gained better skills in selecting effective sources from the Internet for listening instruction.

The study suggests that computer use in listening instruction should be given much more consideration so as to increase the listening skills, motivation and learner autonomy of EFL students, as well as to enhance motivation and computer self-efficacy of EFL teachers in Vietnamese tertiary institutions. Implications of the findings for pedagogy, professional development, policy making, and research are discussed.
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I am indebted to the NZAID Scholarship Committee for their financial support for my PhD study, the Faculty of Education Research Grant, and the University of Auckland Research Grant for sponsoring my conference trips (ICT for Language Learning in 2011, Italy and EWC-IGSC in 2014, the United States), in which I presented the findings of my study and received invaluable feedback from colleagues and scholars. I am grateful for this support.

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CHAPTER ONE: INTRODUCTION

In this chapter, an overview of the thesis is presented through five sections. The first section outlines the importance of listening skills and computer use in language learning, the main themes in the study. In the next section, the Vietnamese education system is described, followed by the motivations driving the study and purposes of the study. The chapter further presents the general research questions, which aim at investigating the effects of computer use on English as a Foreign Language (EFL) students and teachers. The final section of the chapter is devoted to a framework of the thesis organisation, which outlines the key issues covered in the six chapters of the study.

1.1. Rationale for the Study

Listening is an essential skill in all verbal communication for social, recreational or academic purposes. In fact, we expect to listen twice as much as we speak, and four times as much as we read, and five times as much as we write (Morley, 2001). Language teachers have recognised that listening is a critical factor in communication: a person spends about 50 percent of his or her life listening (Rubin, 1995), a student’s listening time at school is over 50 percent (Wolvin and Coakley, 1996) and, functioning in a foreign language, students devote over 50 percent of their time to listening (Nunan, 1997). The importance of listening in developing overall language proficiency has been acknowledged by many language researchers (Field, 2008a; Goh, 2005, 2008; Lynch, 1995; Mendelsohn, 1995; Morley, 1995; Rost and Wilson, 2013; Rubin, 1994, 1995; Thompson, 1995; Vandergrift, 1997, 1999, 2007, 2008, 2011; Vandergrift and Goh, 2012). Listening has been considered important in every stage of language learning, ranging from beginning to advanced levels (Rubin, 1995). It is “the primary channel for language input and acquisition” (Peterson, 2001, p. 87) (see also Section 1.1). Listening enables learners “to receive and interact with language input and facilitates the emergence of other language skills” (Vandergrift and Goh, 2012, p. 4) (see also
Section 3.2.2). Listening, therefore, plays a central role in developing the other three language skills, namely, speaking, reading, and writing:

Of the four major areas of language development, listening is the most basic. Listening is the first language skill that we develop, and it is followed by the other language skills in this order: Listening, Speaking, Reading, Writing.... Thus, our ability to speak, read, write and master complex skills is directly and indirectly dependent upon our ability to listen. (Wolvin and Coakley, 1996, p. 13)

Along with the rising importance of listening skills in language learning (see Section 3.2.2), the computer has been increasingly recognised as a vital medium for developing language skills (e.g. Davies, Ottó, and Rüschoff, 2013; Fotos and Browne, 2004; Hubbard, 2009; Levy, 1997; Stockwell, 2013; Thomas, Reinders, and Warschauer, 2013, Warschauer and Healey, 1998). It is believed that “...with the advent of multimedia computing and the Internet, the role of computers in language instruction has now become an important issue confronting large numbers of language teachers throughout the world” (Warschauer and Healey, 1998, p. 57). The amount of literature in the field of Computer-Assisted Language Learning (CALL) is extensive with thousands of published articles (Hubbard, 2009). Based on their review of 246 articles published between 1990–2000, Liu, Moore, Graham, and Lee (2002) stated that the trend of using computers as a tool assisting language learning is growing dramatically. Similar statements were found in CALL reviews of many researchers in earlier and later periods. Thanks to the application of learning technologies, language learning has become one of the most dynamic areas of education for the last 30 years (Thomas et al., 2013). Possible advantages of multimedia-based language learning tools over traditional tools are: combination of media (i.e. combination of tasks, subtitles, video or audio resources) offering more comprehensible input; availability of a large quantity of content that provides learners with varied learning opportunities; computer power (e.g. access to video materials) offering efficient resources and rapid feedback; degree of learner control offering learners choices in learning experience; low
cost for autonomous learning with reusable, replayable and locationally flexible resources; skills work provision with video and sound, and potential to enhance motivation (Brett, 1995). Stimulation facilitated by the computer through its multiple learning modalities (including auditory, visual, and kinesthetic) offers opportunities for higher learning levels (Machnaik, 2002). Therefore, language teachers are increasingly required to have computer expertise, including practical skills and a deep understanding of information technology theory (Fotos and Browne, 2004).

Computer use is considered to be a potentially powerful medium for developing listening skills. Advances in computer technology enable the delivery of digital, audio and video resources in the same interface as written texts, which enables the provision of listening tasks, language input, and feedback on success. Findings from CALL studies show that computer use by language teachers in listening classes resulted in enhancement of students’ listening performance. In computer-assisted listening instruction (CALI), computers can provide learners with immediate task-specific feedback, enable learners “to be exposed to the same text from different perspectives and with emphasis on different aspects in order to fully comprehend a listening text” (Hoven, 1999, p. 91), and offer learners more choices in frequency of reviewing a text, in the number of tasks designed for the same text, in the text type, and in the level of cognitive difficulty (Hoven, 1999).

Given the importance of listening in language learning, and of computer use in language teaching in general and in listening teaching in particular, ongoing research is needed. There is currently limited empirical research regarding the effectiveness of computers in teaching listening skills in Vietnam. There is, therefore, a need for studies aimed at providing insight into the effectiveness of using computers in teaching listening skills to EFL students in this context.
1.2. The Vietnamese Background

1.2.1. The Education System of Vietnam

The study was conducted at the English Department, Hanoi University in Vietnam. There are two main streams in the education system in Vietnam: the state schools and the private ones. Education is compulsory for twelve years of schooling. In state schools, education is free from primary to high schools. Although the curricula in both state and private school systems are basically the same, each system has its own distinctive features. The structure of education in Vietnam in either state and private education, from primary school to tertiary education, can be seen in Figure 1.1 below.
The main feature of state run schools, colleges, and universities is centralisation. The education policy is issued by the Ministry of Education and Training (MOET), which makes all major
decisions and disseminates policy for teachers to follow. Language education curricula for the state system follow the same guidelines about what is taught, how it is taught, the roles of teachers and students, and intended outcomes (Hoang, 2007; Nguyen, 2012). On the other hand, although private schools, colleges and universities have to follow general educational policies as set by MOET, they tend to have more freedom and flexibility in choosing their own curricula for teaching, which seem to meet the demands of teaching and learning in the country at present much better than the state system (Chu, 2012). Besides, as the salary for teachers depends on their qualifications, knowledge, and teaching experience, the private education system seems to have better teachers and lecturers than the state sector (Nguyen, 2012).

1.2.2. English Language Teaching (ELT) in Vietnam

Up to the mid-1980s, Russian was the most common foreign language taught in Vietnamese schools due to the close relationship between the former Soviet Union and Vietnam. Since the *Doi Moi* (Economic Renovation) policy in 1986, English has been considered by Vietnamese people as a key factor facilitating this economic development policy. The Vietnamese see English as the key to opening doors in science, technology, commerce, and to the better living standard that they crave (Denham, 1992). The Vietnamese government has also emphasised the role of English in the socio-economic development of the country (Nguyen, 2011). Therefore, the demand for English proficiency in jobs, business, and communication has been increasing all over the country (Nguyen and Nguyen, 2007). ELT is gaining higher status, with English becoming a preferred foreign language for teaching in Vietnam (Dang, Nguyen, and Le, 2013; Denham, 1992; Nguyen and Nguyen, 2007). English is a compulsory subject for national final examinations (Nguyen and Nguyen, 2007), and has recently become compulsory in all levels of education (Nguyen, 2011).

Along with the rising popularity of English taught at all educational levels, there was also a shift in ELT from the traditional approach to the Communicative Language Teaching (CLT) approach in the
mid-1980s (Lewis and McCook, 2002; Pham, 2005; Sullivan, 2000). Before the Doi Moi policy in 1986, the popular approach for English teaching in Vietnam was traditional, which means ELT foci were accuracy, knowledge about the language, written (rather than oral) language, memorising, students working hard, exercises, and teacher’s total control. In theory, this shift towards CLT in the Vietnamese context suggests a move towards more effective practice. The foci in teaching English have become fluency instead of accuracy, contextualised use rather than knowledge of language, oral rather than written language, understanding rather than memorising, students being active and engaged instead of working too hard, pairwork and co-operation replacing workbook exercises, and students taking initiative in learning rather than teacher’s full control in class (Hird, 1995). Table 1.1 below describes a comparison between the features of the communicative language approach with traditional language teaching (see also Table 3.1).

<table>
<thead>
<tr>
<th>CLT</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>Accuracy</td>
</tr>
<tr>
<td>Contextualised language use</td>
<td>Knowledge about language</td>
</tr>
<tr>
<td>Oral language</td>
<td>Written language</td>
</tr>
<tr>
<td>Understanding</td>
<td>Memorizing</td>
</tr>
<tr>
<td>Students being active and happy</td>
<td>Student working hard</td>
</tr>
<tr>
<td>Pair work and co-operation</td>
<td>Exercises</td>
</tr>
<tr>
<td>Student initiative</td>
<td>Teacher control</td>
</tr>
</tbody>
</table>

(Lewis and McCook (2002, p. 151)

Despite the changes in terms of English popularity and the CLT approach, the quality of English teaching in general has not been of a high standard at all educational levels (i.e. from primary schools to universities) in Vietnam (Le, 2011; Nguyen, 2012). In fact, at the end of each level (from primary to tertiary levels), only a small percentage of students nationally have good grades in oral and/or written English tests. As English teaching is not systematic or consistent, the beginner’s level is taught again at primary, intermediate, high school, and even at college or university level (Nguyen,
The following factors are considered main causes of low quality English teaching in Vietnam. Firstly, like some other Asian countries, Vietnam lacks qualified teachers of English. A majority of pre-service teachers of English do not have competence in using the target language in the classroom (Dang et al., 2013; Kirkpatrick, 2011; Le, 2011; Le and Do, 2012; Nguyen, 2011). As teachers generally have low English proficiency level, they tend to lack confidence in using English as a medium of instruction (Dang et al., 2013). This would certainly result in low-quality English classes.

Secondly, although CLT is introduced and encouraged everywhere in the country, the method opted for by teachers in class is still grammar-focused, textbook-bound, and teacher-centred (Dang et al., 2013; Le, 2011). This results in a lack of interactive class activities which are necessary for language learning (Hoang, 2008).

The low quality of English teaching in Vietnam can also be attributed to underpaid teachers, paper qualifications syndrome (i.e. qualifications are required even when not needed), lack of reliable resources, and poorly-equipped large classes (Le, 2011; Nguyen, 2011; Nguyen and Nguyen, 2007).

A typical Vietnamese English class would involve the teacher sitting in front, and a large number of students sitting in rows, close together (the size of the class is usually 40 to 50 students). With this kind of classroom set-up, it is impossible for teachers to create either individual work or group work. It is typical that the teacher guides all students as whole class activities (Sullivan, 2000). Also, it is hard for teachers to move around in order to monitor students in large-size classes or to correct students’ errors (Hoang, 2008). Many schools in Vietnam refuse to apply group-based learning because classes are too large, plus time allocation for each subject is very strict (Phuong-Mai, Terlouw, and Pilot, 2005). Another constraint may be the exam-oriented culture of Vietnam (Dang et al., 2013; Le, 2011; Nguyen, 2012). In this culture, the exam formats tend to dictate the teaching practices in the English classroom, which limits English teaching and learning. Teachers tend to teach more vocabulary, grammar, and literacy skills (i.e. reading and writing) as they are tested more than oral skills.
Nevertheless, good quality English teaching in Vietnam can still be found in a small number of high quality English classes in some schools, according to Chu (2012). Chu named a handful of schools and universities, where English is taught as a major, including Hanoi University (where the present study was conducted). In these institutions, constructivist theory is applied in teaching English in a flexible way. Besides following the curricula designated by MOET, which tend to be traditional, both cognitive and socio-cognitive approaches are employed, and teachers of English are encouraged to use any supplementary resources to make their teaching more effective (Luu, 2014). Therefore, the quality of teaching and learning English in these institutions is quite high, meeting the increasing demand for Vietnamese people with a good command of English (Chu, 2012).

According to Nguyen (2010), among the four language skills (namely, listening, speaking, reading, and writing), listening has been given increasing importance in English teaching; aligning with a world-wide tendency, listening has been gaining more attention from Vietnamese professionals in the ELT area. However, achievement data from students’ academic reports at Hanoi University and Vietnam National University, the two most widely recognised language teaching institutions in Vietnam, show that the listening scores of students of English are usually lower than those of the other three skills (i.e. speaking, reading, and writing) (Nguyen, 2010). Also, through informal conversations with teachers and students of English (including participants and non-participants in the study) before and during the project time, the researcher found that Vietnamese students of English complain most about their listening, and consider it the most difficult skill. For these reasons, listening warrants more attention in language instruction and research in Vietnam.

1.2.3. Vietnamese Culture and Computer-Assisted Language Learning

In the early 1990s, computers appeared and started to become increasingly popular in Vietnam. Notably, the number of Vietnamese people using the Internet multiplied exponentially, rising to over 35% of the population (ictnews, 2013). Inexpensive access to computers and ADSL (asymmetric
digital subscriber line; broadband) with high speed is available in most cities through Internet cafés and households (Internet World Stats, 2012). Table 1.2 indicates the exponential growth of Internet use in the country.

Table 1.2: Internet usage in Vietnam

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Users</th>
<th>Population</th>
<th>% Pop.</th>
<th>Usage Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>200,000</td>
<td>78,964,700</td>
<td>0.3 %</td>
<td>ITU</td>
</tr>
<tr>
<td>2005</td>
<td>10,711,000</td>
<td>83,944,402</td>
<td>12.8 %</td>
<td>VNNIC</td>
</tr>
<tr>
<td>2007</td>
<td>16,737,129</td>
<td>85,031,436</td>
<td>19.7 %</td>
<td>VNNIC - July/07</td>
</tr>
<tr>
<td>2008</td>
<td>20,669,285</td>
<td>86,116,559</td>
<td>24.0 %</td>
<td>VNNIC - Nov./08</td>
</tr>
<tr>
<td>2009</td>
<td>22,779,887</td>
<td>88,576,758</td>
<td>25.7 %</td>
<td>VNNIC - Dec./09</td>
</tr>
<tr>
<td>2012</td>
<td>30,802,752</td>
<td>90,549,390</td>
<td>34.0 %</td>
<td>VNNIC - Feb./12</td>
</tr>
</tbody>
</table>

(Internet World Stats, 2012)

As discussed in the previous section, the Vietnamese Government emphasises the important role of ELT, considering it as a key to the country’s economic development. In the past few years, educational and technical reforms, especially those concerning English teaching, have emerged strongly (Johnson and Brine, 2013). Vietnamese leaders believe that computer technology is essential in the ELT process in Vietnam.

However, the fact is that funds for applying computers in language teaching (i.e. purchasing hardware, software, and Internet connection) in Vietnam are not sufficiently or properly allocated (Dang, 2012). Only some large institutions in big cities have favourable conditions for computer-assisted teaching in general. This is partly due to the fact that Vietnam is a developing country, where funding is more urgently needed for other areas of development (Chu, 2012). Also, curricula are determined by educational leaders in the Ministry of Education and Training (MOET) of Vietnam and a majority of Vietnamese educational leaders only focus on fulfilling the goals set by MOET, rather than changing curricula or teaching approaches for better quality teaching and learning. Finally, ongoing CALL teacher professional learning has not been greatly emphasised until recent times in the country (Luu, 2014). Vietnamese teachers lack computer skills as well as
technical support; technical skills of teachers cannot catch up with rapid technological development; many Vietnamese teachers are unmotivated and have negative attitudes towards technology use in language teaching, and there have not been enough CALL teacher training courses organised in Vietnam in the past (Dang, 2012). In addition, rewards and incentive factors (see Section 2.3.1) have rarely been evident in any form from primary to tertiary education levels in the country (Dang, 2011).

Nevertheless, there have been signs of improvement in recent years. It is worth noting that Vietnam hosted two GloCALL (The Globalization and Localization in Computer-Assisted Language Learning) conferences, one in 2007 and the other in 2013, which shows Vietnam’s increasing concern and interest in the CALL area. Also, an agreement was signed in December 2012 between Intel Vietnam and the Ministry of Education and Training (MOET) to promote the use of computer technology in language education in Vietnam. The main goal of the agreement is to instigate the ‘National Foreign Language Project 2020’, which aims at ensuring all high school leavers have a good command of English (Dang et al., 2013). The agreement expects to improve the quality of English language teaching in Vietnam at all levels of education with the support of Information and Communication Technology (ICT). Besides the agreement, after research and appraisal, computer-assisted language teaching projects have been either completed or in process, namely, the Vietnam OpenCourseWare (OCW) project between Vietnamese educators and the Massachussettes Institute of Technology (MIT) (VietnamNet Bridge, 2007), and two other projects supported by the New Zealand Government during 2005 – 2006 and the Japanese Government (still operating). Both involved academics from tertiary institutions in New Zealand and Japan working with Vietnamese academic colleagues and both employed strategies introducing and implementing open source software (OSS) and open educational resources (OER). The main goal of the New Zealand project was to improve the ability of the Vietnamese partner institution in developing and supporting its eLearning initiatives within local English courses. The main goal of the Japanese three-year project is to implement a computer science course named Logic Circuit Design along with language and
concordancing exercises to develop students’ lexical and semantic knowledge of English while acquiring computer science knowledge (Johnson and Brine, 2013). At the present stage, there is also a programme called “Intel Teach Getting Started”, which is to be introduced to primary school teachers of English in the ‘National Foreign Language Project 2020’. A hundred software sets called “Mythware” will also be installed in the towns and teacher training universities involved in the project. Two language laboratories are to be set up at Hanoi Teacher Training University and Ho Chi Minh Teacher Training University. To support other e-learning models, the software named “School Portal” will also be provided. On a smaller scale, the number of workshops, seminars, and projects on CALL teacher professional development in different towns and cities in Vietnam, both at school and tertiary levels has been increasing every year for the last five years (Dang, 2012; Luu, 2014). This form of teacher training is popular because international organisations often fund language institutions to offer programmes to train their teachers to use computers in teaching languages. During typical workshops or training courses, professional technology experts with experience in the field of language education introduce computer skills, ranging from basic skills and using software to more advanced skills such as exploring and exploiting online resources, to support language teaching. Participants also take part in discussions on computer skills and technology-related matters. At the end of the training programmes, participants are awarded certificates (Dang, 2012).

A pervasive and important factor influencing teaching and learning in Vietnam (including the teaching of English) is Confucianism in the Vietnamese culture. Confucianism is also predominant in China and other Asian countries that are influenced by the Chinese culture such as Japan, Korea, Singapore and Taiwan (Phuong-Mai et al., 2006). Confucianism maintains that unequal relationships between people determine society stability (Hofstede, and Hofstede, 2005). Vietnam has a “high power distance”; power distance is defined as “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally” (Hofstede, and Hofstede, 2005, p. 46). In education, this means that, in the classroom,
the teacher is in an honored position, and students just receive, without question, everything taught by the teacher. Like some other Asian countries, in the typical Vietnamese society, there is strong uncertainty avoidance, which is defined as “the extent to which the members of a culture feel threatened by ambiguous or unknown situations” (Hofstede and Hofstede, 2005, p. 167). In the Vietnamese teaching and learning context, this means teachers are expected to be experts who have all correct answers (Hofstede and Hofstede, 2005). Teachers are considered as guru who can satisfy learners in their search for both truth in knowledge and virtues in life. The teacher is the ultimate, one and only source of knowledge in the classroom besides textbooks, and the knowledge stream goes along a one-way street from teachers to students (Phuong-Mai et al., 2005). Vietnamese teachers are, therefore, considered masters of knowledge and respected by students for their knowledge (Phuong-Mai et al., 2005; Phan, 2004). If teachers fail to answer their students’ questions, they will lose face, or be humiliated, in front of the class. Losing face means losing respect, dignity, or prestige, and is compared to serious personal damage, which should be avoided at any price (Hofstede and Hofstede, 2005).

In the light of this cultural belief, a typical Vietnamese teacher may feel reluctant to “lower” himself or herself from a “noble” position to that of a guide or facilitator as might be consistent with teaching a computer-integrated language class where a constructivist learning environment is supported. Also, as students are already used to a certain conventional style, it may be hard for teachers to manage such constructivist activities as pair-work or group-work in the classroom (Phuong-Mai et al., 2005). Consequently, many Vietnamese teachers of English who lack experience and skills with technology tend to choose to teach English without computer technology in their classrooms to avoid humiliating situations. Nevertheless, for this very reason, integrating computers into English language teaching in Vietnam, even in the university that is part of the current study, a professional language training institution, is a challenge but a must for language teaching quality improvement. It is, therefore, important for professional development programmes to introduce and
promote the use of CALL to support pedagogical approaches. In these professional development programmes as well as in their language teaching practice, professional developers should always help teachers to be aware of Vietnamese cultural factors during their teaching practice with computers in different contexts in Vietnam.

It can be concluded from the above discussion that computer hardware, software, and online resources are very important but not the only determining factors in good computer-assisted language instruction. Other important factors include the target language (L1) culture, good instructional design and teaching, and how technology could be used to support language learning and teaching in different contexts.

1.3. Motivations for the Study

The study was initiated by the following motivations:

Firstly, the students of English at the English Department, Hanoi University, where the researcher was working, generally have lower scores for listening skills compared to other language skills, namely, speaking, reading, and writing. This has been the pattern over a number of years (Chu, 2009; an investigation prior to the project by the researcher using the data provided by the administration staff of the department with the Dean’s permission).

Secondly, during informal conversations with many teachers of English at the department, the researcher found that the teachers were dissatisfied with the listening resources suggested in the syllabus. They expressed their concern that the listening materials in use within the department were not varied or motivating enough for the students. In a study by Do (2011), over 90 percent of the teachers in the English Department in her survey believed that the listening resources did not provide students with enough real-life listening practice due to the lack of different native English speaker
accents, or authentic situations, which may have partly contributed to the poor listening performance of the students.

Thirdly, in informal conversations with the researcher, prior to the project, the teachers and students in the English Department at Hanoi also expressed their wish to have more computer use in their listening classes. Although some teachers and students, spontaneously, had been using computers by themselves, alongside the materials suggested in the syllabus, they would like computer-assisted learning and teaching to become officially acknowledged, implemented, and encouraged by educational leaders at departmental and university levels. They believed that online resources would be diverse and stimulating for listening teaching and self-study. This opinion of the teachers and students at English Department seems to accord with the explanations in many previous studies that have shown positive effects of computer use in language teaching and learning more generally.

Fourthly, although there has been much literature on computer use in language teaching internationally (as noted in the previous section), up to the time of the present study, there had been little research conducted in the field of computer use in language teaching and learning in general and in computer adoption in listening teaching and learning in particular, situated in the context of Vietnam. This area could, therefore, profit from greater attention in order to improve the quality of language teaching and extend research in this area in Vietnam.

Finally, from my own experience as a teacher of English in the department for over 20 years, I have realised the importance of computers in teaching language skills, particularly listening skills. Therefore, I have been using the computer for my own teaching for the last ten years, and have gained certain success. My own experience in computer-assisted language teaching motivated me to conduct this project in order to investigate the use of computers in listening in a systematic way and, hopefully, contribute to improving the quality of teaching and learning language skills in Vietnam.
1.4. Research Purposes and Research Questions

The current study was shaped from the following hypotheses. First of all, on the basis of a number of previous studies investigating computer use in language teaching and learning, it seemed that a computer-assisted listening instruction intervention could be developed. Also, based on the fact that a majority of the previous research work showed positive effects of computer use in language learning and teaching in general, and in listening instruction in particular, a well-planned intervention would likely have positive effects on both EFL teachers and students of English at tertiary level in Vietnam.

The main objective of the project is to help EFL teachers improve their teaching of listening skills at tertiary institutions in Vietnam. To realise this objective, computer-assisted activities for teaching academic listening skills were employed supporting the listening syllabus at the English Department of Hanoi University, and an assessment made of the effects on the development of EFL learners’ academic listening skills and language-related skills as well as on the motivation and attitudes of EFL teachers and learners towards computer-assisted language instruction. The study was conducted in two main phases: baseline study and main study. The results of the baseline study were used to compare with the findings of the main study, which aimed at investigating the effects of the use of computer-assisted listening instruction in the context of EFL teaching at a tertiary level in Vietnam on the following:

- listening performance of EFL students.
- language-related skills of EFL students.
- the attitudes of EFL students toward computer-assisted listening instruction.
- the attitudes of EFL teachers toward computer-assisted listening instruction.

Based on the objectives mentioned above, this research aims to address the following questions:
1. What were the effects of computer-assisted listening instruction on the academic listening skills and language-related skills of EFL students?

2. In what way did computer-assisted listening instruction affect the attitudes towards computer use in listening instruction of EFL students?

3. In what way did computer-assisted listening instruction affect the attitudes towards computer use in listening instruction of EFL teachers?

1.5. Organisation of the Thesis

The current chapter serves as the introduction, presenting the rationale for and overview of the thesis.

Chapter Two is devoted to a literature review of Computer-Assisted Language Learning (CALL). Starting with the definition of CALL, it then provides an overview of CALL development from the 1960s to 2014, and discusses CALL phases and approaches defined by different researchers. The chapter ends with factors affecting the use of computers in language teaching and learning.

Chapter Three starts with the description of constructivism as a theoretical framework of the study, followed by the review of literature concerning listening skills in language learning. Detailed descriptions of multimedia in listening skills and previous studies on computer-assisted listening instruction are presented. This chapter ends with a discussion on selecting CALL materials for listening skills.

Chapter Four describes the research methodology of the study. The first section of the study is assigned to the background of Hanoi University, the English Department, and the teaching situation in the English Department. The second section of the chapter serves as an empirical foundation to the methods used in the current study. The section reviews methods applied in previous CALL research (from 1990 to 2014). In the third section, an overview of the research design, and
description of the participants, research teams, procedures, instruments, and data analysis methods are presented.

Chapter Five reports the results of the computer-assisted listening instruction (CALI) intervention on EFL students and teachers. Specifically, the listening test results of the two groups, the treatment group and the comparison group, are compared with the use of the MANOVA test. In case of significant differences, post hoc tests are applied. In this chapter, the effects of computer use on the motivation and attitudes of EFL students and teachers, on learner autonomy, on teachers’ computer self-efficacy, and on collaboration among participants (i.e. student-student and teacher-student) are presented.

Chapter Six summarises the general findings of the study. Results are discussed, followed by some implications for language teachers, language teacher professional developers, policy makers, and researchers. Limitations and contributions of the study are described, and recommendations for future research are made in the final part of the chapter.
CHAPTER TWO:

COMPUTER-ASSISTED LANGUAGE LEARNING

The computer is an essential feature of modern life. Computer applications in such areas as shopping, banking, word-processing, traffic control, design, communication, and education are a part of our everyday existence. The term Computer-Assisted Language Learning (CALL) is used to refer to the application of computers in language learning and teaching. In an attempt to understand the CALL applications better, this chapter is devoted to an overview of CALL. Before embarking on a review of literature related to computer-mediated listening comprehension and the approach employed in the present study to promote listening skills for EFL learners, it is pertinent to discuss what constitutes the specific nature of Computer-Assisted Language Learning. The development of CALL over time reflected concurrent development in theories and beliefs about learning, both in language and in more general educational areas. This literature is the first essential step toward understanding how computers could be effectively exploited to promote listening skills. After the definition of CALL, descriptions of CALL development are presented, and the chapter ends with factors affecting CALL use in formal educational settings.

2.1. Definition of CALL

To describe CALL, some researchers have divided CALL processes and software packages into categories (Egbert, 2005). For instance, some researchers have described CALL according to what learners do (i.e. fill in blanks, text manipulation, word processing, tutorials); some others by the skills CALL addresses (e.g. listening or reading software); some according to where it is used (i.e. home, office, laboratory, school), and others by the philosophy underlying CALL construction (e.g. behaviourist, communicative, or integrative underpinnings, as suggested by Warschauer, 1996b). From the categories suggested by Egbert (2005), two themes emerge: First, CALL focuses on both
technology and language learning. As the word “assisted” means that technology only facilitates language learning, educators should not put “technology” before language learning in their classroom (i.e. they should not be technocentric in thinking). The term *language learning through technology* may be more accurate as it reflects the important position of language in CALL activities.

Second, “CALL pedagogy should be grounded in the theory and practice of different fields, especially applied linguistics, psychology, second language acquisitions (SLA), and computer science” (Egbert, 2005, p. 4).

CALL, in general, means using computer technologies in any context to support teaching and learning a second or foreign language in some way (Egbert, 2005; Richards and Schmidt, 2002). Including a wide range of roles for computers in language learning and teaching, CALL is characterised as involving optimal, technology-enhanced language teaching and learning environments or situations where language and content settings for technology are used most effectively to support learning (Egbert, Hanson-Smith, and Chao, 2007). CALL is defined as “the search for and study of applications of the computer in language teaching and learning” (Levy, 1997, p. 1). This definition was employed during the process of intervention of the current study because it is a catch-all definition (Davies, Rendall, Walker, and Hewer, 2012). Teaching and learning practices covered by this definition have evolved along with computers to include the use of linguistic and informational resources, interactive CALL programs, and communications programs.

More importantly, the definition portrays CALL work “as inquiry which includes the activities of development, discovery, selection, use and evaluation of language learning activities that draw upon technology” (Chapelle, 2010, p. 68). The definition by Levy (1997) could, therefore, leave open and encompass the ways in which the researcher decided to make use of the computer in teaching listening skills during the intervention. The use of the term does not limit the types of use; the common understanding of the term is consistent with a wide range of uses.
CALL is an exciting field for both practice and research as it is dynamic, complex, and changing rapidly (Hubbard, 2009). There have been other terms for computers in language learning, which suggests that CALL boundaries are still being explored and its components are still being clarified. This has taken place over many years, while conceptions of learning in a broader sense were still being explored and developed as well. Acronyms commonly used for computers in education by practitioners can be seen in the glossary below:

CAI  Computer-Assisted Instruction
CBE  Computer-Based Education
CBI  Computer-Based Instruction
CMC  Computer-Mediated Communication
CML  Computer-Managed Learning
CMI  Computer-Managed Instruction
ICAI  Intelligent Computer-Assisted Instruction
ITS  Intelligent Tutoring System

Acronyms used for computers in language learning (some can be an extension of acronyms for computers in education) can be seen in the glossary below.

CAL  Computer-Assisted Learning
CALI  Computer-Assisted Language Instruction
CALL  Computer-Assisted Language Learning
CASLA  Computer Applications in Second Language Acquisition
CASLR  Computer-Assisted Second Language Research
CBLT  Computer-Based Language Teaching
CELL  Computer-Enhanced Language Learning
As researchers and professionals have presumably deliberately chosen from these in describing their works, a closer look at these acronyms is justified.

While most of the acronyms for computer roles in education start with “C” for computer and end with “L” for learning or “I” for instruction, the middle letter varies for different purposes. The term assisted (or aided), indicates a less direct and less intrusive role (i.e. the computer’s auxiliary role) than the term based, (Levy, 1997), and highlights the subservient auxiliary role of the computer, which functions “merely as a part of the total learning experience” (Ahmad, Corbett, Rogers, and Sussex, 1985, p. 2). As the word “based” means central, all the acronyms containing based suggest a more fundamental role of computers than the term assisted (or aided) (Ahmad et al., 1985). The term managed is highly directive, implying that the computer is a guide to study and covers work on and off the machine. The difference between based and managed is that the former focuses on the type and scope of materials included, and the latter highlights interactions between the computer and human (Levy, 1997). The term enhanced emphasises the role of computers in making language learning more effective, and programs and materials are not judged. It can also be seen from the acronyms mentioned above that there is sometimes the replacement of “technology” for “computer” referring to a broadening range of tools for language learning. The terms learning and instruction may be used depending on the focus of the teaching or learning process (Ahmad et al., 1985). This is how CALL was understood many years ago rather than the present time.
However, all the CALL acronyms refer broadly to computer use in language learning. They indicate broad directions, but also a division between an all-encompassing role and an auxiliary role for the computer in language learning. They make distinctions between a more directive controlling role and a more neutral one for the computer. The role of the computer indicated by these acronyms also implies the teacher’s role in teaching. Computers guide students to different parts of CALL programs or packages. However, in most cases, the teacher makes important decisions as well as determining the degree of computer control exercised in the learning process (Levy, 1997).

It is not exactly clear when the term CALL appeared for the first time. The earliest documented use of the term was in a conference paper by Davies and Steel in 1981 (Davies et al., 2013). CAI and CAL predate CALL as generic terms, and computer-assisted language instruction (CALI) was incorporated into the organisation CALICO (Computer-Assisted Language Instruction Consortium) founded in the United States in 1982. The term CALL appeared to be widely accepted by practitioners at the 1983 Teachers of English to Speakers of Other Languages (TESOL) Convention in Toronto (Chapelle, 2001). While CAI suggested the main role of computers was in drill-and-practice and tutoring programs, CALL emphasised the wider roles the computer can play in language learning (Levy, 1997). The term “intelligent” was added to ICALL to refer to specific types of language learning software. In ICALL, more emphasis is put on modelling the language and on the learner in order to create a computer environment that is conducive to language learning. Some researchers use ICALL to model theories of second language learning (Levy, 1997). ICALL also denotes the use of artificial intelligence in developing CALL materials, e.g. creating an intelligent tutoring system to process and give feedback on free language input (Finkbeiner and Knierim, 2008).

In the current study, some of the acronyms described above may appear; however, the most common term used is Computer-Assisted Language Learning (CALL) for the following reasons. First, CALL
emphasises all possible roles of computers in language learning, and maintains its momentum in conferences, books and journals such as ReCALL, CALL, On-CALL, and CALICO. Second, the perspective that the computer acts as an assistant or aid is very useful as it highlights the role of computers in assisting in learning and providing resources that may not be available otherwise. Third, as the whole network is conceptualised as the computer, the term CALL also incorporates the Internet, a very important development in the 1990s. With CALL, the computer is at the centre, the student sits in front of a computer to study, and (as noted in the previous paragraph), the teacher’s role is to guide them throughout the teaching and learning process (Levy, 1997).

2.2. Development of CALL

This section is devoted to descriptions of technology applications in language teaching and learning over time. It describes CALL phases in relation to language learning theories as described by different researchers, with specific focus on the types of applications used in this study.

2.2.1. Technology Development and Language Learning

The growth of computer applications for language learning and teaching during the 1960s and 1970s was considered moderate. Developed using programming languages, the computer software was stored on a mainframe located on campus and accessed by students at connecting terminals to help them gain accuracy in language use. For example, students could press function keys to seek help in morphology, vocabulary, or syntax, to request error analysis, to listen to audio text again, or to see the correct answer to a question. In a language listening class, students could listen to a word or sentence more than once, record their own voice and compare it with the original version. At the discourse level, students were able to hear lines of a dialogue while seeing texts in the target language with the first language (L1) translation on the screen, and then answer multiple choice questions about the content presented on the screen. Although a range of materials was produced for
language teaching, only a limited number of schools, colleges or universities actually used them because they did not support meaningful learning (Levy, 1997).

In the 1980s, the microcomputer was introduced along with the development of multimedia (Hubbard, 2009). Academic departments, language schools, or even individual teachers could afford microcomputers to explore their potential for language teaching (Chapelle, 2001). It was an active time in CALL evolution due to the diversity of ideas, capabilities and growing professional discussions. During this time, consistent with the constructivist view of learning, CALL shifted to place the learner in the centre of a dynamic learning process (Warschauer, 1996b). In this process, learners received input through interaction to help develop their own internal mental systems (Warschauer and Healey, 1998). Learners in this period could build up new knowledge by exploring microworlds. A microworld is defined as a model of a conceptual space, which can be either a simplified version of a real world or a completely abstract environment (Dalgarno, 2001). In CALL, microworlds (e.g. Wonderland, Dictionoplis, Island of Conclusions) were learning environments designed to transform learners’ preconceptions and engage them in acquiring new knowledge about the world through inquiry and discovery (Kaufman, 2004). Discovering these microworlds would provide learners with opportunities for solving problems and testing hypotheses, thus allowing them to utilise existing knowledge to develop new understandings (Kern and Warschauer, 2000).

Technologies at this time included concordancing software, (for example, Monoconc from Athelstan, which allowed teachers and students to search through small or large texts for instances of actual use of particular words), text-reconstruction software, and multimedia software, which offered learners maximum opportunities to be exposed to the target language in meaningful contexts and through this, to build up their own knowledge (Warschauer and Meskill, 2000). Computers provided tools and resources, which learners would use to explore simulated environments for study (Kern and Warschauer, 2000). As educational technology developed, students started to learn with, rather than
from computers, which would act as facilitators or collaborators in their learning. In this process, teachers would use computers to involve students in meaning-making language activities (Jonassen, Peck, and Wilson, 1999). In other words, teachers would act as the coordinator and planner by integrating CALL into existing curricula (Warschauer and Healey, 1998).

During this period (the 1980s), many language teachers became teacher-programmers, which meant they could write simple CALL programs. To design CALL software from scratch, some teacher-programmers chose BASIC (Beginners All Purpose Symbolic Instruction Code), which was then considered a high-level programming language. Others used authoring programs (e.g. Storyboard), or authoring systems (e.g. HyperCard, a program combining database capabilities with a graphical, flexible, user-modifier interface), or authoring languages. Besides developing CALL materials, language teachers had to use them effectively with their students and integrate CALL activities into the broader curricula. This meant the teacher played a central role in both choosing materials and integrating computer activity into lessons (Jones, 1986).

A decade after the coming of the microcomputer, the Internet, the worldwide network of networks, provided wide access to materials, people, and learning environments. A CALL project, the Athena Language Learning Project (ALLP) developed the MUSE (Multi User Simulated Environment) multimedia authoring environment, used hypertext and hypermedia systems to provide for cross-referencing of audio, video and graphic materials. This allowed listeners to click the mouse on the links they wanted to utilise to practice their general language or listening skills. At that time there was also the Computer-Aided Multimedia Interactive Language Learning project (CAMILLE), in which learners were provided with tools and information including a textbook, grammar, dictionary (with recordings of native speakers), audio and video recordings, a book on the target culture, and a notebook, and directed in their studies through drills, quizzes, cloze and role-playing exercises. CALL programs in this period provided opportunities for language learners to practice listening
skills both inside and outside classes (Levy, 1997). This means they could practice listening in the
target language flexibly, at their own pace, preferred time, and at a location convenient to them.

By the middle of the 1990s, the Internet began to affect most aspects of professional life. The World
Wide Web, the most significant ICT development in the last 30 years (Davies et al., 2013), played
several roles: “part library, part publishing house, part telephone, part interactive television”,
representing “one of the most diverse and revolutionary media in human history” (Warschauer and
Healey, 1998, p. 64). With text, graphics, sound, video, colour and animation, the Internet was a
natural multiple-modality environment providing students with various paths for different learning
styles (Reid, 1995). CALL activities extended to communication with learners from other parts of
the world. CALL users began to construct “MOOs” (i.e. MUD = Multiple-User Domain, Object
Oriented), virtual environments in which learners could “meet” and “converse” with speakers of the
target language from different parts of the world (Levy and Stockwell, 2006). With the Internet,
CALL activities included linking learner communities all over the world via email, virtual
environments and shared domains (Chapelle, 2001).

Multimedia programs created opportunities for learners to be exposed to the foreign language and
the culture. The combination of sound, video, text, and pictures of cognitive CALL resources played
an important role in developing students’ listening skills (Section 3.3 will describe this aspect in
detail). In addition, the new multimedia capability (e.g. sound, collaboratively authored content
libraries, and sophisticated search techniques) of CALL materials in the 1990s offered language
learners more choice, convenience, and flexibility. This was a particularly important development
for listening skills as sound files were available to learners enabling them to practice using their own
choice of learning materials. This was also an important part of the shift towards a student-centred
approach, which was occurring at that time. However, CALL programs were not “intelligent”

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learners’ writing or speech, diagnose learner difficulties, or intelligently choose proper communicative options (Kern and Warschauer, 2000). The late 1990s also witnessed the advent of e-learning with the explosion of virtual learning environments (VLEs), which provided teachers with standard sets of tools to create online courses and facilities for teacher-student and peer-to-peer communication (Davies et al., 2013).

From the year 2000 to the time of this study (i.e. 2014), the quality of audio and video on the Web has improved greatly with complete language courses offered by commercial entities (e.g. BBC) and university and government projects (e.g. Chinese Online, LangNet, CAMILLE Group’s InGenio Project). By this time, e-learning was largely redefined as “blended learning”, in which self-study with Web-based activities is used to support and extend classroom practice and social interaction (Davies et al., 2013).

Web 2.0, a new and more collaborative version of the World Wide Web, has been considered a great supporter and facilitator for language learning in general, and listening learning in particular. Web 2.0 applications include image sharing, discussion lists, social networks, chatrooms, podcasting, audio tools, video sharing, animation tools, mashups, and document sharing (Davies et al., 2013). The diversity and flexibility of digital media and the increased ease of exploiting the communicative, interactive, multimedia and networking potential of computers have greatly influenced language learning methodology. Digital tools now include tablet PCs, smartphones and other mobile devices, which facilitate data sharing via social networks and broad access to resources shared in cloud computing applications (Davies et al., 2013). With the rapid development of computer applications including synchronous CMCs (e.g. chat, MOOs, virtual worlds, audio/video conferencing) and asynchronous CMCs (e.g. mailing lists, social media sites, bulletin boards and email), communication can be one-to-one, one-to-many or many-to-many. These options facilitate flexible and multi-channel interactions and collaboration between teachers and students and among students,
thus supporting student learning (Levy and Stockwell, 2006; Stockwell, 2010; Warschauer, 1997). In addition, the recent development of Massive Open Online Courses (MOOCs) enables unlimited participation and open access to courses via the web, thus promoting even greater opportunities for flexibility, choice, customisation, accessibility, and self-paced learning for students, and for more collaboration between instructors (Bruff, Fisher, McEwen, and Smith, 2013).

Podcasting or vodcasting and video sharing are developments with potential to have considerable impact on listening practice of language learners. Podcasts, the combination of pod (i.e. an Ipod from the Apple Inc.) and broadcast, are series of audio and video recordings uploaded on the web by individuals or organisations with the support of Rapid Simple Syndication (RSS) feeds (Lafferty and Watch, 2006). The equivalent term vodcast, is a digital video recording made available on the web. The uses of podcasts for language learning are illustrated in Figure 2.1. Podcasts or vodcasts allow listeners to download selected podcasts with a podcatcher (e.g iTunes), which means an ipod or similar device may not be required. Listeners can search for different types of podcast, such as TV, radio, classroom, group or individual recordings for their listening practice in the target language at any time suitable for themselves (Anzai, 2007; Godwin-Jones, 2005; Hasan and Hoon, 2013). The design of podcasts may have the most impact on desired learning outcomes in second language (L2) learning (Rosell-Aguilar, 2007). Since the first podcasts were made in early 2005, the number of ELT podcasts on the Web has increased rapidly. There are podcast directories for ELT, for example http://iteslj.org/links/ESL/Listening/Podcasts/, which is maintained by the Internet TESL Journal (Sze, 2006). The four types of podcasts provided by academic institutions include traditional course content (e.g. archives of face-to-face lectures); additional course content providing relevant materials to the course; supplementary course content that is not crucial to passing exams, and content from students for lecturers or other students (Rüdel, 2006). With such features of simplicity, convenience, low costs, time saving, and especially being appealing to more than one of the senses, podcasting or vodcasting sources offer great opportunities for target language listening practice. Language learners
may be asked to locate podcasts or vodcasts relating to their areas of interest, analyse them and make decisions about their usefulness, or upload their own resources, actions which promote autonomy, and thus support the construction of their own learning environment (Lee and Chan, 2007). As discussed in Section 3.1.1, learner autonomy is one of the key features of constructivist learning, which is the theoretical framework used for the current study. Section 3.4 identifies a number of empirical studies that show the positive effects of podcasts or vodcasts on constructivist teaching and the learning of listening skills.

Figure 2.1: Taxonomy of uses of podcasting for language learning

![Podcasting Taxonomy Diagram]

(Rosell-Aguilar, 2007, p. 476)

Video sharing is another example of a Web 2.0 tool that enables language teachers and learners to play, download and upload video recordings. Examples include BlipTV, a video sharing site focusing on delivery of video broadcasts); popular sharing websites such as Dailymotion, Metacafe, Vimeo, TeacherTube (with many useful videos for language teaching), and especially YouTube (the best known video sharing website containing may useful videos for language teaching); dotSUB
(enabling teachers to upload, transcribe, translate and subtitle videos into any language); Teacher Media (a searchable website for educators, which took over the Teachers TV videos when the website was closed), and Bubbleweet (an application enabling people to add videos to Twitter). Video sharing is considered a very useful tool in listening skills, in which language learners can produce and upload videos for their peers to learn from (Davies, 2011).

In summary, the computer has made an increasing range of contributions to language learning over many years. First, as a tutor, the computer presented subject material and simple feedback on learner input in language drills or skills practice exercises. Based on evaluation of learners’ responses, the computer could decide on the next thing to present. Later on, computer networks offered access to concordancers, email, text and video-based computer conferencing for local and global communication as well as a rich source of authentic materials to enhance learners’ knowledge of both language and culture. The multiple roles the computer could play opened many new avenues for foreign language teaching and learning (Davies et al., 2012, 2013; Fotos and Browne, 2004; Hubbard, 2009; Kern and Warschauer, 2000; Levy, 1997; Stockwell, 2013; Thomas et al., 2013, Warschauer and Healey, 1998). More recently, the development of Web 2.0 has helped to increase learner autonomy and control; two essential features of constructivist learning environments. It has also provided a range of tools which students can use to construct their own resources, and to develop and test their understanding. The next section is devoted to detailed descriptions of CALL development in relation to language learning theories described by different researchers.

2.2.2. Phases of CALL

Researchers have taken different approaches to describe and classify the phases through which CALL has developed. From a theoretical perspective, Warschauer (1996b) and Warschauer and Healey (1998) named the first phase of CALL, lasting from the 1960s to the 1970s, ‘behaviouristic’ This emphasised the role of the computer as a tutor, mainly serving as a vehicle for delivering
instructional materials to students. In this period, CALL replicated ‘structural’ linguistics teaching techniques and the audio-lingual method, which was based on habit formation (Richards and Rodger, 2001). This was later described as structural CALL by Kern and Warschauer (2000). The technology of that time was the mainframe computer used for drill and practice and to focus on accuracy of language (see Table 2.1 below).

Table 2.1: The three stages of CALL

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<td>Technology</td>
<td>Mainframe</td>
<td>PCs</td>
<td>Multimedia and Internet</td>
</tr>
<tr>
<td>English-Teaching Paradigm</td>
<td>Grammar-Translation and Audio-Lingual</td>
<td>Communicate Language Teaching</td>
<td>Content-Based, English for Special Purposes (ESP) English for Academic Purposes (EAP)</td>
</tr>
<tr>
<td>View of Language</td>
<td>Structural (a formal structural system)</td>
<td>Cognitive (a mentally-constructed system)</td>
<td>Socio-cognitive (developed in social interaction)</td>
</tr>
<tr>
<td>Principal Use of Computers</td>
<td>Drill and Practice</td>
<td>Communicative Exercises</td>
<td>Authentic Discourse</td>
</tr>
<tr>
<td>Principal Objective</td>
<td>Accuracy</td>
<td>Fluency</td>
<td>Agency</td>
</tr>
</tbody>
</table>

(Warschauer, 2004, p. 22)

The second phase of CALL was considered to last from the 1980s to the 1990s. This phase was termed ‘communicative’ by Warschauer (1996b) and Warschauer and Healey (1998), as the computer continued to be used as a vehicle for language skills practice, but in a non-drill format with more student choice, control and interaction. This second phase of CALL, described as ‘cognitive’ by Kern and Warschauer (2000), reflected significant changes in language learning and teaching theories. The technology used in this period was the desk-top computer, which provided exercises designed to support communicative language teaching. The view of language was cognitive, focusing on fluency in the target language (see also Table 2.1).
This third phase of CALL (in the 21st century) was described as ‘integrative’ by Warschauer (1996b) and Warschauer and Healey (1998) and reflected the authors’ predictions about the future CALL phase, later named ‘socio-cognitive’ by Kern and Warschauer (2000). The main technology of this time was multimedia and the Internet, which facilitated the socio-cognitive view of language. The principal use of the computer is for authentic discourse, focusing on agency, which means shifting “the dynamic from learners’ interaction with computers to interaction with other humans via the computer” (Kern and Warschauer, 2000, p. 11).

The fact that these three roles for the computer occurred sequentially does not mean the development from “bad” to “good” CALL, or rejection of the previous stage. At any point in time, one or more of these stages can be combined for various purposes. The general trend has been that new ideas and affordances from computer use are integrated into those previously used (Warschauer, 2000). For instance, drill programs can be used as stimulus for communicating in discussions, thus providing tools for writing finished tasks. The primary difference between communicative CALL and integrated CALL can be illustrated in this example: A teacher might become frustrated because instead of using the Internet to practice English and engage in meaningful English usage, his students tended to chat in their first language. This is considered a limitation of the communicative CALL approach, which views the Internet as a medium for simple or unfocused communication practice. In integrative CALL, students should perform real-life tasks on the Internet in a community of their peers or mentors. They could, for example, conduct an international project researching an issue of interest to them or create an English language website for an organisation in their community. In these activities, English would be used for communication in order to accomplish the main task, but students in the project would have opportunities to learn important new English genres and engage in new discourses (Warschauer, 2004).
The three phases (behaviourist, communicative and integrative) suggested by the authors above were examined carefully and criticised by Bax (2003), who, from the perspective of teacher and learner, defined CALL history in terms of restricted, open, and integrated approaches. The first phase of CALL was described as restricted because it referred to actual software and activity types that were used at that time, to the teacher’s central role, to the highly structured forms of feedback for students, and to other dimensions, all of which were seen to be relatively restricted rather than “behaviourist”. According to Bax (2003), the term restricted was more comprehensive, flexible and satisfactory as a descriptor than the term behaviourist used by Warschauer (1996b) and Warschauer and Healey (1998). A detailed description of the three approaches to CALL suggested by Bax (2003) can be seen in Table 2.2. The term “communicative” used by Warschauer and Healey (1998) for the 1980s-1990s period was also considered inappropriate by Bax (2003), who saw little evidence of communicative CALL in practice during this time. The second phase should, therefore, according to Bax, be termed open (from the 1980s to 2003) as CALL during this time was relatively open in terms of feedback to students, software types and the teacher’s role (Bax, 2003). Integrated CALL implies normalisation in using technology, which means technology should become invisible to the extent that we hardly recognise them as technologies. Contrary to the starting point indicated by Warschauer and Healey (1998), Bax (2003) believed that the third phase of CALL was not fully achieved by the year 2003 (i.e. the time of Bax’s study) as, until then, there were still fears, and exaggerated expectations of ICT. Most teachers were adopting open CALL, but each classroom or institution might also feature restricted or integrated CALL features to a greater or lesser extent (Bax, 2003) (see also Table 2.2 below).
<table>
<thead>
<tr>
<th>Content</th>
<th>Type of task</th>
<th>Type of student activity</th>
<th>Type of feedback</th>
<th>Teacher roles</th>
<th>Teacher attitudes</th>
<th>Position in curriculum</th>
<th>Position in lesson</th>
<th>Physical position of computer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restricted CALL Language system</strong></td>
<td>Closed drills</td>
<td>Test reconstruction Answering closed questions Minimal interaction with other students</td>
<td>Correct / incorrect</td>
<td>Monitor</td>
<td>Exaggerated fear and/or awe</td>
<td>Not integrated into syllabus – optional extra Technology precedes syllabus and learner needs</td>
<td>Whole CALL lesson</td>
<td>Separate computer lab</td>
</tr>
<tr>
<td></td>
<td>Quizzes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Open CALL System and skills</strong></td>
<td>Simulations</td>
<td>Interacting with the computer Optional interaction with other students</td>
<td>Focus of linguistic skills development Open, flexible</td>
<td>Monitor/ facilitator</td>
<td>Exaggerated fear and/or awe</td>
<td>Toy Not integrated into syllabus – optional extra Technology precedes syllabus and learner needs</td>
<td>Whole CALL lesson</td>
<td>Separate lab – perhaps devoted to language</td>
</tr>
<tr>
<td></td>
<td>Games CMC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Integrated CALL Integrated language skills work Mixed skills and system</strong></td>
<td>CMC Word Processor (WP) Email</td>
<td>Frequent interaction with other students Some interaction with computer through the lesson</td>
<td>Interpreting, evaluating, commenting, stimulating thought</td>
<td>Facilitator Manager</td>
<td>Normal part of teaching – normalised</td>
<td>Tool for learning Normalised integrated into syllabus, adapted to learners’ needs <em>Analysis of needs and context precedes decisions about technology</em></td>
<td>Smaller part of every lesson</td>
<td>In every classroom, on every desk, in every bag</td>
</tr>
</tbody>
</table>

(Bax, 2003, p. 21)
From another perspective, a more technological one, Davies et al. (2012) looked at CALL development in terms of dumb, multimedia, and Web phases. ‘Dumb’ CALL (in the 1970s and 1980s) was so named as the computer at that time did not have sound or video. The lack of sound and video was overcome by linking a tape recorder or videodisc player to the computer, though these were often expensive and hard to integrate. Due to technological restrictions, most computer programs in this period were drill-and-practice (also described as behaviourist), until the appearance of the Granville simulation with text and primitive images in the mid-1980s, and multimedia simulations for computers linked with interactive videodisc players such as Montevideo and Expodisc. According to this classification, the second phase of CALL, from the 1990s to 2012 (i.e. the time of the study by Davies et al., 2012), was named ‘multimedia’. There were soundcards for sound to be played and recorded without the need to link peripheral devices to the computer. Images on the computer screen and later video quality were improved, yet many CALL programs were still stuck in the drill-and-practice phase. The third phase was termed ‘Web’ CALL, and lasted from 1993 also to 2012 (i.e. the time of the study by Davies et al., 2012). Early websites contained mainly text and still images (i.e. similar to dumb CALL programs), yet they could be accessed at a distance. The traffic was mainly one-way from the Web to users, and it was slow due to the dial-up modems used to access the Internet at that time. When Web 2.0 appeared, traffic became two-way or multi-directional, the sound and video quality improved, and socialising via the Web spread widely (Davies et al., 2012).

From the different descriptions of CALL phases mentioned above, the approaches suggested by Warschauer (1996b), Warschauer and Healey (1998), and Kern and Warschauer (2000) were considered the best fit for the current study. In the context of the
current study, both the cognitive (or communicative) and socio-cognitive (or integrative) approaches to CALL described by the researchers named above are recognised as contributing to language teaching and learning in the English Department at Hanoi University. A close look at the syllabus of Listening Term Four described in Section 4.3.4.3.1 reflects a combination of the two approaches designed to support the constructivist teaching philosophy of the department.

2.3. Factors Affecting CALL Adoption in Language Teaching

Researchers have found many different factors influencing the implementation of CALL in language instruction. These factors are generally classified as physical, educational and philosophical. (Yildiz, 2007). They can be categorised into first-order (also called external) factors including access to computers and software programs, sufficient time to plan teaching, and adequate administrative and technical support, and second-order (also known as internal) factors including teachers’ beliefs about computers, their established teaching practice, and willingness to make changes (Ertmer, 1999). Based on these frameworks, the researcher considers the following to be factors that could influence the adoption of computers in language teaching in the context of the current study.

2.3.1. Institutional Support

It is agreed among teachers and researchers that institutional support is an external factor that plays a critical role in successful application of computers in language teaching (Epper, 2001; Yildiz, 2007).

The primary support from institutions should include supplying and maintaining computer technology appropriately. Computer resources were listed as hardware and software
(Egbert, Paulus and Nakamichi, 2002), and reliable Internet access. While considerable funding is required to cover the cost of hardware including computers, printers, and other necessary devices (Yildiz, 2007), supporting the use of this technology can be even more expensive (Epper, 2001). Adequate provision of software means funding is needed for operating systems, applications, specialised software, training, and replacement costs. Further, when new software versions with more capability appear on the market (usually within one or two years of initial release), upgrading of systems may be required to run them. Internet connection is another factor; it should be stable and fast for a feature rich CALL environment. Only with considerable support from institutions is computer use in language teaching feasible (Yildiz, 2007).

Another important component included in institutional support is curricula. A flexible curriculum would enable teachers to integrate computers into their teaching more readily. However, in many educational settings around the world, this flexibility is lacking, and it is impossible to change the curriculum for the sole purpose of technology integration. The barriers to changing curricula are perceived to be too many educational software programs and websites to choose from, and/or the lack of those with high-quality or suitable titles for curricula, and/or the lack of time for their preparation and trialling (Guha, 2003). The challenging tasks are searching for and finding suitable software to support existing curricula and course materials, and to align with teachers’ approach to teaching. It is, therefore, necessary to develop curricula that facilitate CALL integration into language instruction (Yildiz, 2007), or to develop CALL materials to fit with existing curricula. Either approach would require considerable support from institutions.
Ongoing professional learning for language teachers should be considered another aspect of institutional support, which ranges from participating in one-off in-service workshops to dedicated seminars and courses, CALL course series, certificate courses, or even CALL graduate degrees (Hubbard and Levy, 2006). Adoption of CALL needs regular professional development (PD) for the following reasons: a large number of teachers do not have enough foundational skills or initial training and in the field (Brinkerhoff, Ku, Glazewski, and Brush, 2001); hardware and software applications change so fast that they challenge teachers’ existing skills and knowledge; technology and technical support vary across teaching settings, or there may even be changes with little notice within the same institution (Hubbard, 2007). Also, technology courses are not sufficiently well integrated into teacher preparation programmes. Another potential reason is the existence of numbers of unmotivated technology users with a sense of intimidation and negative reaction to technology use situations (Kessler, 2006). These factors imply that teachers should be engaged in learning and relearning constantly to make the best use of available technology (Hubbard, 2007). Ongoing and appropriate professional learning through institutional support would provide teachers with computer skills from basic to advanced levels, and update them with knowledge and skills in exploring and exploiting new computer resources (i.e. new hardware, software). This would help teachers to gain more experience and confidence in using computers, and also more computer skills that they did not have before (Egbert et al., 2002; Slaouti and Motteram, 2006).

Another aspect of institutional support is faculty rewards and incentives, which are believed to create an enabling environment for the use of technology-assisted instruction. The formal reward structure and general faculty ethos have strong effects on faculty members’
behaviour. With proper rewards and incentives from institutions (e.g. extrinsic rewards such as increasing salary, creating good teaching opportunities, offering appropriate workload and supervision; intrinsic rewards such as highly appreciating autonomy and contributions, creating intellectual challenges and giving trust to more active and productive staff in the institution), teachers would be encouraged to make full use of technologies for teaching (Epper, 2001).

In the particular context of the English Department and Hanoi University, the current study had considerable material and moral support from leaders during the entire project time. Facilities for computer use in teaching at the university are readily available, of good standard, and up-to-date, which is one important type of support from the institution. Workshops on computer-assisted language instruction are offered within the department and across the university to encourage and provide teachers with computer skills. As institutional support in the form of ICT facilities and professional support is already provided, it was not one of the challenges faced by the current study. The other factors described below were more prominent in the study. Detailed descriptions of institutional support in the study context are provided in Sections 4.1.4 and 4.1.5.

2.3.2. Attitudes and Motivation in CALL Adoption

It has been agreed by many researchers (e.g. Albirini, 2004; Davis, 1993; Davis, Bagozzi, and Warshaw, 1989, 1992; Dusick, 1998; Hadley and Sheingold, 1993; Hassanzadeh, Gholami, Allahyar, and Noordin, 2012; Karahanna, Agarwal, and Angst, 2006; MacArthur and Malouf, 1991; Sandholtz, Ringstaff, and Dwyer, 1997; Venkatesh, 2000; Venkatesh and Bala, 2008; Zhao and Frank, 2003) that attitudes and motivation are two important
factors that influence decisions of teachers and students in using technology in teaching or learning. An attitude is defined as “a disposition to respond favourably or unfavourably to an object, person, institution, or event” (Ajzen, 2005, p. 3). An attitude in social sciences is “an evaluative reaction to some referent or attitude object, inferred on the basis of the individual’s beliefs or opinions about the referent” (Gardner, 1985, p. 9). Attitude towards technology use is people’s overall affective reaction to using a technology system (Venkatesh, Morris, Davis, and Davis, 2003). Positive attitudes toward computers would encourage language teachers or learners to use them in teaching and learning, and witnessing the ease of use and usefulness of computers would result in positive attitudes of computer users (Venkatesh and Bala, 2008). Self-reports (largely surveys containing items rated on a Likert scale) and easily observable behaviours are common research methods used to measure attitudes.

Motivation is understood as “the dynamically changing cumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, and evaluates the cognitive and motor processes whereby initial wishes and desires are selected, prioritised, operationalised and (successfully or unsuccessfully) acted out” (Dörnyei and Ottó, 1998, p. 65). There are two types of motivation, intrinsic (also known as internal) and extrinsic (or external), which will be described in detail in the following section.

2.3.2.1. Intrinsic Motivation and CALL

Intrinsic motivation refers to “doing an activity for its inherent satisfactions rather than for some separable consequence” (Ryan and Deci, 2000, p. 56). Intrinsically motivated people act for fun, joy, or challenge, which means the reward is in the activities themselves.
Intrinsic motivation in computer use relates to users’ perceived playfulness of computers (i.e. fun, pleasure, satisfaction, exploration, discovery, challenges, and even curiosity in using computers for study or work), and to perceived ease of use (Davis et al., 1989, 1992; Venkatesh, 2000; Venkatesh and Bala, 2008). The combination of sound, pictures, and words in computer resources helps to make work or study with the computer engaging and challenging, which may encourage individuals to use it. Detailed descriptions of the multimedia features of CALL are provided in Section 3.3.2.

Perceived ease of use, a determinant of intrinsic motivation, is related to the concept of self-efficacy (Davis, 1989). Self-efficacy is defined as people’s judgements of their own capacities “to organise and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgements of what one can do with whatever skills one possesses” (Bandura, 1986, p. 391). Self-efficacy in computer use is the degree that an individual believes that he or she has ability to use computers to accomplish a task, such as using software for data analysis, or word processing to write a mail merge letter (Compeau and Higgins, 1995). There is much evidence that teachers’ computer self-efficacy is an important factor determining their computer use in class. Previous studies over many years by Albion (1999); Davis (1989, 1993); Davis et al. (1989); Igbaria and Ilvari (1995); Marcinkiewicz (1994); Venkatesh (2000); Venkatesh and Bala (2008); Venkatesh et al. (2003) demonstrated that teachers’ beliefs in their capacity to teach effectively with computers would affect their motivation to use computers in teaching.
2.3.2.2. Extrinsic Motivation and CALL

Extrinsic motivation is defined as doing an activity in order to gain separable outcomes (Ryan and Deci, 2000). This external value can be increased pay, job performance, job promotions (Davis et al., 1992), or more internalised reasons (e.g. proving to be a good citizen), or personal choice, priority or value on the outcome (e.g. choosing to be a bilingual or multilingual person) (Vandergrift, 2005). Extrinsic motivation in using computers is related to individuals’ perceived usefulness of technology such as increased performance outcomes, productivity, and effectiveness (Davis, 1989, 1993; Davis et al., 1989, 1992; Karahanna et al., 2006; Venkatesh, 2000; Venkatesh and Bala, 2008), which will be discussed in the coming paragraph.

Regarding the factor of perceived usefulness, some CALL research has found that computer use in language teaching has increased teachers’ motivation and positive attitudes towards computer-assisted language instruction. It should also be noted that world-wide studies investigating attitudes toward computer use were either of pre-service or in-service teachers (Hong, 2010). Before the 1990s, there were several studies (e.g. Sheingold and Hadley, 1990) showing that computer use had positive effects on teachers’ motivation and attitudes. From the 1990s to the time of the current study, there have been many empirical studies, which showed that computer use has positive effects on teachers’ motivation and positive attitudes towards computers in language teaching. Appendices 1a and 1b provide the full lists of these studies.

Furthermore, research suggests that computer use offers many benefits to second or foreign language teachers and learners. The flexibility of computers enables students to choose
when, what and how long to study. Besides, the computer is also seen as a tool to increase language learners’ self-esteem and vocational preparedness ((Felix, 2001). Up to the time of the current study, there have been a number of meta-analyses of CALL (i.e. literature reviewing CALL studies in different periods) CALL practice and research, and these reveal great diversity in terms of the landscape of CALL. From 2000 to the time of the current study, there were review studies by Felix (2005a) of 52 studies (2000-2004); Felix (2005b) of 13 studies (after 1991); Felix (2006) of 62 studies (1991-2005); Felix (2008) of CALL studies between 1981 and 2005; Grgurović, Chapelle, and Shelley (2013) of 37 studies (1970-2006); Hasan and Hoon (2013) of 20 recent research studies on podcast use; Hassan, Hauger, Nye, and Smith (2005) of 14 articles from eight journals (1990-2004); Hubbard (2005) of 78 articles from four journals (2000-2003); Jung (2005) of 5301 articles from 200 journals and books (1980-2004); Kern (2006) of 36 articles from 12 journals and books (1992-2005); Levy (2000) of 47 articles from five journals and books (in the year 1999); Liu et al. (2002) of 70 articles from 21 journals (1990-2000); Macaro, Handley, and Walter (2012) of 47 post-2000 studies, and Zhao (2003) of nine articles from five journals (1997-2001); After reviewing CALL research in different time periods, general findings from the majority of these review studies (except for studies by Hubbard, 2005; Kern, 2006; Jung, 2005; Levy, 2000, which had different research objectives) were that computer use has had positive effects on learners’ language skills (with studies showing enhancement in one, two, three, or all the four of the language skills), cultural knowledge, teacher-student and student-student interactions, and students’ motivation and attitudes toward computers in language learning. One study by Macaro et al. (2012), however, discovered the same positive effects of student motivation, attitudes, and collaboration, yet only slight and
inconclusive evidence of beneficial impact on linguistic outcomes. It should also be noted that the majority of previous CALL studies in these reviews employed different research methodologies and were conducted with different age groups of students so the similarity in findings could be considered relatively robust and generalisable.

Another finding by many researchers is that computers can help increase the degree of autonomy of language learners. There have been a number of studies showing the positive relationship between computer use and learner autonomy (Blin and Muro, 2008; Boswood, 1997; Chapelle, 2001, 2008; Crystal, 2001; Debski and Levy, 1999; Egbert et al., 2007; Ellis, 2002; Fang and Warschauer, 2004; Felix, 1998, 2001; Fernandez, 2000; Figura and Jarvis, 2007; Fotos, 2001; Fotos and Browne, 2004; Groß and Wolff, 2001; Healey, 2007; Hurd, 2005; Levy, 1997; Pujolà, 2002; Reinders and Hubbard, 2013; Reinders and White, 2011; Schwienhorst, 2003, 2008). Learner autonomy is generally defined as the ability to take charge of students’ own learning (Schwienhorst, 2008). Learner autonomy in general means learners take more control over their learning inside and outside classrooms (Benson, 2001). Autonomous language learners are encouraged to take the largest responsibility for what they learn as well as how they learn it (Benson, 2001; Richards and Schmidt, 2002). In computer-assisted learning, autonomous learners can “take charge of their own learning by working on individual and collaborative projects that result in communication opportunities in the form of presentations, website development, and traditional publications accessible to local and global audiences” (Shetzer and Warschauer, 2000, p. 176). As described later in Section 3.1.1, learner autonomy is an essential factor in constructivist learning, which is the framework of the current study. A description of
constructivist learning supported by computer technologies will be further discussed in Section 3.1.2.

The above-mentioned evidence that computer use has brought benefits to language teachers and learners (in terms of their increased motivation and attitudes, student enhanced language-related and academic skills, learner autonomy, and collaboration between teachers and students and among students) should help to increase the perceived usefulness of computers, thus motivating teachers and students to adopt CALL in teaching and learning. These factors influencing CALL adoption in language teaching (i.e. attitudes and motivation) are relevant to the basic SLA principles outlined by Tomlinson (1998), who suggested that language teaching materials should achieve impact in a number of ways: utilizing novelty, variety, attractive presentation and appealing content; by helping learners feel at ease and making them comfortable and relaxed while learning; by developing learner confidence; being perceived as relevant and useful by learners; facilitating self-investment (i.e. self-discovery and autonomy) of learners, and through allowing for learners’ different learning styles and affective attitudes.

2.4. Summary

The aim of this chapter was to describe how CALL, including its numerous associated acronyms, has developed concurrently with language learning theories, and how these developments relate to the current study. A further aim was to describe CALL phases from the perspectives of different researchers, (Section 2.2), again highlighting those that align most closely with the aims and context of this study. The chapter concluded with descriptions of the main factors affecting the use of computers in language teaching.
This literature review led the researcher to utilise the definition proposed by Levy (1997) as the most suitable one for the study. It also situated the teaching philosophy of the English Department of Hanoi University in the CALL approaches classified by experts, namely, the cognitive and socio-cognitive approaches. As the factors identified in this chapter are recognized as contributing to successful technology integration in teaching listening skills, the researcher also considered their likely operation in the context of the study. The first factor, physical and moral support from the department and host university, was sought and highly appreciated during the project. The other factors (i.e. teachers’ motivation and attitudes toward computer use in language teaching) were studied carefully, encouraged as far as possible, and subsequently considered for their impact on the study findings. Specifically, the researcher brought to the teachers’ attention the findings from the literature review during a CALL teacher training workshop that was designed to prepare them to integrate Internet resources into their teaching. The literature was also referred to during weekly coaching sessions for the teachers and in the course of informal conversations (two other components of the intervention) with the teachers and students throughout the project. In addition, the literature review in this chapter was drawn on while designing research instruments and in analysing the data collected to answer the research questions. Detailed descriptions of how this literature supported the study are presented in Chapter Four. The next chapter is devoted to exploring listening skills and the relationship between listening skills development and CALL applications.
CHAPTER THREE:
LISTENING SKILLS AND
COMPUTER-ASSISTED LANGUAGE LEARNING

Chapter Three introduces the theoretical framing of the study, which is constructivist learning. Constructivist principles of learning are described, along with the affordances of technology, both in general and in relation to these principles. The main aim of the chapter is to discuss how technology can be utilised to support the development of listening skills, so this is followed by consideration of the act of listening: why it is important and what it involves; specifically the cognitive processes that comprise the act of listening and of listening comprehension. Related to these cognitive processes, a detailed consideration is presented of how the elements of multi-media, arguably the most significant area of technology use for this kind of learning, may work to support listening comprehension. Finally, in light of the principles of constructivism and the enabling features of technology for supporting listening comprehension, a summary of considerations for selecting CALL materials for teaching listening skills is presented. A thorough understanding of CALL materials and CALL materials selection for listening skills assists in providing an effective approach to promoting listening skills with the computer.

3.1. Constructivism as a Theoretical Frame of the Study

This section presents an overview of the literature of constructivism as a theoretical framework for the study; it includes both constructivist learning theory and constructivism and learning technology.
3.1.1. Constructivist Learning Theory

According to early theorists such as Dewey (1916); Piaget (1973), and Vigotsky (1978), learning is an active process in which learners construct new knowledge based on their prior knowledge. An educator’s role involves shaping learners’ experience from their surroundings (Dewey, 1916; Piaget, 1973). As learning would allow for creative interaction with teachers, teachers should be considered as guides rather than directors (Dewey, 1916). Emphasis is placed on the social context of learning, in which the interaction of learners with peers and teachers is encouraged (Vygotsky, 1978). Accordingly, constructivism is a theory that “…defines knowledge as temporary, developmental, socially and culturally mediated, and thus non-objective. Learning from this perspective is a self-regulating process of resolving inner cognitive conflicts that often become apparent through concrete experience, collaborative discourse, and reflection” (Brooks and Brooks, 1993, p. vii).

Constructivism in education generally holds that learners construct knowledge in their minds through experiences, and knowledge is actively constructed by learners themselves, rather than being taught by teachers (Berns and Erikson, 2001; Brooks and Brooks, 1993; Duffy and Jonassen, 1992; Honebein, Duffy, and Fishman, 1993; Goodman, 2008; Jonassen, 1996; Jonassen et al., 1999; Pritchard, 2005; Pritchard and Woollard, 2010; Roblyer, 2006). In this way, individuals make sense of the world they have contact with by constructing representations or models of their own experiences. When they come across something they do not know but need to know, they utilise prior knowledge or experience to determine its meaning. Knowledge cannot simply be transferred because students cannot experience all that teachers have and vice versa, and even when an experience is shared,
interpretations of the same experience vary as we relate it to different prior experiences or knowledge (Jonassen et al., 1999).

Constructivist pedagogy is concerned with how knowledge is constructed by the learner (Jonassen, 1996). In constructivist teaching, teachers facilitate individual learners’ abilities in constructing knowledge (Dwyer, 1994). Specifically, constructivist teachers provide learners with experiences and guide them in the meaning-making process in order to help them construct their own meanings from those experiences (Jonassen, 1996; Jonassen et al., 1999). Constructivist teachers seek to give students opportunities for environmentally rich, problem-solving contexts that encourage their investigation, insight, inference and invention (Pritchard and Woollard, 2010). In language learning, constructivism focuses on learning strategies, learner beliefs, teacher thinking and other aspects emphasising the individual, and the contributions of learners to learning. Constructivist teachers make their own sense of classrooms and play the role of reflective practitioners (Richard and Schmidt, 2002).

In traditional instruction classrooms, teachers are free to move about, initiate actions and interactions, allocate resources and time, and ask questions, whereas students are passive listeners and choreographed followers (Sandholtz et al., 1997). Constructivist learners should be engaged in: active learning in order to explore and manipulate components and parameters of technology-based environments and to observe the results of their activities; constructive learning to articulate what they have learned and to reflect on its meaning and importance in larger intellectual and social contexts; intentional learning to determine goals and manage their activities; authentic learning to examine and attempt to solve complex, ill-
structured, and real-world problems, and cooperative learning to collaborate with others and socially negotiate the meanings constructed (Jonassen et al., 1999).

In the constructivist learning class, the interactions between the teacher and students are less didactic and more collaborative (Jonassen et al., 1999; Roblyer, 2006; Sandholtz et al., 1997). Students work together to solve problems through conversations, inquiries, trial and error, and comparisons of solutions. In the model of constructivist learning suggested by Roblyer (2006), group cooperative work is stressed; global goals (e.g. problem solving and critical thinking) are aimed at; students are encouraged to generate their own knowledge through real-life experiences; students learn through problem-oriented activities, visual formats and mental models, rich complex learning environments, and exploration, and non-traditional materials are used to promote problem solving and student-driven exploration. Curricula that are designed based on constructivist theory “lead to an increasing growth in knowledge, a higher degree of critical thinking, greater reading and writing skills, as well as improved skills in argumentation” (Terwel, 1999, p. 196).

The table below (Table 3.1) summarises the two contrasting views of instruction and construction teaching methods, according to Sandholtz et al. (1997).
Table 3.1: Constrasting views of instruction and construction

<table>
<thead>
<tr>
<th></th>
<th>Instruction</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom activity</td>
<td>Teacher centered</td>
<td>Learner centred</td>
</tr>
<tr>
<td></td>
<td>Didactic</td>
<td>Interactive</td>
</tr>
<tr>
<td>Teacher role</td>
<td>Fact teller</td>
<td>Collaborator</td>
</tr>
<tr>
<td></td>
<td>Always expert</td>
<td>Sometimes expert</td>
</tr>
<tr>
<td>Student role</td>
<td>Listener</td>
<td>Collaborator</td>
</tr>
<tr>
<td></td>
<td>Always learner</td>
<td>Sometimes expert</td>
</tr>
<tr>
<td>Instructional emphasis</td>
<td>Facts</td>
<td>Relationships</td>
</tr>
<tr>
<td></td>
<td>Memorization</td>
<td>Inquiry and invention</td>
</tr>
<tr>
<td>Concept of knowledge</td>
<td>Accumulation of facts</td>
<td>Transformation of facts</td>
</tr>
<tr>
<td>Demonstration of success</td>
<td>Quantity</td>
<td>Quality of understanding</td>
</tr>
<tr>
<td>Assessment</td>
<td>Norm referenced</td>
<td>Criterion referenced</td>
</tr>
<tr>
<td></td>
<td>Multiple-choice items</td>
<td>Portfolios and performances</td>
</tr>
<tr>
<td>Technology use</td>
<td>Drill and practice</td>
<td>Communication, collaboration, information access, expression</td>
</tr>
</tbody>
</table>

(Sandholtz et al., 1997, p. 14)

A description of how constructivism was interpreted in the context of English teaching in Vietnam in general, and in Hanoi University, where the study was conducted, in particular, will be presented in the methodology chapter (Chapter Four).

3.1.2. Constructivism and Technologies

Using technologies as constructive tools not only extends but also magnifies humans’ learning capabilities. With technologies as cognitive tools, learners are engaged in thinking while constructing knowledge that they would not have capability to do without technology support (Pea, 1985). Computers, and the World Wide Web, are considered a vehicle for
realising the theories of such educational thinkers as Dewey (1916), Piaget (1973), and Vygotsky (1978) outlined in Section 3.1.1.

Constructivist approaches for Computer-Assisted Learning (CAL) can be classified as endogenous, exogenous, and dialectical (Dalgarno, 2001). *Endogenous* emphasises learner-directed discovery of knowledge through the use of hypertext, hypermedia, simulations, and microworlds to promote active exploration within virtual environments. *Exogenous* recognises the value of direct instruction, yet learners have opportunities to be cognitively active in constructing their own knowledge (including constructing, articulating, and applying knowledge to realistic tasks) via tutorial systems with learner control and guided hypermedia, and cognitive tools (e.g. concept mapping tools). *Dialectical* emphasises social interaction with peers and / or teachers in learners’ knowledge construction process. Interaction is facilitated by computer-supported collaborative learning (CSCL) technologies, including Computer-Mediated Communication (CMC) tools for general purposes, Computer-Supported Cooperative Work (CSCW), and technologies with features specifically designed for collaborative learning (O’Malley, 1995). Examples of using computers within a constructivist approach include technology use for meaning making, learning by exploring with technology, learning by visualising with technology, constructing realities with hypermedia, creating technology-supported learning communities, learning by reflecting (i.e. using technologies as mindtools for critical thinking), learning in immersive environments, and learning by reflecting (i.e. evaluating learning from constructivist uses of technology) (Jonassen et al., 1999).

Based on these CALL approaches described by previous researchers (i.e. Dalgarno, 2001; Jonassen et al., 1999), Roblyer (2006) proposed technology integration within constructivist
models to support creative problem solving and metacognition; help to build mental models and increase knowledge transfer; foster group cooperation skills, and allow for multiple and distributed intelligences. A summary of learning problems with examples of technology-supported solutions, drawn from Roblyer (2006), is shown in Table 3.2 below.

Table 3.2: Technology integration strategies based on constructivist models

<table>
<thead>
<tr>
<th>Integration Strategies</th>
<th>Needs/ Problems Addressed</th>
<th>Example Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>To foster creative problem solving and metacognition</td>
<td>- Students need to be able to solve complex, novel problems as they occur.</td>
<td>- Video-based scenarios pose problems, help support student problem solving.</td>
</tr>
<tr>
<td></td>
<td>- Teachers want to encourage students’ self-awareness of their own learning strategies.</td>
<td>- Graphic tools illustrate concepts and support student manipulation of variables.</td>
</tr>
<tr>
<td></td>
<td>- Video-based scenarios pose problems, help support student problem solving.</td>
<td>- Simulations allow exploration of how systems work.</td>
</tr>
<tr>
<td>To help build mental models and increase knowledge transfer</td>
<td>- Students have trouble understanding complex and / or abstract concepts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Students have trouble seeing where skills apply to real-life problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Video-based scenarios pose problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Students create multimedia products to illustrate and report on their research.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Simulations, problem-solving software illustrate and let students explore complex systems.</td>
<td></td>
</tr>
<tr>
<td>To foster group cooperation skills</td>
<td>- Students need to be able to work with others to solve problems and create products</td>
<td>Students collaborate to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Do Internet research.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Create multimedia or web page products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Compete in instructional games</td>
</tr>
<tr>
<td>To allow for multiple and distributed intelligence</td>
<td>- Teachers want to allow students multiple ways to learn and to demonstrate achievement.</td>
<td>Students have varying roles in group work to create:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multimedia products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Web pages.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Desktop-published newsletters, brochures.</td>
</tr>
</tbody>
</table>

(Roblyer, 2006, p. 50)
The constructivist teaching approach, which serves as an important foundation for technology integrated pedagogy, was considered appropriate for the language teaching situation at Hanoi University where the curriculum supported this approach. The curriculum objectives of the English studies bachelor degree program include: flexible and creative approaches to teaching and learning; making effective use of ICT facilities to motivate students; providing students a wide range of opportunities to have real-life experience; fostering students’ autonomy in expanding their language knowledge, and nurturing students’ ability in critical thinking, comprehensive analysis and effective expression. The design of a CALI teacher training workshop (as mentioned in Chapter Two) included an overview and discussion of, plus teachers’ reflections about, constructivism, which helped to increase the teachers’ understanding of constructivist teaching. Moreover, the constructivist teaching approach was focused on consistently by the research team (i.e. the researcher, the academic assistant, and the computer expert) in all the weekly coaching sessions (also mentioned in Chapter Two) of the project. During the coaching, the research team emphasised constructivism, modelled the lessons and guided the teachers in constructivist teaching throughout the project. This meant that, when choosing websites for computer-assisted listening instruction (an important part of the intervention), the research team considered the extent to which the features of the websites would not only promote the students’ listening skills but also support the principles of constructivist learning. For example, the content of such websites as http://www.ted.com, https://www.youtube.com/, or http://abcnews.go.com/ provides opportunities for the students to develop their problem-solving skills, metacognitive strategies, and build mental models for learning listening skills. Besides that, the students had to research on the
Internet so as to compete in instructional games or to create multimedia products (e.g. podcasts / vodcasts or own webpages). During the project, the students were also encouraged to utilise such software as skype, yahoo messenger, viber, zalo, tango etc to communicate with their peers or teachers, as this would help to build up their cooperation skills. A further description of how the coaching was employed will be discussed in Section 4.3.4.3.3.

3.2. Listening Skills in Language Learning

This section comprises the literature review of listening skills in language learning. Definitions of listening from different researchers are presented and followed by models of listening processes. Background knowledge (i.e. schema) regarding listening and listening strategies is outlined, then the section concludes with a cognitive model for listening comprehension which is consistent with the constructivist theory described above.

3.2.1. Definition of Listening

It is not easy to give an accurate definition of listening (Dunkel, 1991; Dunkel, Henning, and Chaudron, 1993; Rost, 2011; Underwood, 1989; Wolvin and Coakley, 1996). Listening is considered as “the process of receiving, constructing meaning from, and responding to spoken and/or nonverbal messages (The International Listening Association (ILA), 1995). Put simply, listening is “the activity of paying attention to and trying to get meaning from something we hear” (Underwood, 1989, p. 1). A more nuanced definition describes listening as an activity, which is:

   a complex, active process in which the listener must discriminate between sounds, understand vocabulary and grammatical structures, interpret stress and intonation,
retain what was gathered in all of the above, and interpret it within the immediate as well as the larger sociocultural context of the utterance. Co-ordinating all of this involves a great deal of mental activity on the part of the listener. Listening is hard work, and deserves more analysis and support. (Vandergrift, 1999, p. 168)

When making sense of spoken language, listening is “normally accompanied by other sound and visual input, with the help of our relevant prior knowledge and the context in which we are listening” (Lynch and Mendelsohn, 2002, p. 193). Listening is believed by Buck (2001); Rost (1994); Rubin (1994); Wolvin and Coakley (1996) to include four processes: receiving, attending to, assigning meanings to, and responding to information. These four processes are similar to the four orientations suggested by Rost (2011), namely, receptive (i.e. listening means receiving what the speaker actually says); constructive (i.e. listening means constructing and representing meaning); collaborative (i.e. listening means negotiating meaning with the speaker and responding); transformative (i.e. listening means creating meaning through involvement, imagination and empathy). Most definitions seem to emphasise one of these four orientations (Rost, 2011). The definition by Rost (2011) was identified as being comprehensive and appropriate because the four orientations draw attention to the different parts of listening that could potentially be supported by computer use in this project (see also Section 3.1).

3.2.2. Importance of Listening in Language Learning

Listening contributes greatly to the development of language proficiency (Krashen, 1982; Morley, 1999; Rost, 2011; Wolvin and Coakley, 1996). Listening gives learners information from which to build knowledge necessary for them to use the target language
(Nation and Newton, 2009). As mentioned in Section 1.1, listening provides input for learners (without the right level of input learning cannot start); spoken language provides a means of interaction for learners in achieving comprehension; authentic spoken language can create challenges for learners in trying to understand language the way it is actually used by native speakers, and listening tasks enable teachers to draw students’ attention to new forms (vocabulary, grammar, interaction patterns) of the language. Perception enables production so listening can help learners to enhance language accuracy, increase their vocabulary and grammar, develop their cognitive and metacognitive strategies for language learning, and engage in and develop communicative skills in terms of linguistic, discourse, sociolinguistic and strategic competence (Canale and Swain, 1980).

In addition, listening offers enjoyment and stimulates cultural interests, appreciation of the beauty of the target language through figures of speech, colloquial expressions and sayings, participation in the culture of the target language through radio, TV, movies, songs, plays, and fulfilment of social needs through relationships development, confidence, and gathering information for survival needs (Rost, 1994).

Although listening is very important in foreign language learning, it did not receive much attention until the 1990s. Listening was, at that point, compared to a “neglected stepchild” (Oxford, 1993, p. 205), and as “an overlooked dimension in language acquisition” (Feyten, 1991, p. 173). Listening was often taken for granted, and the least understood and most overlooked among the four skills in the language classroom. Instead of being taught explicitly, listening was just developed as a part of general educational training for language learners (Mendelsohn, 1994; Nation and Newton, 2009; Oxford, 1993; Rost, 1994; Vandergrift, 2007; Vandergrift and Goh, 2009). This lack of attention to listening
came from the presumption that listening can be naturally acquired because students can listen to their teachers all day. Listening ability was seen as a natural gift that requires no training (Wolvin and Coakley, 1996). In addition, the covert nature as well as difficulties in understanding the actual listening process led to a lack of emphasis on listening skills (Joiner, 1986). Another factor was that it took longer to prepare materials to teach listening compared to other skills (Health, 1988).

Arguments for paying more attention to listening comprehension teaching started to be voiced as early as in the mid-1960s (Rivers, 1966), by Wintz in 1981 and by other researchers subsequently (e.g. Morley, 2001). Over time, researchers have acknowledged that listening should be developed like any other skills in language teaching (Brown, 1990; Morley, 1995, 2001; Mendelsohn, 1995; Oxford, 1993; Vandergrift, 2007, 2008, 2011; Vandergrift and Goh, 2012). (Hayati, 2009). This increasing recognition of the importance of listening may have come from the fact that many students of English in English as a Second Language (ESL) and EFL contexts had problems with listening comprehension. Those problems were caused by the fact that students have to make sense of information while also trying to store it (Brown, 1995; Buck, 1995; Mendelsohn, 1994; Rubin, 1995). Information may come and go to listeners at a very fast rate (Buck, 1995; Mendelsohn, 1995; Rost, 1994). Listeners may lack control over what is said, how, and how quickly it is said (Mendelsohn, 1995). The focus, then, had shifted from arguing about the importance of listening to how to best promote listening skills for language learners (Herron and Seay, 1991).

Given its recognition as a key process in language learning, researchers advocated that listening should be taught in a structured and systematic way (Flowerdew, 1994; Rost,
Systematic development of listening comprehension is important not only as input for learning to speak the language, but also as a premier skill in its own right (Morley, 1999). As listening is increasingly recognised as important in language learning, due attention should be paid to listening instruction and research.

### 3.2.3. Cognitive Processes in L2 Listening Comprehension

In second language acquisition (SLA), it is necessary to build up a theoretical model which can explain how the target language is learned and how it can be taught most effectively. Similarly, such a theoretical model is needed for listening comprehension. Cognitive theory helps to explain how technologies can assist teachers in developing students’ language-related skills and, specifically, listening skills. Cognitive processes in L2 listening comprehension can be viewed from four perspectives: bottom-up and top-down processing; controlled and automatic processing; perception, parsing and utilization, and metacognition. These cognitive processes describe what listeners do during listening, how they do this successfully, and how they can regulate the processes (Vandergrift and Goh, 2012).

#### 3.2.3.1. Bottom-Up and Top-Down Processing

Within this theoretical model, listening can be understood in two main ways: the bottom-up processing view and the top-down interpretation view (Anderson and Lynch, 1988; Brown, 1990; Buck, 2001; Chaudron and Richards, 1986); Flowerdew, 1994; Flowerdew and Miller; 2005; Johnson, 2008; Morley, 2001; Lynch and Mendelsohn, 2002; Nation and Newton, 2009; Nunan, 1995, 1997, 2002; Oxford, 1993; Rost, 2011; Rost and Wilson, 2013; Vandergrift and Goh, 2012). An interactive model and incorporating both bottom-
up and top-down processing of input was seen to have best explanatory power by Flowerdew and Miller (2005), Vandergrift (2004), and Vandergrift and Goh (2012).

Researchers developed the bottom-up model of listening in the 1940s and 1950s. In the bottom-up model, listeners build up their understanding from the smallest units (i.e. individual sounds, or morphemes), then combine them into words, which make up phrases, clauses, and sentences. In the final stage, individual sentences are combined to create ideas or concepts as well as relationships between them. In this model, the knowledge types needed in the listening process are applied in a serial hierarchical way. Finally, based on communicative situations, the listener interprets literal meanings in order to understand what the speaker really means (Anderson and Lynch, 1988; Brown, 1990; Buck, 2001; Chaudron and Richards, 1986; Field, 2008b; Flowerdew, 1994; Flowerdew and Miller, 2005; Johnson, 2008; Rost, 2011; Rost and Wilson, 2013; Vandergrift, 2004; Vandergrift and Goh, 2009, 2012).

Figure 3.1: A transmission view of communication

As can be seen from Figure 3.1, the sender encodes a message which, in a form of a signal, will pass along the communication channel before the receiver decodes it. Successful
communication will be guaranteed provided that there is no deficiency in the communication channel, and that the sender and receiver use the same code. In this model, communication can take place without reference to speakers, hearers, or wider contexts (Flowerdew and Miller, 2005). Listeners construct meaning by combining increasingly larger units of meaning, from phoneme to discourse levels.

The bottom-up process is not always accurate or workable in dealing with incoming information (Buck, 2001; Rixon, 1986). Listeners are not mere processors of language who act in a fixed order without contexts. Three arguments against the bottom-up process are: there is no one-to-one correspondence between segments of spoken signals and sounds we hear; there are no fixed distinctive characteristics in many phonemes that mark them as absolutely different from all others, and when words are extracted from conversations and played for listeners to recognise, only about half of them can be identified in isolation (Anderson and Lynch, 1988). Nevertheless, L2 learners sometimes lack linguistic knowledge in listening, which may mean they need basic lower level decoding skills (e.g. word recognition skills, sentence parsing skills, etc.) (Buck, 2001). Therefore, bottom-up processes may be useful to lower proficiency level L2 learners as they can usually recognise words in slow speech (Renandya, 2012). Successful language programs should therefore design tasks which help learners to automate their bottom-up process for recognizing words (Hulstijn, 2003).

In everyday life, we sometimes comprehend words before decoding sounds based on the knowledge we already have. In many situations, people know what happens and anticipate what they will hear. This is known as top-down processing. In the top-down model, listeners use prior knowledge in processing text rather than simply sounds and words.
Listeners have expectations about what they are going to hear, which will influence how they approach the message. Using incoming sounds as clues, the listener actively builds up or reconstructs the original meaning of the speaker. In applying contextual knowledge, the listener uses pre-established knowledge patterns and discourse structures stored in his or her memory (Anderson and Lynch, 1988; Buck, 2001; Flowerdew and Miller, 2005; Goh, 2008; Rost, 2011; Rost and Wilson, 2013; Vandergrift, 2004; Vandergrift and Goh, 2009, 2012).

There are two types of knowledge involved in the top-down listening process, namely, systematic or linguistic knowledge and non-linguistic or schematic knowledge. The former covers phonology, lexis, syntax, semantics, and discourse structure; the latter includes topics, contexts, and general world knowledge (Buck, 2001). The latter (i.e. schematic knowledge) plays a central role in effective listening comprehension (Anderson and Lynch, 1988; Johnson, 2008; Long, 1989; Rubin, 1994). Schema is “a mental structure, consisting of relevant individual knowledge, memory, and experience, which allows us to incorporate what we learn into what we know” (Anderson and Lynch, 1988, p. 14). Schema are based on our general world knowledge and experiences; generalised knowledge about situations, events, objects, feelings, and actions; are incomplete and constantly evolving; and are personal, and not usually totally accurate, representations of a phenomenon. Also, schematypically provide simplified explanations of complex phenomena. They contain uncertainty but are still used even if incorrect, and guide our understanding of new information by providing explanations of what is happening, what it means and what is likely to result (Pritchard, 2005). The use of schema is important for listening comprehension as they enable us to imagine details that are missing from descriptions,
narrative or social conversations (Rost, 1994). If people are familiar with subject matter or text types, they are more likely to achieve higher levels of comprehension. This macro-level of comprehension can compensate for micro-level factors such as sound discrimination, syntax, or utterance or word level semantics (Flowerdew and Miller, 2005).

In EFL contexts, students may sometimes lack not only listening skills but also cultural or specialist knowledge for listening comprehension tasks. The important role of prior knowledge in aural input comprehension has been shown in research by Chiang and Dunkel (1992), Markham and Latham (1987), Vandergrift (1997), and Vandergrift and Goh (2012). In teaching listening, teachers and listening materials should, therefore, be chosen so students will be well-prepared in terms of background knowledge relevant to the texts they will encounter.

It is widely acknowledged that in ESL or EFL teaching, both the bottom-up and top-down views are necessary and interrelated in listening because listening results from interactions between information sources, including acoustic input, linguistic knowledge types, contexts, and general knowledge of the world. In case there are gaps in knowledge, activities to assist in preparation for the input should precede the listening activity itself (Nunan, 1997, 2002).

So while the top-down approach can help listeners develop real-life listening skills, the bottom-up approach helps them develop their word recognition skills (Vandergrift, 2004). It is, therefore, suggested that the listening process should be considered as an interactive model between bottom-up and top-down approaches (Flowerdew and Miller, 2005; Rost and Wilson, 2013; Vandergrift, 2004; Vandergrift and Goh, 2009, 2012), which is discussed next.
An interactive model synthesising both bottom-up and top-down processes is suggested by some researchers (e.g. Flowerdew and Miller, 2005; Hulstijn, 2003; Rost and Wilson, 2013; Vandergrift, 2004; Vandergrift and Goh, 2009, 2012). In fact, all recent models of comprehension involve both of these two types (Johnson, 2008). In this parallel processing model, phonological, syntactic, semantic, and pragmatic information interact. While top-down processes are important, bottom-up processes are indispensable: for example, discriminating between different but similar sounds would facilitate subsequent top-down processing (Lynch and Mendelsohn, 2002). One advantage of the interactive model over either the bottom-up or top-down model is that it offers the possibility of individual variation in linguistic processing. At the individual level, some learners prefer the bottom-up process while others favour top-down processing. At the group level, beginners like to spend more time on bottom-up skills of decoding, while higher-level learners, who already have basic phonology and syntax, may prefer top-down skills of applying their schematic knowledge (Flowerdew and Miller, 2005).

The interactive model (i.e. a combination of top-down and bottom-up processes) of listening processing underpins the syllabus at the English Department of Hanoi University, that is both top-down processes and bottom-up processes are emphasised. The employment of a top-down model was supported in all listening classes during the project because it was suitable for the students of an upper-intermediate level of English. This means the students were encouraged and supported in using their existing schema while listening as part of their note-taking skills practice. Aware that prior knowledge of the students plays a very important role in their comprehension of listening texts, the research team encouraged and supported the teachers by providing them with relevant online resources during the project.
so that they could help students improve their background knowledge before, during, and after the lessons. In the meantime, the students had to complete such tasks as listening for signal words or for specific information (e.g. listening for numbers, stress, or intonation), or sometimes listening to individual key words to aid their general understanding of texts. In these situations, the bottom-up model was sometimes assumed to be operating (see the excerpt of the listening syllabus in Section 4.3.4.3.1). The realisation of an integrative model synthesising the two models would likely contribute to the teachers’ achieving the main objectives set in the listening syllabus at the department. This model will be returned to in the discussion of the study results in Chapter Five.

3.2.3.2. Controlled and Automatic Processing

According to Vandergrift and Goh (2012), L2 listeners who can efficiently coordinate the bottom-up and top-down processes achieve desired comprehension. However, when L2 listeners have limited knowledge, they cannot automatically process everything they hear. Listeners’ level of proficiency or familiarity with listening topics influences how they focus on some aspects of the input or attend to basic elements of meaning (e.g. relevant content words). When L2 learners cannot process the input automatically, controlled processing is required if time permits.

In controlled processing, the listening is consciously attended to and processed. Being a cognitive skill, listening needs practice to become automatic like other skilled behaviours (Johnson, 1996). As limitations of working memory and speed of the listening input may cause comprehension break-down, L2 listeners have to use strategies, contexts, or other relevant information to guess what they do not understand. Learners’ memory includes
long-term memory and working memory (or short-term memory). Long-term memory is the information bank (comprising listeners’ prior knowledge and life experiences) that learners access to interpret the input. Long-term memory helps to shape interpretation of incoming information while working memory influences listeners’ cognitive processing efficiency. The more familiar the input is to listeners, the more quickly long-term memory can supply linguistic and prior knowledge for listeners. With limited capacity, working memory only enables listeners to hold a certain amount of information before it fades and new information is processed (Call, 1985). Retained information in a phonological loop is held for a few seconds until sounds are segmented into words or larger chunks of speech linked with long-term memory. Listeners’ level of proficiency will decide the amount of information held in the working memory.

The links between working memory and long-term memory are critical in successful L2 listening comprehension. The more input listeners can process automatically, the more they can allocate their working memory to process new information. Increased working memory would, therefore, allow them to comprehend the content being heard, which is considered essential for critical listening.

The listening activities for the students in the project were focused on developing both their working memory and long-term memory, helping them to shift from controlled to automatic processes. For example, they were encouraged to use their schema to predict the content and to comprehend the listening texts, and use their working memory to retell them to their peers after listening (see also Appendix 8 for a detailed lesson plan).
3.2.3.3. Perception, Parsing, and Utilisation

In cognitive theory, language comprehension consists of active and complex skill processes, in which people construct meanings from aural or written texts (Anderson, 1985; Byrnes, 1984; Call, 1985; O’Malley and Chamot, 1990). Listening comprehension is a cognitive activity which involves “the activation and modification of concepts in the listener’s mind” (Rost, 2011, p. 57). The conceptual knowledge brought by listeners for text comprehension should be coordinated in a way that would allow listeners to activate it efficiently and progressively build an acceptable cognitive understanding of that input (Rost, 2011). On the basis of the three stages of comprehension described by Anderson (1985), listening comprehension can be understood as three interrelated processes, namely, perceptual processing, parsing, and utilisation (Anderson, 1985, 1990; Bacon, 1992a, 1992b; O’Malley and Chamot, 1990; O’Malley, Chamot, and Küpper, 1989; Vandergrift and Goh, 2012; Underwood, 1989).

In the perception phase of the word segmentation process, listeners use bottom-up processes to recognise phonemes, pauses, and acoustic varieties, and hold them in their memory (Vandergrift and Goh, 2012) (see Section 3.2.3.1). The process of listeners decoding speech includes: attending to text selectively; noting similarities, pauses and acoustic stress relevant to a language, and grouping these according to categories of the language. After this initial phase of word segmentation, a phonetic representation of what is retained is passed on for the parsing stage. A major challenge for L2 listeners is how to develop word segmentation skills. As stress patterns, omissions, and reduced form in spoken language make it difficult to segment words, L2 listeners may not be able to recognise words in connected speech (Vandergrift and Goh, 2012). As L1 word
segmentation strategies are involuntarily applied in listening to another language, L2 listeners may encounter such difficulties as inability to identify words; missing some of parts of speech; inability to group streams of speech, and problems in concentration (Goh, 2000).

In the parsing phase, based on word onset, perceptual salience or phonotactic rules, listeners use parsed speech in order to retrieve word candidates from their long-term memory, thus creating potential meaning of words in their working memory. Along with their language proficiency development, L2 listeners can activate word candidates relevant to topics or contexts, and can hold meaning in larger chunks of content (Vandergrift and Goh, 2012). The difficulties L2 listeners may have include: inability to retain what has been heard; inability to create a mental representation from spoken words; and inability to comprehend subsequent parts because of information missed earlier (Goh, 2000).

In the utilisation phase, listeners use top-down processing to relate the parsed information to their long-term memory to interpret meanings (see Section 3.2.3.1). Listeners use their pragmatic, prior knowledge (i.e. schema stored in long-term memory) and other relevant information to build on newly parsed information and validate the interpretation of this information. In this phase, listeners form a conceptual framework to match emerging interpretation of text and to go beyond the literal meaning of listening input if needed. Good listeners can automatically match the parsed information with prior knowledge to derive meaning. In case automatic processes breakdown, listeners may have to revisit their inferences (Vandergrift and Goh, 2012). Reported problems by L2 listeners in this phase include: understanding of words but not messages, and confusion because of seeming incongruity in messages (Goh, 2000).
These three processes do not work individually or sequentially because any level may influence or may be influenced by results of the others. In fluent listening, the processes take place simultaneously when new input is processed. As discussed in Sections 3.2.5.1 and 3.2.5.2, the broader the background knowledge L2 listeners have, the more fluently they can listen. The combination of video and audio (and sometimes text) provided by rich online resources in the current study was expected to provide considerable amounts of background knowledge to the students, thus supporting their comprehension during the listening process.

3.2.3.4. Metacognition

It is necessary to guide learners to realise to the maximum extent the external and internal resources (including information in texts, visuals, prior knowledge, and contexts) they can use to help themselves in learning a second language (Goh, 2002). Teachers should encourage students to make full use of their resources to support their own listening comprehension (Færch and Kasper, 1986; Garrod, 1986). This role of language teachers matches the constructivist approach of placing the learner at the centre of the curriculum. Learning strategies that learners have gained from the past are raw materials for any learning programmes (Willing, 1988). There are cognitive and metacognitive strategies, the former directly related to the language process, and the latter to knowing about learning and controlling the context in which learning happens (Buck, 2001; O’Malley and Chamot, 1990; Oxford, 1990; Rost and Wilson, 2013; Vandergrift and Goh, 2012; Willing, 1988). In other words, metacognition refers to listeners’ awareness of cognitive processes involved in comprehension, the capacity to oversee, regulate and direct these processes (Goh, 2008),
and includes knowledge about factors relating to task, person, and strategy coming into play during cognitive activity (Vandergrift and Goh, 2012).

Listening strategies can be categorised into metacognitive (including planning, monitoring, problem-solving, and evaluating); cognitive (including inferencing, elaboration, imagery, summarisation, translation, transfer, repetition, resourcing, grouping, note-taking, deductive/induction and substituting), and socio-affective (including questioning for clarification, cooperation, lowering anxiety, self-encouragement and taking emotional temperature) (Rost and Wilson, 2013; Vandergrift, 1997; Vandergrift and Goh, 2012).

As discussed in Section 3.1.2, the use of computers (i.e. hypertext, hypermedia, simulations or microworlds for knowledge discovery; online tutorials and cognitive tools for active construction of knowledge, and CSCL technologies for social interaction during the knowledge construction process) can support and promote the cognitive processes involved in listening skills as mentioned above. In theory, the cognitive processes facilitated by technology use can help improve listening skills performance of language learners; to establish whether this occurred in practice is the focus of the first research question of the study.

It was expected that teaching listening with online resources would help to develop the CALI-intervention students’ metacognitive skills, thus fostering their activeness, creativeness, and collaborations in the learning process.
3.3. Listening Skills and Multimedia

Listening is a cognitive skill in language learning. A theoretical model is needed as a basis for explaining how language is learned with multimedia. A good description of listening development through multimedia is also needed for understanding the role of multimedia in the development of listening skills.

3.3.1. Cognitive Theory of Multimedia Learning

An integrated model of second language acquisition was proposed by Plass and Jones (2005) with the incorporation of elements of Ellis’s (1997) model of second language learning, components of an interactionist model of second language acquisition (Chapelle, 1998), and Mayer’s (2002, 2005) cognitive theory of multimedia learning (See Figure 3.2).

![Figure 3.2: Integrated model of second language acquisition with multimedia](Plass and Jones, 2005, p. 471)

According to Mayer (2002, 2005), there are three assumptions underlying the cognitive theory of multimedia learning, namely, dual channels, limited capacity, and active
processing. The first is that the human cognitive system has two distinct channels, namely, visual/pictorial and auditory/verbal processing for representing and manipulating knowledge. The second assumption is that the amount of information that humans can process in each channel at one time is limited. This means when too many pictures or words are presented at one time, the visual-pictorial or auditory-verbal channel can be overloaded. The third assumption, active learning, means that learners actively engage in processing within the channels, that is to say they select relevant words and pictures, organise them into coherent visual-pictorial and auditory-verbal models, and integrate them with each other and with appropriate prior knowledge to make sense of multimedia presentations (see also Section 3.2.3.1).

There are five cognitive processes in multimedia learning, namely, select relevant words from text or narration presented, select relevant images from presented illustrations, organise selected words into coherent verbal representations, organise selected images into coherent pictorial representations, and integrate pictorial and verbal representations and prior knowledge (Mayer, 2005).

Specifically, the cognitive theory of multimedia learning, which is based on how the human brain works, is described in Figure 3.3. The auditory-verbal channel is on the right and the visual-pictorial channel is on the left. In their working memory, L2 learners only pay attention to certain words and construct some word sounds in selecting words, and only attend to certain aspects of pictures and construct some images in selecting images. L2 learners mentally connect verbal and pictorial models and also appropriate prior knowledge from their long-term memory in the cognitive process of integrating. Through processes of selecting and organising words and integrating, verbal thinking is involved and, in selecting
and organising images and integrating, visuospatial thinking is involved. When L2 learners engage in appropriate verbal and visuo-spatial thinking, meaningful learning will occur.

Figure 3.3: Cognitive theory of multimedia learning

The combination of visual and verbal modes has strongly and consistently supported L2 learners’ listening comprehension and also supported vocabulary acquisition (Chun and Plass, 1996; Jones, 2004; Jones and Plass, 2002).

The understanding of a comprehensive model of second language acquisition with multimedia contributed to the computer skills training for the teachers (i.e. the cognitive
model of second language acquisition with multimedia was introduced and discussed in the CALI teacher training workshop at the beginning of the project), and to designing appropriate computer-assisted listening instruction activities during the course of the project. A detailed description of the training and activities will be presented in Chapter Four of the study.

3.3.2. Listening Development through Multimedia

Dual processing (i.e. aural and visual modalities) was believed by some previous researchers (e.g. Fisher, 1984; Singer, 1980; Williams and Snipper, 1990) to put too much pressure on listeners/watchers, especially in a foreign or second language, causing derailment of comprehension. There may even be a potential loss of information as learners might find the visual portion distracting them from the aural information (Taylor, 2005). However, text included in multimedia was believed by some researchers (e.g. Chiquito, 1995; Jung, 1990; Vanderplank, 1990) at least not to interfere with comprehension. Moreover, there is evidence that the combination of visual, aural, and text (i.e. multimedia) helps to enhance both processing and recalling the target language. Pictorial or written information supporting aural text has long been acknowledged to help improve L2 learners’ listening comprehension (Carlson, 1991; Garza, 1991; Gruba, 2004; Guillery, 1998; Herron, Hanley, and Cole, 1995; Joiner, 1997; Mendelsohn, 1998; Mueller, 1980; Pusack and Otto, 1997; Raphan, 1996; Severin, 1967), enhance recall ability (Chiquito, 1995), and therefore increase students’ outputs (Garza, 1991).

The following sections are devoted to the main features of multimedia including visuals, video, and text, and two cognitive processes, namely, schema and chunking (Meskill, 1996).
As discussed in the previous section (3.3.1), visuals, including pictures, slides, and drawings, support both comprehension and form-to-meaning correspondence of the students, both of which would contribute to increasing their motivation level in learning listening skills (Meskill, 1996). This type of motivation can be considered as intrinsic for two reasons: first, learners would enjoy watching visuals as they are appealing to their eyes, and therefore, fun to watch (while listening at the same time); second, with the two factors mentioned above (i.e. the support of comprehension and form-to-meaning correspondence), learners are likely to engage more in listening practice. Images enhance the comprehension, storage and recall of aural information (Paivio, 1971, 1986). Visuals have positive effects on the listening process as aural text processing is facilitated by varied audio-visual aids (Pouwels, 1992; Snyder and Colón, 1988) and by combinations of visual, aural and textual inputs (Chiquito, 1995; Garza, 1991). Compared to listening in the first language, more time and mental energy is needed to understand unfamiliar challenging linguistic issues in a foreign language. As construction of mental representations and interpretations is needed in L2 listening, learners should be provided with stimuli (such as visuals) to support and extend that construction process. Information in visuals can help to save cognitive energy for other critical processes (e.g. input predication and elaboration) rather than linguistic decoding. Visuals can provide learners with “hooks on which to hang meaning and make sense of the aural stream” (Meskill, 1996, p. 184). In fact, more recent technology has made the use of images in different ways and on demand or searchable. For example, dynamic images, live video streams, and a greater choice of sources add the richness of learning environments.
Video was considered more striking, comprehensible, and powerful than other media for language learning at the time of its initial use (Vanderplank, 1990). While video may create challenges to L2 listeners’ comprehension (e.g. unfamiliar discourse patterns, speech rates, vocabulary, prosody and syntactic structures; confusing visual cuts, and distinction between aural and visual information (Cross, 2009), it can be motivating to learners and allow them to give more of their attention to aural input. With images and full motion, video is appealing to learners’ eyes, which would stimulate their intrinsic motivation, and the video provides more information for comprehension than still images (Fletcher and Tobias, 2005). Videotexts, for example, enable L2 learners to both hear and see the target language in use with its culture and society, thus increasing their interests in learning the language (Cross, 2011). With their own extensive experience through film, television, and their conventions, learners tend to be literate and psychologically well-prepared for video-using skills, and therefore could get used to decoding video messages for extended periods of time. Also, as demands for simple coding are strong and at the expense of elaboration in listening to a foreign language, other forms of support from video may help listeners to attend to overall meaning before being preoccupied with language form. This means multi-model materials by video would support listeners’ comprehension rather than draw their attention to constituent parts of the message (Carlson, 1991; Gruba, 2004; Mendelsohn, 1998; Meskill, 1996).

Text, which co-occurs with video (or subtitiles), can aid L2 listening comprehension (Garza, 1991; Guillory, 1998; Jones, 2003; Markham, 2000-2001; Meskill, 1996; Stewart and Pertusa, 2004 ). In a study by Guillory (1998), video clips with captions (both in full text and with key words) supported listening learning better than non-caption ones. As
explained by Guilorry (1998), information provided in the text (especially the video clips with key words rather than the full-text ones) supported comprehension. As people’s speaking was subtitled on the video screen, video text resembled oral communication, rather than writing. Therefore, it exposed learners to approximations of oral language, both in aural and written forms simultaneously (Meskill, 1996).

*Schema* are believed to support and enhance listening comprehension. As discussed in Section 3.2.3.1, activating knowledge about the world markedly assists new information processing. An authentic language learning activity must have learners make use of the complex contexts that aural texts reside in. Effective learning occurs when these complex contexts are utilised by matching previous experiences with new input (Diller, 1981). The use of such mental schema is an essential strategy for listening skills development.

Prior knowledge and the linking of old and new information can be activated by any one or any combination of textual, aural or visual inputs. When learners are prompted by multimedia to make use of visual conventions to support their aural processing, comprehension and retention of aural input can be enhanced (Chiquito, 1995; Gay, 1986; Meskill, 1991). Mental schema also include scripts, which are conventional templates or verbal routines to accomplish communicative goals. Script competence, which is understood as knowledge listeners possess in advance about subject matters and contexts of discourses, can play a very important role in deciding successful comprehension of aural input in second language learning (Dunkel, 1986; McCarthy, 1991). Familiarising learners with scripts in the target language (i.e. understanding how things get done with language through formulaic routines) would be feasible with multimedia (Meskill, 1996).
Chunks (also called discourse chunks), which are lengthy stretches of discourse, are the focus in second language instruction. In this approach, listening contexts are important in determining listeners’ comprehension. Through multimedia, students access, view, and repeat texts representing extended discourses that are richly contextualised by visual and textual information. When texts are chunked, learners can control the listening stream by stopping, repeating, or starting chunks in a suitable way for their effective listening practice. Optimal chunks can be decided by syntactic breaks, which are called “breathing points” governed by the language syntax. In this way, learners can use not only structural clues to meaning but also, equally, the rule-governed rhythm of chunks (e.g. stress and intonation patterns) (Meskill, 1996). Previous studies have shown the positive effect of chunking. Good listeners made use of chunks (or segments) to comprehend aural text (Hawkins, Yong-ho, and Pingree, 1991); effective listeners used syntactic breaks and intonation contours for chunking and processing text (O’Malley et al., 1989). Thus, with the combination of aural, visual, and textual inputs, capacity to encourage learners’ use of schema and opportunities for working with discourse chunks, multimedia could be a very effective medium for both teaching and practicing listening skills (Meskill, 1996).

With development of multimedia and the Internet, computers can be very effectively used for listening skills. Audio and video resources on the Internet offer language learners easy access to a vast quantity of listening materials, which can be stored, managed, and distributed (Levy, 2009). Through many websites, a great amount of authentic material, which is readily applicable, up-to-date, and free, can be used for listening skills. For example, teachers and students can access online authentic listening material from radio or TV programmes for listening teaching and practice (Mosquera, 2001). Students can even
use mobile phones to browse wireless application protocols (WAP) for listening, which creates more opportunities for their language skills and encourages them to participate actively in learning (Nah, White, and Sussex, 2008). As discussed earlier in Section 2.2.1, podcasting is a recent technology gaining much interest for developing listening skills (McCarty, 2005; O’Bryan and Hegelheimer, 2007; Rosell-Aguilar, 2007). Podcasts are audio or video files broadcast via the Internet with sound files that are “pushed” to subscribers at regular intervals. Podcasts can also be used to facilitate listening instruction which, research shows, has resulted in teachers’ and learners’ positive attitudes towards computer-assisted multimedia (O’Bryan and Hegelheimer, 2007). The benefits of podcasts use in listening teaching and learning are presented in detail in the coming section of this study.

To sum up, with all the dynamic multimedia functions described above, the computer can play a very important role in facilitating constructivist learning, which is the framework of the current study (see Section 3.1). The use and affordances of technology offer teachers many engaging ways to implement the theoretical principles of language learning that were identified by researchers many years ago. Computer use can help to make language learners more active, creative, autonomous, and collaborative in learning, which are key factors in learning a language in general, and in listening skills in particular (see Section 3.2.3). This helps to answer the first research question in this study. To achieve this aim, the researcher and her assistant studied all of the features of listening comprehension, cognitive theory and multimedia learning carefully before the project commenced, and explored and exploited them thoroughly during the conduct of the computer-assisted listening instruction project.
The coming section is devoted to a detailed description of previous empirical studies on computer-assisted listening instruction.

**3.4. Previous Studies in Computer-Assisted Listening Instruction**

Up to the present time of this study (i.e. 2014), there have been a number of CALI-intervention projects investigating the effects of computers on developments of students’ language skills in general and in listening skills in particular, and on motivation and attitudes towards computers on the part of teachers and students. All of the studies employed mixed methods (i.e. both quantitative and qualitative research designs), and were conducted in tertiary institutions, yet they had different participants and settings, and measured the success of students in different ways. Different forms of multi-media including Web-based materials, digital annotations, podcasts, and CSCL environments were used to teaching listening skills in these studies (see Appendices 1a and 1b).

The use of Web-based listening materials (i.e. Brett, 1997; Iskold, 2008; Jakobsdóttir and Hooper, 1995; Nah et al., 2008; Puakpong, 2008; Romeo and Hubbard, 2010); digital annotation use for teaching listening skills by Jones (2003), and application of podcasts by Hawke (2010); Lu (2009); Qasim and Fadda (2013) resulted in better listening comprehension, increased motivation and positive attitudes toward computer use of language learners. There were also implications drawn from some of these studies: ongoing feedback for tasks provided by the multimedia (e.g., providing instant ticks and crosses guiding, confirming, and realigning internal and ongoing construction of messages) should improve listening comprehension (Brett, 1997); blended learning (i.e. the combination of face-to-face and computer-assisted teaching) would maximise positive effects on online
resources (Iskold, 2008), and the use of online resources could help to promote student-centred learning and collaborative learning (Nah et al., 2008). Slightly different from the other works mentioned above, the project by Lee (2007) applied E-Touch (a commercial Web-based system for English learning and testing) in an English course for senior cadets and discovered improvement in their English listening and reading comprehension as well as their positive attitudes toward blended learning.

With the use of Web-based CALL news programmes, the studies by Lin (2010) and by Smidt and Hegelheimer (2007) found positive effects of the resources on students’ enhanced listening comprehension and incidental vocabulary acquisition. Similar results were found by Jones (2004, 2008), who employed digital annotations for teaching listening skills. The use of Web-based materials in the study by Chen and Zhang (2011), and the use of podcasts and / or vodcasts as supplementary resources for listening in the studies by Alm (2013); Ashraf, Noroozi, and Salami (2011); Chan, Chi, Chin, and Lin (2011); Corbeil and Corbeil (2011); Lee and Chan (2007); Li (2010); Lu (2009); Menezes and Moreira (2009), O’Bryan and Hegelheimer (2007), Scida and Sauri (2006), Weinberg, Knoerr, and Vandergrift (2011) had common results that learners showed increased motivation and had positive attitudes towards this type of modern technology in learning listening skills. As suggested in these studies, factors affecting this positive relationship included real or authentic materials covering current and cultural issues, flexibility and ease of access, and interesting, useful and informative contents of podcasts and vodcasts used in language teaching. The positive effects that podcasts brought to learners in these studies could be explained by the benefits of podcasts such as convenience, low costs, time saving, and opportunities for rich online resources for L2 listening practice (see also Section 2.2.3).
The studies described above provided evidence of positive effects of computer use on listening teaching and learning in some parts of the world. As computer-assisted listening instruction is still considered a new area in Vietnam, the model applying the computer in teaching listening skills in a Vietnamese tertiary institution was conducted in this project to investigate the effects of computer use in EFL teaching and learning in Vietnam. The strengths and limitations of previous studies described above were considered and analysed carefully by the researcher in order to increase the likelihood of successful outcomes of the current study.

3.5. Selecting CALL Materials for Listening Skills

This final section describes how CALL materials can be selected for teaching listening skills. This literature like that reviewed in the rest of this chapter, informed the computer-mediated listening instruction invention employed in the present study.

The development and use of CALL is different from those of textbooks, workbooks, videos, or other language teaching materials. Options for technology-assisted language learning are much greater than those in textbooks, audios or videos. Professional CALL literature, therefore, contains much research and reflection on CALL evaluation, which appears in technology and language learning journals, namely, CALICO, ReCALL, Technology and Language Learning, and ALSIC (Apprentissage des langues et systèmes d’information et de communication) (Chapelle, 2010). CALL and non-CALL materials have similarities, yet there are many differences between them due to the dynamic nature of CALL (Levy, 1997). Language teachers should be aware of these in the process of using CALL materials in their teaching.
Along with the increasing use of computers in language teaching, English learning websites are expanding dramatically. CALL materials can be manually or automatically downloaded for later study through file transfer, podcasts, and Webcasts. The number of English learning websites available providing listening materials is increasing. Digitised audio and video resources “have made their way into all aspects of educational computing” (Levy, 2009, p. 774). Audio and video materials can be stored, managed, and easily accessed for learning. As the increase of available listening websites has made it difficult for users to choose the most appropriate ones, “all teachers need to know how to use the Web as a resource for current authentic language materials in written, audio, and visual formats” (Chapelle and Hegelheimer, 2004, p. 305). By “how to use the web” the authors were not referring to technical skills but, rather, to evaluative skills. It has become, therefore, increasingly important to evaluate such web materials systematically before use and select them for specific purposes when they are embedded in course and learning activity designs (Chapelle and Hegelheimer, 2004; Fotos and Browne, 2004; Susser and Robb, 2004; Taylor and Gitsaki, 2004).

In language learning and teaching, an optimal learning website should not only provide users with a place to surf, but also help them create some “waves” from surfing (Yang and Chan, 2008). By the metaphor of waves they likely mean the impetus, direction and possibly opportunity for repeat practice. In order to select useful websites, it is necessary to undertake two stages, screening and evaluation. In screening websites, language teachers have to:

- establish rough academic and functional criteria for screening;
- find potential sites by using meta sites or published materials;
• visit as many sites as possible and use their own rough criteria to bookmark a shortlist of sites for evaluation (e.g.: academic criteria includes topic, level, volume, item, and feedback). (Susser and Robb, 2004, pp. 280 – 281)

In screening, teachers should explore many websites and have their own evaluation criteria for those websites. The evaluation framework of websites should cover “language acquisition, ESL/EFL materials design, learner profile and learning style, courseware and multimedia instructional design, and online courseware instructional design” (Susser and Robb, 2004, p. 282). Suggested criteria for high quality CALL materials include flexibility across ages and levels; thematic, contextual presentation; interesting relevant content; possibility for open-ended students’ expression and natural interactions among students; mixed media (i.e. books and CDs complementing software) with provision of detailed documentation (e.g. lesson plans, setup) and in-service training. After screening and evaluating materials, language teachers should, however, adapt or modify the materials to suit their own teaching situations (Chapelle and Hegelheimer, 2004).

Components within English learning websites to be evaluated include the four language skills (listening, speaking, reading, writing), and the four major language areas (namely, knowledge of grammar, pronunciation, vocabulary, and culture) (Liu, Liu, and Hwang, 2010). Other considerations in forming an evaluation include the ACTFL standards for foreign language learning (i.e. standards of communications, cultures, connections, comparisons, and communities); learners’ preferences and styles; web usability (making systems easy to learn and to use), and website functionality of assisting language learning (i.e. extent to which website materials can provide multichannel, hypermedia-based communicative opportunities for learners to cultivate their language skills and language
areas) (Chapelle, 2009; Shield and Kukulska-Hulme, 2006; Levy, 2009; Liu and Chen, 2007).

A review of existing criteria for English learning website evaluation can be seen in Table 3.3. Although these criteria were developed some time ago, they were reviewed by Yang and Chan (2008) in order to establish a comprehensive set which will be described later in this section.
Table 3.3: Existing evaluation criteria for evaluating English learning websites

<table>
<thead>
<tr>
<th>Author</th>
<th>Evaluation criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hubbard (1988)</td>
<td>1. Giving meaningful rather than mechanical practice, contextualised in a coherent discourse larger than a single sentence</td>
</tr>
<tr>
<td></td>
<td>2. Providing hints of various types to lead students to correct answers</td>
</tr>
<tr>
<td></td>
<td>3. Accepting appropriate alternative correct answers within a given context</td>
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<tr>
<td></td>
<td>4. Offering the option of explanations for why correct answers are correct</td>
</tr>
<tr>
<td></td>
<td>5. Anticipating incorrect answers and offering explanations for why they are incorrect</td>
</tr>
<tr>
<td>Chapelle (1998)</td>
<td>1. Making key linguistic characteristics salient</td>
</tr>
<tr>
<td></td>
<td>2. Offering modifications of linguistic input</td>
</tr>
<tr>
<td></td>
<td>3. Providing opportunities for ‘comprehensible output’</td>
</tr>
<tr>
<td></td>
<td>4. Providing opportunities for learners to notice their errors</td>
</tr>
<tr>
<td></td>
<td>5. Providing opportunities for learners to correct their linguistic output</td>
</tr>
<tr>
<td></td>
<td>6. Supporting modified interaction between the learner and the computer</td>
</tr>
<tr>
<td></td>
<td>7. Acting as a participant in L2 tasks</td>
</tr>
<tr>
<td>Comer and Geissler (1998)</td>
<td>1. Content: (a) Quality; (b) Depth; (c) Tests</td>
</tr>
<tr>
<td></td>
<td>2. Interface: (a) Ease of use; (b) Navigation; (c) Text quality; (d) Graphics; (b) Sound; (e) Technical; (f) Sound</td>
</tr>
<tr>
<td></td>
<td>3. Interactivity: (a) Feedback</td>
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<tr>
<td></td>
<td>4. Sequence: (a) Questions</td>
</tr>
<tr>
<td></td>
<td>5. Classroom related issues: (a) Entry level/Technical requirements; (b) Motivation; (c) Backwash; (d) Management</td>
</tr>
<tr>
<td></td>
<td>6. Support: (a) Online help; (b) Off-line help</td>
</tr>
<tr>
<td>Bradin (1999)</td>
<td>1. Feasibility: (a) Will the software run on your computer and platform? (b) Will the software run on your network? (c) Can the software be made available to many students? (d) Does the software require Internet access? (e) Can you afford the software?</td>
</tr>
<tr>
<td></td>
<td>2. Quality</td>
</tr>
<tr>
<td></td>
<td>2.1 Content: (a) What is the goal of the software? (b) Is the level appropriate? (c) Is the content accurate and up-to-date? (d) Is the material culturally appropriate? (e) Does the software accommodate the students’ learning styles and preferences? (f) Is the software interesting? (g) How flexible is the software?</td>
</tr>
<tr>
<td></td>
<td>2.2 Format: (a) Is the interface consistent? (b) Is the screen display effective? (c) Are the motivational devices effective?</td>
</tr>
<tr>
<td></td>
<td>2.3 Operation: (a) Is the software easy to use? (b) Can the text and graphics be printed? (c) How much control are the learners allowed? (d) How interactive is the software? (e) Are the quality and degree of feedback adequate? (f) What kinds of records does the software keep?</td>
</tr>
</tbody>
</table>

(Yang and Chan, 2008, p. 405)
However, there are some problems with these website evaluation criteria. First, many of them are just general guidelines for CALL-related materials and do not provide specific aspects and concerns about English learning; second, none of them is specific enough as they lack emphasis on evaluating the transmission of four language skills to learners; third, they did not offer a complete set of criteria in one or all language learning aspects (thus placing a burden on designers, teachers and learners in designing, selecting and using websites); fourth, they were almost completely based on theoretical concepts (i.e. opinions of experts), but lack the inclusion of opinions and needs of teachers and students, who are actual users of the materials, and fifth, most of criteria developed previously were not validated by empirical research, which is a weak foundation for designing and selecting websites, thus slowing down progress in making them more effective (Yang and Chan, 2008).

As English learning websites have changed markedly over the last ten years, the criteria sets described above may not be applicable for recent CALL-related studies, including the present study. A three-phase research study conducted by Yang and Chan (2008) including synthesising and establishing a set of criteria based on a thorough literature review, evaluating and refining them through interviews with teachers and learners, and validating and finalising the refined criteria with expert validity surveys resulted in the set of criteria, which will be described in detail in Chapter Four. Compared to all the previous sets of criteria, the set of criteria suggested by Yang and Chan (2008) (the latest set available at the time of this study commencement) seems to cover all major aspects of teaching listening. Given that these criteria were investigated, established, and validated thoroughly on both theoretical and empirical foundations, they were given much weight by the researcher and
her team in selecting websites for teaching listening during the project time. They helped to achieve both academic and research objectives set before the project commenced. These criteria suggested by Yang and Chan (2008) were drawn on in selecting appropriate online listening resources to teach the students in the current study. A further discussion on how CALL materials were selected with the use of the website evaluation criteria set by Yang and Chan (2008) will be presented in Section 4.3.4.1.

3.6. Summary

This chapter has provided a review of relevant literature in listening skills in language learning, and the relationship between listening skills development and CALL. The chapter started with the concept of constructivism and the close relationship between constructivism and the likely affordances of technology (Section 3.1). Then a review of listening skills in language learning (Section 3.2), covering the definition, importance of listening, listening models, listening strategies, and a cognitive model for listening comprehension was presented. A detailed description of the relationship between listening skills and multimedia followed (Section 3.3). Sections 3.2 and 3.3 provided a picture of listening in the context of language learning and in technology use. In the next section (Section 3.4), previous studies on CALL-related listening instruction were reviewed, discussed, and evaluated to help provide an empirical foundation to the current study. The final section (Section 3.5) was dedicated to criteria for selecting CALL materials for language teaching in general, and for listening instruction in particular. A comprehensive review of relevant components in this chapter helped to form guidelines and directions for the intervention design (including selecting websites based on an appropriate set of criteria, designing computer-assisted listening activities and coaching teachers) (see Section 4.3.4.3.
for further description) and research methodology of the present study (including designing research tools and data analysis) (see Section 4.3.5). In the next chapter, a detailed description of methodology employed in the study is presented.
CHAPTER FOUR: RESEARCH METHODOLOGY

In this chapter, the methodology employed for data collection and analysis is presented. It includes three main parts: context of the study, a methodological literature review, and methods of the thesis study. The first part describes the context where the study was conducted. In the second part, an overview of the methodologies used in previous CALL research is presented to provide a background to the design and research methods of the present study. The third part reports the methods applied in the current study, including an overview of research design, participants, research team, procedures, instruments, and data analysis.

As discussed in Chapter One, the main purpose of the current research was to discover whether the application of a CALL-intervention project would help Vietnamese students of English to develop their listening skills. The study aimed to investigate the effects of the intervention project on EFL teachers and learners in Vietnam. Based on the nature of the research questions, and on the literature of previous CALL studies, the present study employed a quasi-experimental design and mixed research methods to address those questions.

4.1. Context of the Study

4.1.1. Hanoi University

Established in 1959 by the Government of Vietnam, Hanoi University has been one of the few universities entrusted by the State to train interpreters, translators and teachers of undergraduate and post-graduate qualifications in foreign languages. The University offers a great number of modular programmes at both bachelor and master levels. Hanoi
University now offers regular courses in 19 languages as foreign languages such as English, Chinese, Japanese, Korean, Thai, French, Russian, German, Spanish, Italian, Portuguese, Hungarian, Rumanian, Bulgarian, Polish, Czech, Slovak, and Arabic and also offers the study of Vietnamese as a language. In addition, the university conducts research in linguistics, teaching methodology, and curriculum design and development.

There are approximately 400 lecturers of different majors at Hanoi University. There are about 6,000 full time students of undergraduate and post-graduate programmes in different departments or divisions, among which are about 1800 full-time students in the English Major B.A. Programme. Many of these students become translators and interpreters, and others become teachers of English for colleges and universities in Vietnam.

According to the websites of Hanoi University and of English Department, the facilities for language teaching at Hanoi University, in general and in the English Department, have constantly been modernised and upgraded. Technology plays a very important role in the process of renovation and development of the university. The facilities of Hanoi University, which have been increasingly upgraded, include:

- Laboratories for language teaching, for training professional simultaneous interpreters.
- More than ten multimedia laboratories with more than 200 computers connected to the Internet and installed with up-to-date software programs for language learning and teaching.
- University digital administration system with more than 300 computers enabling students to get enrolled or register for online self-study in laboratories.
Open libraries with more than 30,000 books; 2,000 CDs, and more than 200 computers connected to the Internet 24 hours, seven days a week. (Hanoi University Brochure, 2013)

The modern equipment and facilities described above would support the use of computers in Hanoi University.

4.1.2. English Department

Officially founded in 1967, the English Department has developed into the largest department of Hanoi University. The department offers different English courses, namely, in-service, correspondence, second-degree, and second-foreign language courses, from which about 500 students graduate every year. The number of full-time students newly enrolled every year ranges from 300 to 1000. The number of teachers at the department is currently about 70.

Full-time English-major students have a four-year course programme consisting of eight semesters. The course is divided into two phases. The first phase includes four semesters, in which the focus is the development of their English proficiency in terms of four language skills, namely, Listening, Speaking, Reading, Writing, and English for Academic Purposes (EAP) Study Skills. The second phase of the last four semesters is designed to develop and perfect the students’ knowledge of the English language in terms of theory and practice. During the second phase, students learn more theoretical subjects, such as Linguistics, ELT Methodology, English Literature, Translation and Interpretation Theory and Practice, and Cultural Studies (i.e. knowledge about cultures, geography, history, and political systems of English-speaking countries) (English Department – Hanoi University official website: http://web.hanu.vn/en/).
The teaching in the department aims to ensure that, after graduating from the university, the students have a very good command of the English language in both theory and practice. In fact, it is claimed that about 95 percent of the graduates have been able to work efficiently with English speakers in every field (Chu, 2009; English Department Brochure 2012).

Among the skills taught in the English Department, listening is considered the most difficult skill to learn and to teach. The first listening resource materials used at the department were some tapes brought from England by some Vietnamese teachers of English in the 1980s. During this time, *New Concept* (1969), *Kernel Lessons* (1977), *Listen Carefully* (1980), *Now Hear This* (1984), *Task Listening* (1989) formed the first original sources of spoken English used at the department. In the early 1990s, some other ready-made listening materials were in use, including *Elementary Task Listening* (1990), *Streamline English* (1991), and *Listening in Action* (1991). In recent years, many new listening materials are available in Vietnam such as *Active Listening* (1995), *Introductory Topics* (1995), *Academic Listening Encounters: Human Behaviour* (2000), *Contemporary Topics* (2002), *Tactics for Listening* (2003) and *Academic Listening Encounters: Life in Society* (2004), some of which have been used in teaching as the main course-books or supplementary listening materials in the department. In general, all these materials are good for teaching integrated skills and especially for listening skills. These materials support the main topics or sub-skills suggested in the syllabus. While the increasing array of resources available on the internet might have potential, they are have not been widely adapted and used because Vietnamese teachers and course designers are generally looking at textbooks as a total package, rather than for materials to be adapted to fit into a course and student
prior abilities and current learning needs, as such requires much more preparation time and skill on the part of the teacher.

Similar to all the facilities available at the university, classrooms at English Department are equipped to modern language teaching standards. Unlike the typical Vietnamese class, the conditions of foreign language classes at Hanoi University in general and English Department are much better: the size of the class is usually under 30 students (instead of the usual class size of 40 to 50 students), and the students are seated in U-shape (instead of sitting in rows), ensuring equal access to the teacher and the screen connected to the computer at the front, and students have equal opportunities to participate in different class activities. The department has some modern language laboratories, a self-access individual learning centre, audio-visual aids, and a system of computers for administering students' record of study and assessment. In the laboratories where the project classes were conducted, there was a computer for the teacher at the front of the class. According to the reflections of the researcher and the comments her colleagues conveyed during their informal interactions, it seems as if the teachers at the English Department have always been encouraged by the university and departmental leaders to take initiatives in teaching all of the four language skills (Listening, Speaking, Reading, and Writing).

In summary, the university and department provide a good standard of high-tech facilities for language learning and teaching.

4.2. Methods of Previous CALL Research

Much educational research is based on quasi-experimental design (as opposed to experimental design) due to the complexity of learning and teaching in classrooms
(Richards and Schmidt, 2002). There are basic similarities between experimental and quasi-experimental designs: “if the research has all of the features of an experiment except random assignment, it is called a quasi-experiment” (Kirk, 2009, p. 24). Different from experimental research in which experimental groups are constituted and their learning outcomes are compared to those of control groups (i.e. non-treatment groups), in quasi-experimental research, comparison is made between outcomes of computer-assisted instruction (i.e. treatment) groups with those of intact classes (Burston, 2003). Of over one thousand evaluative studies comparing the effectiveness of computer applications over traditional instruction in a large variety of subject areas conducted between 1960 and 1990 (Dunkel, 1991), nearly all “were based on a quasi-experimental, quantitative “treatment method” research design” (Burston, 2003, p. 220). However, there has been a wider range of new methodologies that are becoming increasingly popular for learning technology research in general and also for CALL in recent years. For example, action research, scholarship of teaching and learning research, and educational design research are becoming common methodologies for research into practice. Mixed methods are still in use, yet the research design may include additional steps such as explicit reference to theory, or aims to challenge or endorse theory with findings that are more useful for generalisation than single case or context specific studies. Details of different research designs will be discussed following.

As the current study was employing CALL for teaching listening skills, the review of previous research in this section focused on CALL-intervention studies from the 1990s to 2014. The summary of CALL-intervention studies from 1990 to 1999 can be seen in Appendix 1b; it is based on the CALL research review by Liu et al. (2002) and expanded
by the researcher of this study. CALL-intervention studies from the year 2000 to the time of the current study have been reviewed by the researcher and presented in Appendix 1a. Based on the classification of research designs by Creswell (2009), the majority of CALL-intervention studies were categorised as of experimental design (including pre-experimental, quasi-experimental, and true experimental). Types of experiments can be pre-experimental design in which a single group is studied and provided with an intervention, and no control group is compared with the experimental one; quasi-experimental in which a comparison and an experimental group are compared but participants are not randomly assigned (e.g. they can be intact groups available to researchers), and true experimental in which the researcher randomly assigns participants to treatment groups (Creswell, 2009). Based on this classification, nearly 60% were of pre-experimental design, and 40 studies (nearly 20%) were of true experimental design. Only a small number of previous CALL-intervention studies were of either quasi-experimental design (15 in 212) or case study design (23 in 212). Three studies were action research designs, three were comparative, and one was exploratory, all of which were so classified by the researchers themselves (see Appendices 1a and 1b).

As each data collection method has its own strengths and weaknesses (Brown and Dowling, 1998; Burns, 1997; Merriam, 1998; Patton, 2002), the process of collecting data employed in almost all of these CALL-intervention studies involved a combination of methods, both quantitative and qualitative. A mixed methods approach aims to gain from strengths and minimise weaknesses of both methods in single studies and across studies (Johnson and Onwuebuzie, 2004). Quantitative data can help to compensate for the fact that qualitative data cannot be readily generalised, and qualitative data can help to explain the relationships
that are discovered by quantitative data (Onwebuzie and Leech, 2005). Triangulating data
collection methods is very important because “no single item of information (unless coming
from an elite unimpeachable source) should ever be given serious consideration unless it
can be triangulated” (Lincoln and Guba, 1985, p. 283). In addition, when both methods
occur in one phase of the research period, this strategy is called concurrent triangulation. In
this approach, data are merged or results of two databases are integrated or compared,
which would make it possible for the strengths of one method to compensate for the other’s
weaknesses and vice versa, thus providing broader understanding of the research problems.
This traditional mixed method would result in substantial and well-validated findings for
the study, and save time as both forms of data (i.e. quantitative and qualitative) would be
collected simultaneously (Creswell, 2009).

Studies with interventions of CALL in foreign or second language teaching contexts from
the 1990 to the time of the current study have employed mixed methods to enable
researchers to explain or provide information about the process of the intervention. As can
be seen in Appendices 1a and 1b, the sources of quantitative data collected in the 212
previous CALL-intervention studies (since the 1990s to 2014) were mainly questionnaires
(over a hundred in total), which enabled the researchers of these studies to understand their
participants’ detailed views about computer use, students’ perceived language
achievements, and their intentions for future use of computers in language teaching and
learning. Some studies conducted pre and post intervention surveys, which helped
researchers to compare and contrast participants’ motivation and attitudes toward
computers before and after the treatment. About 40% of the studies used test scores to
measure learners’ language skills performance.
For qualitative data, measures such as open-ended questionnaires, teaching or learning blogs or diaries or journals, course evaluation surveys, interviews, and observations were employed mainly to investigate participants’ motivation and attitudes toward computer use in language learning and teaching (see Appendices 1a and 1b). The review of 212 previous CALL studies shows that interviews were used in a third of those studies. This is a modest number given that the interview is considered an effective way to understand and explore feelings, interests, attitudes and concerns of individuals (Gay and Airasian, 2003). Interviews enable researchers to gain data about people’s knowledge, feelings, and opinions (Patton, 2002). The purposes of interviews may be to gather information for research objectives; to help identify variables and relationships, or to be combined with other research methods (Cohen, Manion, and Morrison, 2000). Most of the interviews conducted in previous CALL studies were semi-structured as they have the following advantages:

- The informant’s perspective is provided rather than the perspective of the researcher being imposed.
- The informant uses language natural to them rather than trying to understand and fit into the concepts of the study.
- The informant is in equal status to the researcher in the dialogue rather than being a guinea pig. (Burns, 1997, p. 331)

In previous CALL literature, only about 10% of the studies used observations as their research instrument, to help to answer the research questions in these studies. Observations are believed to enable the researcher to notice participants’ routine things that may help to understand contexts; see things firsthand and use the researcher’s own knowledge to interpret things observed; gain knowledge of contexts or specific behaviours or incidents
for reference points for subsequent interviews, and observe firsthand those activities in some areas that people might not be willing or able to talk about (Merriam, 1998). Additionally, it should be noted that observation enables researchers to understand the context of programmes, to be open-ended and inductive, to see things that might otherwise be unconsciously missed and to move beyond perception-based data (e.g. opinions in interviews) (Cohen et al., 2000).

Another source of documentary data collected in previous studies was teacher journals (or diaries or teaching or learning logs), which record events that happened for research purposes. Journals are personal self-reports, which are kept by participants to record what they do according to categories provided by the researcher (Brown and Dowling, 1998). Journals could be treated as a version of things seen by the writer, filtered through his or her past experience, own identity, aspirations and personality (Denscombe, 2003). As can be seen from Appendices 1a and 1b, the number of CALL studies using personal documents such as teaching or learning blogs, diaries or journals as a research instrument is small (only 21). This could be explained by the fact that in personal documents, “the writer is the only one to select what he or she considers important to record” (Merriam, 1998, p. 116). In other words, personal data can be very subjective and so need to be treated very carefully. Nevertheless, the use of blogs or journals resulted in some data which helped to answer research questions in previous CALL studies. Three important elements of journals are factual data (describing what happened, decisions made and people involved), significant incidents (identification of important things and description of priorities), and personal interpretation (reflection and interpretation of happenings, added with personal
feelings). These elements can provide rich data, yet should not be stated as objective facts by the researcher (Denscombe, 2003, p. 216).

Another source for data collection is informal conversations which are believed to encourage a climate of trust and thus establish close rapport between the researcher and participants. Trust and close rapport are considered very important to interviewers’ success, enabling researchers to explore and exploit further information needed for research (Fontana and Frey, 1994). In one empirical CALL-intervention study conducted by Osuma (2000), informal conversations were used for further information collection (see Appendix 1a).

In previous CALL studies, where qualitative data such as open-ended questionnaires, interviews, or journals were analysed, there were two main steps in this process: transcribing of audio data, and coding of all sources of qualitative data. Coding helps the researcher to build “a foundation for the interpretative phase when meanings are extracted from the data, comparisons are made, creative frameworks for interpretation are constructed, conclusions are drawn, significance is determined” (Patton, 2002, p. 465).

Open coding helps the researcher to select and categorise data relevant to the research questions. In this phase, key words are highlighted; activities, events, behaviours, or issues are noted to break data open. When all the data sources are broken into separate parts, they are examined closely until similarities and differences are identified. After that, the database is reduced “to a small set of themes or categories that characterise the process or action being explored in the ground theory study” (Creswell, 1998, p. 151). Having
developed the categories, researchers want to specify their properties, and show how those concepts or categories vary along their properties (Strauss and Corbin, 1998).

After open coding, axial coding would help the researcher to develop and relate categories systematically. In this process, subcategories help the researcher to answer such questions as where, when, how, who, and why in order to offer greater explanatory power to the phenomenon (Strauss and Corbin, 1998).

The methods employed in previous CALL studies described in this section helped the researcher to form the research methodology of the current study, which is described following.

4.3. Methods of the Study

4.3.1. Overview of Research Design

This research aims to examine the effects of an intervention of computer use in teaching listening skills to EFL students at a tertiary institution in Vietnam. The sample included EFL teachers and students at the English Department of Hanoi University in Vietnam. This university was chosen because the researcher had connections there and had previously observed that computers were underutilised (or even not used) in language teaching. While it is widely recognised and justified that, in our modern technology age, computer use can bring many advantages for language teachers and learners (see Section 2.3.2.2), the idea of exploring and exploiting computer resources in teaching listening was expected to promote listening teaching and learning in this institution.
The utility of a quasi-experimental research design and the success of previous studies in CALL provided the empirical foundation for the research design of the current study. Based on the research questions asked in this study, and on the fact that the use of quasi-experimental designs has allowed success in terms of testing for and establishing learning outcomes or attitudes in previous CALL studies (see Appendix 1a), a quasi-experimental design was employed in the current study. In this quasi-experimental study, the CALL intervention that was applied to half of the second-year students at Hanoi University could be regarded as the treatment; exploration of teachers’ beliefs, and instructional practices before and after the treatment were considered in addition to the cohort of students’ listening skill scores from pre-tests and a post-intervention test. In theory, experimental or quasi-experimental designs enable the researcher to establish and explain improvement in student language skills or attitudes. This is because, as other variables are held constant as far as possible, the treatment or intervention is what makes the difference in students’ listening learning with computers.

As noted in the previous sections, most previous empirical CALL-intervention studies have employed a mixed method (i.e. both quantitative and qualitative data) approach to data collection, and this was employed in the current study. Three main data collection methods: questionnaires, observation, and interviews were used to obtain data to investigate the effects of a computer-use intervention in listening skills instruction. These methods were also supplemented by the teacher journals and informal conversations with the teachers and students during the project time. The independent variable of this study was the intervention project (including a CALI teacher training workshop for the teachers, and websites provision and coaching). The dependent variables were the changes after the
project in teachers’ and students’ attitudes towards computer use in listening instruction, teachers’ computer skills, and students’ listening performance.

4.3.2. Participants

Four teachers who teach listening skills to second-year students (total 100) at English Department of Hanoi University volunteered to participate in the study. The English Department is the largest department and is the researcher’s place of employment. At the time of the study, the number of full-time teachers working at the department was about 70, amongst whom eight were in charge of teaching listening skills to the second-year students at the department. The vignettes (i.e. short descriptions) of four teachers participating in this study will be described in details in Section 5.2.1.2. The two reasons why the second-year students were chosen were they were more settled in terms of language skills and computer skills compared to the freshmen, and the third-year students did not have any more listening skills classes. Each teacher was in charge of teaching listening skills to one class, which had about 20 to 25 students. A majority of the students participating in this project were 19 years old and a very small number of students were one year younger or older. As English is often considered a major more oriented towards girls than boys, over 70% of the student participants were females. However, gender was not considered a variable in this study. Historically, academic records of the students held in the department where this research was conducted show that the majority of the students barely passed, or received grades just above-average, in the end-of-semester listening tests (Chu, 2009; Do, 2011. This supports the researcher’s own investigation in 2011 based on the data provided by English Department administration staff with the permission of Dean of English Department).
Before Term 4 started in February 2011, by the end of December 2010, participant information sheets and consent forms were sent to President of Hanoi University and Dean of English Department for their permission to recruit some teachers and all of the students taught by those teachers. Upon their approval, participant information sheets and consent forms were forwarded to the teachers and, subsequently, to their students to invite them to participate in the project.

4.3.3. Research Team

The researcher worked with two assistants in this project: one was an experienced teacher of English with 12 years experience and a Master’s Degree in TESOL, working at the English Department, Hanoi University, and the other had 15 years experience as an IT expert with a Master Degree in Computer Science, working as Head of Information Technology (IT) Support Section, Hanoi University.

The academic research assistant was responsible, with the input and guidance of the researcher, for the following tasks: coordinating the workshop (including presentations on constructivism, CLT, and CALL theories and practices, guiding discussion on these topics, presenting computer skills, instructing teachers in selecting online resources, providing feedback on teachers’ demonstration); assisting the researcher in selecting websites for academic listening instruction during the project; coding the qualitative data (this will be described in detail in Section 4.3.6 (Data Analysis) of this chapter); conducting class observations and engaging in informal conversations with the researcher at times. The role of the technical assistant was to: provide technical support in the workshop, assisting the researcher, her academic assistant, and the intervention teachers during the entire project time.
4.3.4. Research Procedures

4.3.4.1. Selection of CALI Materials for Listening Skills

Based on the theories of listening, cognitive and multimedia learning, the research team reviewed and refined the criteria suggested by previous researchers (see Section 3.5.2) to finalise the following criteria for website evaluation, in particular for website suitability for helping develop listening skills, in order to select appropriate websites for the intervention:

i. There are text-aids after the listening comprehension

ii. The content is combined with a series of pictures to help learners to comprehend the material listened to

iii. The content is presented with situational animation (e.g. on the topic of a visit to the zoo, users can simultaneously watch an animation about walking in the zoo)

iv. The intonation is appropriate

v. The pronunciation is correct

vi. The listening comprehension takes place in authentic situations (e.g. debates on an environmental issue)

vii. The listening comprehension is designed to guide users to answer the questions (e.g. the question and answer section after a presentation)

viii. The division of listening materials is based on users’ attention span (e.g. if users’ attention span is one minute based on teachers’ judgement, the material should be around one minute according to the teacher’s experience)

ix. There are different levels of listening materials for users to select from

x. The listening comprehension includes reflective questions (e.g. “What listening subskill(s) do I want to develop during this course?”

(Yang and Chan, 2008, p. 419)
These selection criteria completely match the criteria suggested by Tomlinson (1998) (see Section 2.3), and could also be seen to assist the selection of content that was consistent with some SLA principles suggested by Ellis (2005). Specifically, criteria (ii) and (iii) would guide teachers in finding online resources that meet the principle which suggests that teaching needs to be motivating to students; criteria (iv), (v) and (ix) would help teachers to find extensive comprehensible materials to suit students’ aptitude for learning; criteria (vi), (vii) and (x) would help to foster the student-student and student-teacher interaction, which is also considered an important principle of second language acquisition.

Based on these website evaluation criteria, and on the contents of the listening syllabus at the department, the researcher and her assistant selected appropriate websites for the study based on the constructivist teaching approach, which has been encouraged in language teaching in general and in Vietnam in particular (see Sections 3.1.2 and 4.1.2). However, some adjustments and adaptations of the websites were made. For example, authentic situations selected for the project were mostly formal situations such as lectures, academic talks, or TV talk shows on serious issues. The division of listening materials was usually much longer than suggested (up to five minutes instead of one minute as recommended) depending on the students’ language skills level, proficiency and attention span. Examples of the websites selected are:

- http://www.youtube.com
- http://www.youtube.com/user/ABCNews
- http://www.youtube.com/shows/news
- http://abcnews.go.com/
Additionally, in order to suit the listening comprehension levels and interests of the students, the contents of all the websites for the intervention project were evaluated very carefully by the research team before use. In addition, during the intervention, the teachers were introduced to computer skills by the research team. Through the training workshop (described in Section 4.3.4.3.2) at the beginning and through weekly coaching, teachers were supported to learn how to make the best use of computers in their listening instruction.

4.3.4.2. Baseline Study

The baseline phase took place three weeks before the commencement of the main study. The main purpose of this phase was to identify teachers’ attitudes to and levels of computer use in language teaching. The instrument used for the baseline was a questionnaire for the teacher participants. The questionnaires were sent to the teachers by email and the results were categorised for analysis.

After the baseline questionnaires were completed by all teachers, they were invited to participate in the intervention. However, four teachers declined to be part of the intervention phase (i.e. they only answered the pre-intervention questionnaire and allowed access to their students’ listening scores) and four volunteered to participate in the project. So, teachers were divided into two groups: Intervention group and Non-intervention group on a volunteer basis before the intervention. During this baseline period, the second-year
students’ listening scores of terms one, two, and three were collected (with the permission of the Dean and with the support of the administration staff). The scores were put into two files, one of the intervention group, and one of the comparison group for later reference and analysis. During this time, the researcher also managed to have informal conversations with the intervention teachers to learn more about their background, teaching experience, their views about computer use in teaching, and their opinions of teaching listening skills to the students at the English Department. The information gained from these informal conversations was noted down by the researcher for later reference.

4.3.4.3. Intervention Process

The intervention process of the present study includes three main components, namely, planning of technology integration, CALI teacher training workshop, and coaching sessions as follows. The intervention also comprises what the teachers did in their classrooms over the 15 weeks.

4.3.4.3.1. Technology Integration Planning

According to Finley and Hartman (2004), conditions for teachers to use technology include: they feel they are knowledgeable, skilled, supported and rewarded, and technology is consistent with their teaching style and pedagogically useful. These factors were considered in the CALL-intervention project employed in the present study. Besides that, the model by Roblyer (2006) was used as part of the theoretical foundation for the technology integration process. The model includes five phases: Phase One: Determining relative advantage; Phase Two: Deciding on objectives and assessments; Phase Three: Designing
integration strategies; Phase Four: Preparing the instructional environment; Phase Five: Evaluating and revising integration strategies.

In Phase One, teachers look at teaching problems and identify technology-based methods that can offer good solutions to the issues. In this phase, benefits of technology-based teaching should be considered over the traditional non-technology method before decisions are made about technology application. In Phase Two, objectives are stated to set clear expectations for technology-based instruction, and then ways are created to assess accomplishments of learning outcomes. Phase Three involves decisions in designing technology integration strategies. In the constructivist environment, students are expected to develop global skills and insights over time, such as cooperative group skills, approaches to solving new problems, or models of complex topics. Also in this phase, alternative measures such as portfolios and group products can be considered as means to assess learning. It is suggested in Phase Four of the model by Roblyer (2006) that conditions for effective use of technology including adequate hardware, software, and media; time to use resources, special needs of students, and planning for technology use must be ensured. In Phase Five, evidence of success of strategies and plans needs to be reviewed in terms of objectives achievement, student suggestions on improvements, and teacher reflection of technology-based instruction. This information is used to decide on any possible changes in objectives, strategies, and implementation tasks (Roblyer, 2006).

These five phases were applied to the current study as follows. First of all, the benefits of computer use in listening instruction were analysed by the researcher in order to address the question: “How beneficial are computers to listening instruction?” After all benefits were analysed and compared with other possible solutions, additional factors such as efforts and
expenses were considered in making the final decision of whether to adopt computers in teaching listening skills. In the next phase, the researcher set teaching objectives and methods of assessments (examples were test results; cooperative work, attitude, and motivation outcome measures). In phase three, instructional strategies, technology materials, and implementation methods were decided. The next step involved considerations about technology support (e.g. computers, software, media, peripherals, or handouts), resources arrangements (e.g. access to students with special needs, privacy and safety issues), and planning to ensure technology would work well (e.g. troubleshooting in case of computer break down, or test-runs and backup plans). In the last phase, assessment of success of the technology integration was made based on achievement data (i.e. students’ listening scores after the intervention), and teachers’ and students’ feedback; also areas such as scheduling, computer skills, and efficiency (i.e. unexpected length of time for technology-based instruction) were considered for further improvement in future use of technology in teaching.

A teaching plan for the teachers to use computers and website materials in their teaching had been prepared by the research team prior to the workshop. The contents of the plan were based on the theories of listening comprehension, cognitive, multimedia learning, constructivism, and the listening syllabus for the second year students, and checked carefully by the researcher and the academic research assistant before implementation. The schedule for computer-assisted listening instruction for the intervention group can be described as follows. The semester lasted 15 weeks (from the first week of February to the third week of May), and there were two listening classes every week, which made 30 listening classes (i.e. 60 listening class hours).
As mentioned in Section 2.2.2, the cognitive approach is still quite popular in the teaching and learning context where the current study was conducted. The main goal of teaching at the English Department is to enable the students to take notes from academic lectures on different topics. To achieve this encompassing goal for listening, some subskills are taught during the term. These include: listening for main ideas, listening for specific information, summarising, drawing inferences, retelling contents, answering true/false questions, creating charts, comparing information from different sources and applying general concepts to specific data. These subskills are considered necessary for the students in their academic study in subsequent terms. Teachers refer to the syllabus to teach these subskills and, in the present study, used the computer as the means to achieve their teaching goals. Students were also encouraged, as part of the study, to use the Internet to search for further information to support the listening topics taught in class, to practice listening by themselves outside class and to put listening resources collected into different folders for self-practice when needed. Most of the teaching and learning activities in this study seem to align with the cognitive approach to CALL. However, part of the teaching and learning process in this project can be considered as falling within the integrative approach to CALL. This approach includes some of the other sub-skills taught during the term: giving oral presentations, sharing information, views, and opinions on different topics, and conducting in class surveys and interviews. Students were regularly asked to search for information on the topics covered in these activities and to share with peers in their group. When teachers set research tasks for students, they worked in groups to complete projects with the use of the Internet. Exchanging information on the part of the students in order to accomplish the tasks or projects set by the teachers caused them to engage with new genres and discourses
in the target language. The interactions between teachers and students and among students with online activities inside and outside classes in this study are hallmarks of socio-cognitive approaches to CALL.
### Excerpt from Listening Syllabus, Term IV

<table>
<thead>
<tr>
<th>Class / Week</th>
<th>Topics</th>
<th>Listening Skills to be developed</th>
<th>Integrated skills (speaking, reading, writing)</th>
<th>Assignment(s) / Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 / 2</td>
<td>Adolescence</td>
<td>- Listening for signal words, numbers, names.</td>
<td>- Conducting a survey (searching information (i.e. reading), speaking, writing)</td>
<td>- Search information on the Internet about <em>Adulthood</em> (topic of next class)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Guessing vocabulary from contexts</td>
<td>- Sharing background knowledge (speaking) with peers and teacher</td>
<td>- Exchange information found with teacher and friends outside class (email, skype, yahoo messenger, facebook)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Listening for specific information</td>
<td>- Summarising main ideas of texts (speaking, writing)</td>
<td>- Search for new links for listening self-practice – share with teacher and friends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Listening for and summarising main ideas</td>
<td>- Guessing vocabulary from contexts (reading)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Outlining practice</td>
<td>- Oral presentations (in groups of three or four)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Building background knowledge on the topic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Using background knowledge for listening comprehension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class/Week</td>
<td>Topics</td>
<td>Listening Skills to be developed</td>
<td>Integrated skills (speaking, reading, writing)</td>
<td>Assignment(s) / Homework</td>
</tr>
<tr>
<td>------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 6 / 3      | Adulthood| - Using morphology, context, and non-verbal cues to guess meanings of words  
- Listening for signpost words, key words, details  
- Using symbols and abbreviations for short-hand practice; using space in note-taking skills  
- Guessing vocabulary from contexts  
- Creating a chart for note-taking skills  
- Using cultural and background knowledge to support comprehension | - Predicting the content (speaking)  
- Guessing vocabulary from contexts (reading)  
- Sharing personal and cultural perspectives on the topic (speaking)  
- Oral presentation  
- Summarising main ideas of texts (speaking, writing)  
- Paying attention to signal words (reading) | - Search information on the Internet about *Accounting for Variations in Intelligence* (topic of next class)  
- Exchange searched information with teacher and peers (via email, skype, yahoo messenger, facebook)  
- Search for new links for listening self-practice – share with teacher and friends  
- Search information for new project: “Trial Marriage” |
According to the syllabus, there were 20 topics covered in the semester, namely, *The Influence of Mind over Body; Preventing Illness; Adolescence; Adulthood; Assessing Intelligence; Accounting for Variations in Intelligence; Body Language; The Language of Touch, Space, and Artefact; Friendship; Love; Marriage, Family, and the Home; The Power of the Group; Growing up Male or Female; Gender Issues Today; Mass Media Today; The Influence of the Media; Crime and Criminals; Controlling Crime; Cultural Change; Global Issues*. These topics were taught in either one or two listening classes. The main listening skill was for note-taking, including the subskills of organising notes in columns, outline form, or map; using symbols, abbreviations, telegraphic language for note-taking; listening for signal words, stress, intonation, or numerical information. Some other subskills such as listening for main ideas, listening for specific information, comparing information from different sources, drawing inferences, examining graphic material, creating charts, considering related information, and listening for multiple-choice questions or True/False questions were also covered in the syllabus. For integrating listening with the other three skills (namely speaking, reading, writing), students were taught how to use notes taken to summarise texts, to ask questions and make comments, and to give group presentations. Typically, a CALI-intervention class had the textbook part and the CALI part of classes. In the first part, the teacher taught listening with the textbook as suggested in the original syllabus. In the second part, they would use some online resources suggested or approved of by the research team to supplement their teaching in class. A detailed lesson plan of a CALI-intervention class to illustrate the teaching plan can be seen in Appendix 8.

As constructivism was the theoretical framework of the current study (Section 3.1), the CALI-intervention teaching plan was aimed at fostering creativeness, metacognitive strategies, group cooperation skills, and knowledge transfer of the intervention students. Specifically, the teaching
plan was designed to encourage students to become active listeners who are engaged in cognitive, emotional and physical activity. To help achieve this, students were to be taught to anticipate content; concentrate on the listening input; adjust understanding while listening; use the information in the listening input to guess meanings of unfamiliar language; seek clarification and confirmation with speakers (if interactive), other listeners (i.e. their peers or teachers), or outside sources for improving comprehension and enriching interpretation of the input, and to summarise, repeat, and take notes of the listening input.

4.3.4.3.2. CALI Teacher Training Workshop

In the first week of the new semester, the volunteer intervention group teachers were invited to the training workshop, which lasted one day (four hours in the morning, and four hours in the afternoon) at Hanoi University. In the first hour, the research team introduced the topic of computer use in language teaching. Participants discussed the benefits, drawbacks, difficulties, and their own backgrounds with computers, their experience in applying computers in their teaching, and their opinions and feelings about computer use in teaching compared with their traditional teaching method. The next hour was devoted to a presentation by the research team on a cognitive theory of multimedia learning, constructivism and the CLT approach, followed by a discussion of these theories among the teachers and with the research team. A video clip of constructivist approach versus traditional language teaching was also played during the morning session. The presentation of these theories (as discussed in Chapter Three) included detailed explanation of how multimedia works to assist listening instruction, and how computers can be integrated in a constructivist teaching approach. These theories made the teachers fully aware of their role as facilitators (i.e. supporting students) rather than mere instructors (i.e. telling students what to do) in the implementation of computer-assisted listening instruction. The aim of this
session was to encourage and equip the teachers in the project with theoretical and empirical knowledge so that they could make effective use of computers in teaching language skills in general and listening skills in particular.

In the afternoon session of the workshop, the research team introduced useful websites and the computer skills needed to use them for teaching listening. As the computer skills of the four participant teachers ranged from basic to average (a more detailed description can be found in Section 5.2.1.2), all skills needed such as keyboarding, working with menus, word processing, installing software, navigating file systems, or professional skills were introduced to, or “refreshed” for the teachers. The teachers were advised to look critically at the website sets and select the most effective one for their teaching situation. Then, more guidance was offered on exploring, selecting, and exploiting suitable websites for teaching listening skills. A video clip (modelled by the research team) demonstrated to the teachers how a listening class could be taught with the use of computers in a constructivist way, and was then available on demand for self-access learning.

After the guidance on website selection, the teachers were instructed, step-by-step, to practise using a website with a particular topic chosen to teach listening. During the workshop activities, teachers were at times required to work in pairs, with ideally one “stronger” and the other “weaker” in computer skills. The purpose of this was to enable them to help one another in computer activities and to share experiences. The teachers also had opportunities to exchange views about listening strategies, language teaching techniques, and ways of using the Internet with one another, and with the research team. Through the mix of presentation, discussion, demonstration, and hands-on practice, the teachers observed, learned, and practiced, thus building their confidence in using the computer in teaching listening skills. Technical and
pedagogical support was provided by the research team during the teachers’ further practice on website selection and use. During the workshop, the research team managed to ensure that a constructivist approach was employed during the teachers’ computer-assisted listening instruction practice. Feedback on the practices observed was shared with the teachers.

During the workshop, the research team not only guided and instructed in the workshop content but also listened to the opinions and suggestions of the teachers, which, to some extent, helped to enrich their understanding about the teachers’ points of view, experience, and skills of computer use in their teaching. This further understanding enabled the research team to support the teacher participants better during the project. The sample of of the workshop slides can be seen in Appendix 9.

4.3.4.3.3. Coaching Sessions

After the workshop, computer use was implemented for the whole semester, which lasted fifteen weeks, with the intervention group (i.e. the four teacher participants and their four classes totalling 100 students). The teaching plan with the computer was introduced to the teachers step by step. With the permission of the teachers, all the listening classes taught with the computer were audio-recorded. Every week, the research team met with each teacher for two hours for feedback as part of the coaching session. During those meetings, the audio recordings of the listening classes were listened to, and then discussions for further improvement were conducted. The online resources used in the previous classes were also shown again several times to address different skills and reinforce learning. Further feedback, suggestions, and encouragement for their efforts in their computer-assisted language teaching activities were given by the research team during the weekly coaching. However, due to their own teaching contexts, teaching styles and the characteristics of their classes, the teachers were likely to find certain computer skills or
websites easier or more suitable to use than others. As a result, the coaching was conducted individually so that the teachers were encouraged to use computers flexibly according to their own situations. This enabled them to maximise the use of computers in their teaching. In the coaching sessions, the teachers were often encouraged to use the set of criteria for website evaluation to search new websites, bring them to the coaching sessions for discussion, and then use the most appropriate ones for teaching listening.

As the coaching was conducted only once a week for each teacher, the use of computers in every listening class needed to be monitored. Computer use by the teachers in the other listening class of the week was cross-checked though informal conversations with the students in the next class, by evidence in the teacher journals, and by the researcher’s observation notes of the teachers’ progress in computer use. Also, the weekly coaching enabled the researcher to check the frequency of use and the computer skills improvement of the teachers. During the project time, the teachers were also encouraged and assisted to take initiatives in exploring and exploiting more online resources by themselves and to exchange information with one another in the intervention group, and with the research team. It should also be noted that the teachers and students were encouraged to communicate with the research team any time by any software (e.g. skype, viber, zalo, etc.), email or by telephone to ask any questions related to the intervention. This communication helped to assure that the CALL adoption in teaching and learning was conducted in accordance with the research schedules and at everyone’s comfort level.

The theories of listening comprehension, cognitive and multimedia learning, and constructivist teaching underpinned the content and pedagogical approach in all the coaching sessions of the CALI project. Specifically, class activities, homework, assignments, and outside-class activities were designed and conducted in a way to make the students more active, creative and
collaborative in the listening learning process (see also Sections 3.1.2 and 4.3.4.3.1). The role of the teacher as a facilitator was also emphasised and modelled by the research team. The detailed lesson plan in Appendix 8 helps to illustrate how a constructivist approach was employed in this computer-assisted listening instruction project.

4.3.4.3.4. An Exemplar of a Computer-Assisted Listening Instruction Class

Below is an exemplar of a computer-assisted listening teaching class. According to the syllabus, the topic of listening class 4 was Preventing Illness. The observation was conducted in Heather’s (a pseudonym) class, which lasted two hours. The notes taken by the researcher during the observation as well as the recording as reference afterwards were used for describing this listening class as follows.

In the first hour of the class, the teacher mainly taught the sub-skills covered in the text-book, namely, listening for main ideas and specific information, recording numbers, drawing inferences, summarising skills, and giving an oral presentation. To support the topic of health, the teacher used the two video clips selected from http://abcnews.go.com/ in the second hour of the listening class. The two links were:


The content of the first video clip was about keeping fit, and the second clip was about obesity. The same steps were applied for the two clips. The video clip was played twice. The teacher asked the students to listen for the main ideas while watching the video clip for the first time. As the video clip had suitable content, good quality picture and sound, the students discussed the main ideas very enthusiastically. Then, the teacher played the clip the second time so that the
students could take notes of key information while watching. After the second time, students worked in pairs to exchange key notes they had taken. The teacher typed the main ideas on the slide and showed them to the students as feedback. After that, further discussion was encouraged by the teacher. By this time, the students had become very animated, and the class was quite noisy, but students were engaged. After the second time watching the video clip, the students were divided into groups of three or four for oral presentations (see also Appendices 7a and 7b).

The exemplar mentioned above was a typical listening class during the project time. All the other classes covered different topics and listening subskills but followed similar steps described above.

In summary, the intervention process of the present study includes the technology integration plan based on the model suggested by Roblyer (2006), the training workshop, and coaching sessions during the 15-week-long semester for the participant teachers at the English Department of Hanoi University. Ethical concerns are discussed in the coming section.

4.3.4.4. Ethical Considerations

As stated by Punch (1994), “In essence, most ethical concern revolves around issues of harm, consent, deception, privacy, and confidentiality of data” (p. 89). During the data collection process, researchers should respect participants by not putting them at risk of physical, psychological, economic, social, or legal harm (Sieber, 1998). Therefore, participants in any type of research should “have the right to be informed that they are being researched and also about the nature of the research” (Punch, 1994, p. 90). Besides that, it is suggested that participants should not be identified either directly or indirectly through identifiers who link to them so that their privacy and identity can be protected (Capron, 1991).
Fully aware of ethical issues, the researcher strictly followed the ethical principles and procedures set by the University of Auckland Human Participants Ethics Committee for the data collection process. Recruiting letters were sent to the research team members (i.e. the computer expert and the other language teacher), participant information sheets to the leaders of the institution (i.e. President of Hanoi University, and Dean of English Department), and the research participants, and participant information sheets given to eligible teachers and students to invite them to participate in the study. Consent forms were subsequently signed by those who agreed to participate, which was entirely voluntary. During this process, the researcher explained and answered all the questions by those participants very carefully and in detail, either by email or in person. All the rights of participants in the participant information sheets and elements in the consent forms were also explained carefully. The researcher, for example, explained to the participants their right to withdraw themselves or the information they had provided; the benefits of the research to the institutions (and thus for themselves), the guarantee of their confidentiality and job status security, and the provision for people to contact the researcher if any questions should arise. During this time, several students expressed their concern as to whether their non-participation would affect their listening test scores in that term, and the answer by the researcher was that no effect would result from non-participation. However, there were no actual withdrawals during the time of the intervention.

The academic research assistant, who worked as a translator and transcriber of the data, was asked to sign a confidentiality agreement before working with the research data. For their privacy and identity, the four teachers were asked to choose their own pseudonyms that would be used in the final report, which were Helen, Tania, Nancy and Heather.
After being approved of by the University of Auckland Human Participants Ethics Committee, the data collection process was commenced at the beginning of Term Four at the English Department of Hanoi University.

4.3.5. Research Instruments

The methodology applied in this study was mixed-method, that is both quantitative and qualitative methods were used. Based on the experiences of previous CALL studies, and on the nature of the research questions, quantitative data were collected from three sources: (i) the students’ listening scores before the intervention compared to those after intervention in order to find out the changes in their listening performances; (ii) investigations into changes in teachers’ beliefs and practices in computer use for listening instruction before and after the intervention and, (iii) students’ attitudes towards computer use in language teaching obtained through student questionnaires after the project. Besides quantitative data, in order to understand the effects of computer use on the teachers’ beliefs and practices after the project, the research also employed methods yielding qualitative data including open-ended questions in questionnaires (for teachers and students), observations, teacher journals, and interviews with teachers.

As noted earlier, computer technologies are very important in realising constructivist theory (Section 3.1.2), which has been predominant in English teaching in Vietnam since the 1990s (Section 1.1.2). Therefore, constructivist theory was used as a framework for this investigation. Specifically, constructivist theory was drawn on in designing both the quantitative and qualitative data collection instruments and measures (i.e. some of the questions in questionnaires and interviews, and the checklist for teacher journals). The contents of these instruments were designed to investigate how computer use helped to promote student-centred and interactive
classroom activities; equal roles of teachers and students as collaborators and experts in class; instructional emphasis on relationships, on inquiry and invention; facts transformation, and quality of understanding (see Table 3.1).

4.3.5.1. Questionnaires

To suit this research situation, the post-intervention student questionnaire investigating their attitudes towards computer use in improving listening skills was designed, based on the literature review and previous research: Iwabuchi and Fotos (2004) on effects of CD-ROMs for interactive language learning; Lee (1997) on the Internet and its advantages for foreign language learning; Osuna and Meskill (1998) on the role of the Internet and cultural learning, and Taylor and Gitsaki (2004) on implementing Web-enhanced language learning for EFL teaching. The items of the questionnaire were reviewed by language teaching and research experts (i.e. the researcher’s supervisors) before administration. The student questionnaire contained two parts: Part 1 contained ten closed-ended questions seeking the students’ attitudes toward technology use in language teaching. In this part, the response format was a Likert scale from 1 (strongly disagree) to 5 (strongly agree); Part 2 had eight open-ended questions requiring the students to describe in detail their opinions about technology use in computer-assisted listening instruction during the project (see Appendix 5).

There were 100 students in the four classes of the project, and 86 students filled out questionnaires and sent them back. Those 86 completed questionnaires included both quantitative and qualitative data.

The pre-intervention questionnaire items for the teachers were developed based on the research questions, literature review, and previous research, namely, Boulter (2007) on ESL/EFL teacher
values and technology use in Asia Pacific region universities and Bruess (2003), on perceptions and use of computers in language teaching by university ESL teachers, to suit this research situation. The questionnaire contained four parts: Part 1 asked for their personal information; Part 2 was about their computer use; Part 3 was about their attitudes towards technology use in language teaching, and Part 4 with three open-ended questions was about their views on teaching and learning with computers. Particularly in Part 3, the 12 questions required a rating using a Likert scale: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly disagree, which means, the higher the score, the higher the level of agreement. In this study, reverse coding was used (for some items), depending on whether the question was positively or negatively phrased. Therefore, in positive statements about computer use, if the participants chose numbers 1 and 2, they had negative opinions, while choosing numbers 4 and 5 meant their opinions were positive. In negative statements about computer use, their answers of numbers 1 and 2 would be categorised as positive opinions, and numbers 4 and 5 would be considered negative; number 3 would be categorised as neutral in all the 12 statements. At the end of the intervention, the teachers were asked to answer the questions in Part 3 again. The two versions of answers to Part III were later compared to discover any differences in their attitudes toward technology use in language teaching before and after the intervention. This time, for the last section (Part IV) of the questionnaire, the teachers had to use the retrospective technique to answer the three open-ended questions (see Appendix 2).

4.3.5.2. Scores of Students’ Listening Skills

To measure the listening performance of the students, the grades of end-of-semester listening tests of the intervention and comparison groups were compared. In this case, the results of listening tests of Year One and first semester of Year Two were compared with those of second
semester of *Year Two*. The tests were designed by the testing experts of the *Center for Testing and Assessment* of Hanoi University. The test design is based on the International English Language Testing System (IELTS) listening test; which supports the conclusion that the test has criterion-related validity. The centre has established that scores on this internal test correlate significantly with the IELTS. The test usually includes three main sections, increasing in level of difficulty: Section 1 with true/false and/or multiple choice questions (10 items equal to 10 marks); Section 2 with gap-fill and/or open questions (10 items equal to 10 marks); Section 3 testing the students’ note-taking skills (equal to 10 marks). The Centre establishes that the tests are constructed so as to become more difficult after each level in terms of vocabulary, rate of speech, diction, and metaphorical and idiomatic language use. Compared to Term One, Term-Two listening test has harder true/false or multiple choice questions in Section 1, more gaps or information to complete in Section 2, and more complex texts for note-taking skills in Section 3. The validity and reliability of the listening tests met the standards set by the centre. Reportedly, in construction of the test, pilot tests were administered for different samples of students for reliability and validity. Results of these pilot tests were analysed at the item level to examine test question difficulty, how incorrect options behave (e.g. for true/false or multiple choice questions), or whether the tests behave consistently with different subgroups. In addition, the reliability of the scoring procedure was enhanced by being conducted by trained raters using detailed marking keys. Raters strictly follow the keys for Sections 1 and 2, and apply the Cornell Notes Rubric for Section 3 (note-taking skills) during the scoring process.

As per the department’s policy, each class includes a mix of high, average, and low proficiency students. This enabled the researcher to compare the rate of progress of the students in the intervention group of four classes with the average gain obtained under normal teaching
conditions obtained by the students in the four comparison classes. The pre-intervention scores of all classes could also be examined to ensure that the classes were comparable in listening ability prior to the intervention. However, this comparison may have certain limitations because there may have been other factors influencing the students’ progress: for example, there may have been differences within the groups to start with, and students may have been engaged in different learning activities prior to the intervention.

4.3.5.3. Observations

Based on the nature of the study, the researcher employed observation as a method in this study. Observations were conducted with each teacher once a week. As can be seen in Appendices 7a and 7b, the observation sheet was of similar format, divided into columns so that the researcher could record activities of the teacher and students during the listening classes in one column, and her subjective remarks in the other column.

The researcher asked the teachers for their permission to audio-record the classes to capture verbal interaction. During the observation process, the researcher tried to collect as much information as possible. The jotted notes were about both verbal and non-verbal interactions taken the whole class time (see Appendices 7a and 7b).

The fieldnotes of these observations and audio-recorded transcriptions were used for feedback at the weekly coaching.

4.3.5.4. Informal Conversations

As noted earlier in the previous section (4.2), informal conversations were only employed in one CALL study. Such conversations were employed as one data collection means in order to
provide information necessary for the triangulation method employed in this study. Also, these informal conversations help establish the close rapport needed for class observations and semi-structured post-intervention interviews with the teachers, fostering a climate of trust, and gaining tacit knowledge for the research. Informal conversations were conducted either before or after the listening class observations (i.e. once a week for each class). Similar to the way the observations were guided, based on the cognitive theory of multimedia learning and the model of second language acquisition with multimedia, the research team explored such categories as attitudes and motivation of teachers and students in computer use for listening teaching and learning, benefits of online resources, quality of these resources, technical and academic support, computer-assisted assignments by teachers both inside and outside class, and suggestions for improvement. When listening again to the recordings of the conversations, the researcher could draw on these themes to take systematic notes for data analysis afterwards. The technique of taking fieldnotes was similar to that described in the previous section (see Section 4.3.5.3).

As the project started, the researcher informed the teachers and students about the intended informal conversations, which may be used as data for analysis in the research. The conversations conducted with two groups of the students in each class lasted about one hour, which made a total of eight conversations for the four classes of intervention. On each occasion, informal conversations were conducted with about ten students in one class. During the conversations, both verbal and non-verbal communications were recorded in the form of fieldnotes for later analysis. In addition, with the permission of the teachers and students, all the informal conversations were recorded for later transcription and analysis.
4.3.5.5. Semi-structured Retrospective Interviews

As noted in Section 4.2, the semi-structured interview would best encourage the teachers to share with the researcher their opinions and experiences in computer use in teaching listening skills. The semi-structured interview used in this study was developed based on the research questions. The interview had ten questions designed to investigate any changes in teachers’ attitudes and their students’ observed attitudes towards computer technology in language teaching; in their reported computer skills; their opinions about the effects of the project on their teaching and their students’ learning, and their suggestions about future use of computers in language teaching and learning in general and in teaching listening skills in particular. To answer the interview questions, the teachers sometimes used retrospective verbalisation to report on their activities, thoughts and feelings as well as on their observations of students’ activities during the intervention (i.e. before the interview time). They were offered the choice of expressing their opinions either in English or in their mother tongue (i.e. Vietnamese). All of the teachers chose to answer the questions in Vietnamese, yet they used some English words or terminology when speaking.

The three important parts of interviews suggested by Tolich and Davidson (1999) were used: introductory questions to make people feel comfortable talking about the topic; a checklist of recurrent themes (written in question form) representing “where the theoretical research interests lie for this project at this point in time” (p. 113), and prompts (written at the bottom of the interview checklist) to encourage informants elaborate on things that are told (see Appendix 3).

All the interviews were audio-recorded using an Mp3 device. The recorded data of the interviews were transcribed for later analysis.
4.3.5.6. Teachers’ Journals

As discussed in the previous section, teacher journals have some advantages and have been used in previous CALL research as one means of data collection. In the current study, the teachers involved in the study were guided to write a journal of their computer-assisted listening skills teaching. The first important thing was that the researcher instructed the teachers to use retrospective techniques in order to record all the information of their experiences in the most straightforward and precise way. The teachers were provided with a fixed format checklist covering all the information concerning the issues that the researcher would like to know about. The journal covered the date of teaching, the topic, sub-skills to be taught, students’ performances including their attitudes, student responses to questions, motivations, teachers’ own feelings after the lesson, etc. The teachers also recorded information specific to computer use such as their observation about their students’ preparation before classes, the computer skills they have gained, students’ improvements in attitudes, language or listening skills, and their opinions and feelings about computer use in instruction (see Appendix 6). The journal checklist helped the researcher to crosscheck the information provided by the students in the questionnaires and by the teachers in post-intervention questionnaires and interviews; as well it provided further information to elaborate that in these sources. The teacher journals were collected at the end of every month (i.e. the ends of February, March, April, and third week of May, that is the last week of the intervention).

4.3.6. Data Analysis

As noted above, both quantitative and qualitative methods were used to analyse the research data of the current study. The former consisted of responses to closed-ended questions in teacher questionnaires and student questionnaires, and the end-of-semester grades of the students. The
grades included those from before and after the intervention and were numerical test score data. The latter were from the observations, informal conversations, research journals, open-ended questions in teacher and student questionnaires, and semi-structured interviews.

Based on the successful data analysis frameworks applied in previous CALL studies, the quantitative data were analysed similarly. For the student questionnaire, the students’ answers in Part I about their attitudes towards technology use in language teaching were analysed using descriptive statistics. The outcome of this analysis was percentages of students’ attitudes towards computer use in tabular form (see Table 5.3). For the teacher questionnaire, all the answers in Part I and Part II were summarised in tabular form. As the number of participant teachers was small (only four) and the nature of the data did not require complicated statistical procedures, the data were treated or calculated manually. Part III of the teacher questionnaire was processed using the Excel program. The resulting graphs can be seen in Figures 5.2 and 5.3.

The end-of-semester grades of the students were compared between the intervention group (whose teachers received training on computer skills and website use) and the comparison group (whose teachers just continued to use their own teaching approach whatever it was) to see the effects of computer use in teaching listening skills. Also, the intervention students’ responses in the questionnaire were analysed partly to answer the second research question. The results of the listening tests from Term 1 to Term 4 (i.e. end-of-semester tests before and after the intervention) of all the second-year students at the English Department were analysed to investigate the effects of the project on their listening performances. The test scores were put into the SPSS (Statistical Package for the Social Sciences) program and a MANOVA, with post hoc tests, was used to conduct the quantitative data analysis. This program enabled the researcher to test for differences between groups and over time. Besides the MANOVA program, the mean
scores of the two groups were also put into the Excel program to generate a visual comparison, as can be seen in Table 5.1 and Figure 5.1.

The qualitative data for this research included data from teacher interviews, informal conversations, observations, open-ended questions in student questionnaires and teacher questionnaires, and teacher journals. As part of the data analysis process, the context of the study and backgrounds of student and teacher participants were described in detail (see Sections 4.1, 4.3.2, 5.1.1, and 5.2.1.1). After the data of the interviews were transcribed into Microsoft Word and recorded with the Microsoft Word software, they were given to the respondents for verification, which helped to ensure the accuracy of information. When all answers were verified, the transcriptions of the responses of the interviews and open-ended questions in the questionnaires were translated from Vietnamese into English by the researcher.

As the contents of the research instruments and measures including questionnaires, interviews, observations, and teaching journals (see Section 4.3.5 above) were based on constructivist theory, the researcher also used this theory to develop categories for the themes from all qualitative data of the study. This framework of constructivism helped to strengthen the link between research instruments, and design and data analysis, thus enabling the researcher to discover the extent to which computer use was effective for constructivist English teaching in general, and listening teaching in particular, in the Vietnamese context. In this study, the issues of inquiry focus include teachers’ motivation and attitudes, teachers’ self-efficacy, students’ motivation and attitudes, and learner autonomy, which were considered as the main themes that guided data analysis.
The three phases of coding suggested by Strauss and Corbin, (1998) namely, open, axial, and selective were applied to the data from teacher interviews, teacher journals, and researcher’s observation notes, and responses to open questions in the student and teacher questionnaires. Appendix 4 provides the table developed in the coding process. In the open coding step, the data were first read again and again carefully, then key ideas or phrases were highlighted, and notes were taken to paraphrase the respondents’ opinions. In the axial coding phase, the questions about when, where, why, and how were asked to uncover relationships among categories. For example, looking at each student’s questionnaire, the researcher asked herself “what does the student think about the usefulness of the computer?”, the repeated answer from most students was “interesting”, “fun”, or “motivating”, meaning they seemed to think the computer made them engaged in learning, then “engagement” may be designated as a subcategory. Other subcategories that may be drawn from the answers such as “improved skills”, “good sounds and images”, “saving time”, or “self-study online” helped to explain why or how computer use is useful for language learning. Subsequently, all the subcategories were reorganised according to themes through the use of grids (Appendix 4). In the selective coding phase, the core category was established to represent the main theme of the research. This is the most difficult task for the researcher as an emergent researcher in this area. Therefore, peer debriefing was applied with the researcher’s supervisors and colleagues for agreement on categorisation. These codings of data enabled the researcher to analyse the data more systematically to answer the research questions.

4.4. Summary

This chapter has presented detailed description of the research methodology of the study. It started with the context section (4.1) providing a detailed picture of the context of the study, entailing the background of Hanoi University and the English Department. The second section
(4.2) provides a review of relevant methodology employed in previous CALL research including previous research design, data collection methods, and data analysis. The final section (4.3) covered the research methods employed in the current study, including research design, participants, research team, procedures, instruments, and data analysis. The coming chapter (Chapter Five) is assigned to presenting all the relevant results found from the research data.
CHAPTER FIVE: RESULTS

In this chapter, the data relating to the baseline study and effects of the computer-assisted listening instruction intervention on the students and teachers are presented to answer the research questions (see Section 1.3):

1. What were the effects of computer-assisted listening instruction on the academic listening skills and language-related skills of EFL students?

2. In what way did computer-assisted listening instruction affect the attitudes towards computer use in listening instruction of EFL students?

3. In what way did computer-assisted listening instruction affect the attitudes towards computer use in listening instruction of EFL teachers?

This chapter consists of two main sections reporting the results of the study, namely, effects of computer use on EFL students and on EFL teachers in Vietnam.

5.1. Effects of CALI Intervention on EFL Students

5.1.1. Baseline Data

The belief shared among the teacher participants and the researcher was that among the four skills (i.e. Listening, Speaking, Reading, and Writing) taught in the pre-course programme, the biggest challenge seems to be listening. Despite the students’ and teachers’ efforts, the outcomes in terms of the performance demonstrated in listening skills were perceived to have not been up to the required standard. One indicator of this was that the students performed more poorly in listening compared to the other three skills. According to the teachers during informal conversations when setting the baseline for the study, their students often showed a lack of
confidence in their listening skills, and they sometimes could not catch the message delivered by 
English speakers.

This problem could be explained by the previous English learning experiences of the students 
before starting their university education (Chu, 2009). According to the policy of the Ministry of 
Education and Training of Vietnam, in order to be admitted to the university, the students have to 
pass a very stringent entrance exam nation-wide, in which English is considered the major 
subject with the mark weighted double that of other subjects. This admission standard means that 
their level of English is assumed to be intermediate. Normally, the students learn English at high 
school and at a number of private classes focusing on grammar, because this is central in the high 
school syllabus. This means that, on entering the university, they have quite a good knowledge 
of grammar, but they are not usually taught the four language skills. Rarely have they had a 
chance to practice their listening skills so most students find this aspect the most difficult and 
challenging among the four language skills when they start their first academic year. Whichever 
background they come from, they seem to have problems in language skills development in 
general, and with listening skills in particular. It could be argued that speaking is equally 
challenging yet, according to the students, as a receptive skill, listening to different English 
accents is really the most difficult for them. In general, the students’ grades from the end-of-term 
listening tests were relatively low (see Section 5.1.1). Another fact to add is that all the students 
learn English in Vietnam, a non-native English-speaking environment, which does not offer them 
optimal conditions for learning English.

In order to help students best develop their listening skills, the teachers working at the 
department, drawing on appropriate theories (as outlined in Chapter Three), designed the 
listening syllabus. The listening syllabus at the department was designed based on constructivist
theory to encourage and promote the students’ active learning (see Section 3.1). Also, the combination of bottom-up and top-down processes was used to underpin the listening syllabus and teaching plans at the department. According to the syllabus, the students developed their bottom-up skills, such as listening for specific information or key words to support general understanding of aural texts, and their top-down skills, such as using their background knowledge to predict and comprehend information, in order to take notes of the listening texts.

5.1.2. Effects of CALI Intervention on Students’ Listening Performance

The students’ listening performance was measured by the listening comprehension tests designed by the Center for Testing and Assessment of Hanoi University. There are three data points (i.e. Listening Term 1, Term 2, and Term 3) where listening scores of the students are available before the project and one data point (Listening Term 4) after the completion of the intervention.

Table 5.1 shows the raw mean scores of the intervention group (100 students) and the comparison group (102 students) before and after the project (represented visually in Figure 5.1). As can be seen from the table, the listening scores of the two groups before the intervention were essentially the same. The comparison group listening performance remained almost where they started (Mean score in Term 1 was 7.0, in Term 2 was 7.1, in Term 3 was 7.05, and in Term 4 was 7.1), whereas the listening mean scores of the intervention group increased from an average mean score of 7.08 before the intervention (Term 1 was 7.1; Term 2 was 7.05; Term 3 was 7.1) to 7.7 in Term 4. A T-test was used to determine the effect size of the two group differences. The T-test results showed that difference between pre-intervention and post-intervention tests was 0.50, which, according to Cohen (1992), is of a medium effect size value. This medium effect size value helps to confirm that the intervention resulted in enhanced performance of the students’
listening skills. As indicated earlier in Chapter Five, the tests increased in difficulty, thus accounting for developmental changes so that the test scores at the mean remain constant over time. This is confirmed by the Center for Testing and Assessment of Hanoi University. Therefore, a significant change in mean score implies accelerated development and such was obtained by the classes associated with the intervention (see below). This progress suggests that the use of computers by the teachers helped to enhance the students’ listening performance.

Table 5.1: Listening mean scores of comparison group and intervention group

<table>
<thead>
<tr>
<th>Term</th>
<th>Comparison Group (n=102)</th>
<th>Intervention Group (n=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>One</td>
<td>7.0</td>
<td>1.291</td>
</tr>
<tr>
<td>Two</td>
<td>7.0</td>
<td>1.258</td>
</tr>
<tr>
<td>Three</td>
<td>7.1</td>
<td>1.216</td>
</tr>
<tr>
<td>Four</td>
<td>7.1</td>
<td>1.219</td>
</tr>
</tbody>
</table>

The listening skills enhancement of the intervention students can also be represented in Figure 5.1 in the form of a diagram as follows.

Figure 5.1: Listening mean scores of the two groups: Pre and post intervention
To further investigate the results of the comparison of means between the two groups (and within each group), the statistical software SPSS version 19.0 for Windows was used. To establish if there were any differences between the intervention and comparison groups before and after the intervention project, the one-way multi-variate analysis of variance (MANOVA) was used. The MANOVA results show that there is a statistically significant interaction between the group and the time \((F(4, 197) = 84.05, \ p = .00, \ np^2 = .28)\). This interaction reflects that the computer-assisted instruction intervention had effects on the students’ listening performance \((p < .05)\).

As the one-way MANOVA only gives multiple comparisons for the main effect, the post hoc tests (Tukey’s tests) were used to establish where the effect was. In these post hoc tests, the mean scores of the two groups in all the listening tests before and after the intervention were compared.

Table 5.2: Results of MANOVA post hoc tests of listening scores

<table>
<thead>
<tr>
<th>Pairs of Tests</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1 Comparison – Term 1 Intervention</td>
<td>.176</td>
<td>.675</td>
</tr>
<tr>
<td>Term 2 Comparison – Term 2 Intervention</td>
<td>.056</td>
<td>.813</td>
</tr>
<tr>
<td>Term 3 Comparison – Term 3 Intervention</td>
<td>.017</td>
<td>.897</td>
</tr>
<tr>
<td>Term 4 Comparison – Term 4 Intervention</td>
<td>12.856</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 5.2 shows that the scores during the baseline period (Terms 1, 2 and 3) were not significantly different between the groups. However, after the intervention, there was a significant difference between the Term Four listening test scores (Term 4 listening scores) of the two groups \((F = 12.86, \ p < .05)\). In other words, the students’ performance in the intervention group was better than that of the comparison group (see also Figure 5.1).
The results of the MANOVA post hoc tests show that the comparison group were indeed equivalent in performance to the intervention group in that there was no difference in the mean score at three time points at baseline (Terms 1, 2, and 3). However, there was a significant difference between the two groups after the intervention; the intervention group had an improvement in listening performance between Term 3 and Term 4, the period of the intervention. This difference suggests that the use of computers by the teachers helped to enhance the students’ listening performance. This finding helps to answer research question 1 about the effects of computer-assisted listening instruction on the students’ listening skills. Further analysis of this finding will be presented in Chapter Six (Section 6.2.2).

5.1.3. Students’ Benefits from Computer-Assisted Listening Instruction

The qualitative data, including informal conversations among teacher, students, and researcher, and researcher’s observations, together with teacher journals present a picture of showed students’ initial attitudes towards computer use in language teaching. Fieldnotes taken during observations showed that at the beginning of the project, the students were quite skeptical about the effects of teachers’ use of computers on listening skills teaching and learning. In one conversation, at an early stage in the intervention, when asked whether they thought computers would help in listening teaching, one student said:

\textit{Using computers for self-practice is good, but I doubt it can work teaching listening in class cos we might be distracted by images, or depend on images to guess the content, or it may be hard to understand online resources…so I don’t really think it will work.} (Note sourced from informal conversation with a student in Tania’s class on 15th April, 2011).

Several other students sitting around also nodded their heads to support this opinion.
The data from the student questionnaires and interviews with the teachers, which were both conducted after the project, show that the students had quite positive attitudes towards computer-assisted listening instruction at the end of the intervention.

The results of the student questionnaires (Part 1) from Table 5.3 show that most students agreed (54.7%) or strongly agreed (32.5%) with the statement that their teachers used the computer in their teaching of listening skills, which supported the observation data of the researcher that computers were used during the project time.

Table 5.3: Students’ attitudes towards technology use in language teaching

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>1 (%)</th>
<th>2 (%)</th>
<th>3 (%)</th>
<th>4 (%)</th>
<th>5 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The teacher used computers in most listening classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.8</td>
<td>54.7</td>
<td>32.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>The computer-assisted teaching did not contain many interesting activities for listening practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.8</td>
<td>76.7</td>
<td>10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The computer-assisted teaching contained many useful supplementary contents for listening practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25.6</td>
<td>66.3</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The content taught with the computer was too difficult for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>29.1</td>
<td>69.8</td>
<td>1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>The computer-assisted teaching encouraged me to practise listening at home.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60.5</td>
<td>26.7</td>
<td>12.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>The computer-assisted teaching helped me improve my listening faster than before.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>44.2</td>
<td>50.0</td>
<td>5.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>The computer-assisted teaching made the listening classes more enjoyable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16.3</td>
<td>11.6</td>
<td>72.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I was distracted by the computer-assisted teaching.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>44.2</td>
<td>40.7</td>
<td>15.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I did not learn much English vocabulary through computer-assisted listening instruction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.3</td>
<td>40.7</td>
<td>45.4</td>
<td>11.6</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>I gained much more cultural knowledge of English-speaking countries through computer-assisted listening instruction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24.4</td>
<td>60.5</td>
<td>15.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The two main categories that arose from the attitude questions were students’ reported engagement and usefulness of the computer in language learning. For learner engagement, the majority of the students (of total 86) agreed that computer-assisted listening instruction provided them with many interesting activities, or made their listening classes more enjoyable (nearly 90% and over 70%, respectively). Similarly, 44% of the students strongly disagreed and 41%
disagreed that computer use distracted them from the listening lessons, which left only 11.6% with a neutral stance on this. An interesting finding was that over 60% of the students believed that computer-assisted listening instruction encouraged them to practise more at home, while 26.7% were neutral about this, and only nearly 13% disagreed. From this table, we can also see that the students’ attitude about the usefulness of computers in language-related skills improvement was generally positive. For example, many students (70%) disagreed with the idea that the contents of the computer-assisted classes were too difficult for them; a further 29% strongly disagreed with that, and only 1% had a neutral attitude. Over 75% of the students claimed that they had gained more cultural knowledge during the project, and 24% had a neutral option. However, just over half of the students said that they improved listening faster thanks to computer use by the teachers, and the rest (44%) had a neutral attitude. For question 9, about learning English vocabulary, the students’ opinions were divided. A little under half (43%) of the students thought that they could learn more English vocabulary, while nearly half of them kept a neutral attitude, and a small number of them (11.6%) did not believe that vocabulary could be gained with computer-assisted learning. An overall conclusion from the data presented in this table is that the students had quite positive attitudes towards computer use in language learning.

The researcher’s observational fieldnotes data also suggest that the students’ motivation continued to develop as the project went on (Appendice 7a and 7b are examples of fieldnotes taken during the observation of Nancy’s classes on 10th February, 2011 and on 17th of March, 2011 and which were the 4th and 7th weeks into the intervention). The students’ increased motivation in learning was evidenced by the fact that nearly all the students attended the classes regularly, and participated in class activities enthusiastically and actively. It was also noticed by the teachers and researcher that the students started using new vocabulary they had learned in
previous lessons. In an informal conversation on 10\textsuperscript{th} May, 2011, Heather said, “I noticed that my students started using some new English words or structures they learned in previous classes, which can also motivate them in learning more vocabulary to express their opinions better”.

In answering the open-ended questions in the questionnaires, the students shared a variety of ideas about computer use in listening instruction. Themes were identified from open responses to questions asked in the student questionnaire, which are why computer-assisted listening instruction was most or least useful and most or least enjoyable; about opinions regarding future use of computers for listening self-practice, and for their suggestions for computer use for listening skills self-study (see also Appendix 5). The themes defined by the researcher in the context of this study include engagement in class activities, increased learning effectiveness, language and listening skills improvement, and more cooperation among students and with teachers.

Increased engagement in class activities was mentioned by over half (55 out of 86) students when the computer was used in listening instruction. The online supplementary resources, in their opinion, with many video clips with pictures and quality sound made the classes “fun” or “interesting”, thus encouraging them to study more by themselves at home. Online resources with great diversity in content made the listening classes very enjoyable. For example, in answering question 3 – Part II (i.e.: What aspects of computer-assisted listening instruction did you find the most enjoyable? Why?), a student in Tania’s class wrote: “Watching video clips about life in English-speaking countries like the US, UK, or Australia is much more exciting and attractive than reading newspapers or books about them”. This sentiment was reinforced in informal conversations. A student observed (as part of an informal conversation in class) that the
interesting video clip about healthy diets and keeping fit provided her with knowledge in this area, which she would, otherwise, find very boring to read from books or journals. She said:

Watching a video clip is much more interesting than reading an article on this topic. If it hadn’t been for the video clip, I’d never be interested in the topic about health or illness cos I find this topic really boring. Now I feel more interested in TV or radio news about health care, diets, keeping fit, etc. (Note sourced from informal conversation with a student in Heather’s class on 7th April, 2011)

Some other students sitting nearby supported this student’s view by nodding their heads or indicating their agreement verbally.

The students’ written responses suggested there was significant efficiency in time and effort brought by computer-assisted listening instruction. Over half of the students (49 out of 86) made positive statements about the efficiency that computers brought to their learning listening classes. They said that once everything was well prepared before classes, computers made the lessons more easily accessible, thus helping teachers to save time and energy. In answering question 6 - Part II of the questionnaire, one student in Nancy’s class wrote:

I’m more convinced now that it is very convenient and effective to learn with online resources. The teacher could manage class activities faster and more easily than with other equipment in class before (e.g. CD player, cassette player, radio news, etc.). This would enable both teacher and students to do more work in less time. Learning is much easier now with a laptop and a mouse.

Improvement in listening and language-related skills was another benefit of computer use in listening instruction. It was also believed by the majority of the students to have assisted them in gaining background and cultural knowledge with respect to the target language, and, by about
half of the students, to have helped them improve their listening skills. An answer of a student in Heather’s class to question 1 - Part II of the questionnaire (i.e.: What would you find most useful about computer-assisted listening instruction? Why?) was: “We really enjoyed those listening classes taught with computers as we learned a lot more language and cultural knowledge that way”. One of the possible explanations for learning more, given in some student questionnaires (by about a half of the students), was that more notes (and of higher accuracy) of the listening texts were taken during computer-use listening classes.

This sense that computer use helped students improve their listening and language-related skills was also confirmed by the post-intervention interviews with the teachers, teacher journals, and the researcher’s observation notes. For example, Nancy noticed that “the students seem to understand the lessons better every day, they produced more correct answers, took more and better notes of the listening texts, etc..., which was really rewarding and motivating to me” (note sourced from Nancy’s journal entry on 21th April, 2011). Tania noted in her journal on 29th April, 2011 that her students brought more information about English-speaking countries searched from the Internet for pre-listening discussions in class. Also their performance in post-listening activities showed that they learned more cultural or background knowledge. Similarly, Nancy observed in one of her journal entries that her students had been exchanging more cultural or general background knowledge and many students started searching for material before class in order to have more information to exchange with classmates.

Another advantage, added by Heather, was that students became more familiar with the range of English accents, thanks to computer-assisted listening instruction. She also confirmed that teaching computer-assisted listening, with teachers’ improved skills, was more fun and motivating, the students enjoyed the classes more, so the listening classes became more effective.
In the informal conversation on 19th April, she said, “Now students welcome me with bright eyes and big smiles every time they see me with the laptop, knowing that they are going to have a relaxing yet effective listening class with the computer”.

More collaboration was encouraged by computer use in listening classes. Nearly half of the students (41 of 86) in their written responses confirmed that computer use promoted more collaboration among students and between teachers and students in class. Students, for example, stated in their responses to the questionnaire that classroom activities with computers enabled them “to work in pairs or groups more for listening tasks assigned by the teacher”. Also they noticed that they asked teachers more questions about computer skills as well as about language skills and knowledge. Some students indicated in the survey that they felt “belonging more to the learning community” and more confident in contacting their teachers and peers, which encouraged them to learn more. An interesting finding from the teachers’ journal entries and some students’ answers in questionnaires was that, as several students were quite expert on computers, they were of great help and assistance to other students with technical problems or to the teachers during their computer-assisted teaching. To both teachers and students, the fact that teachers were “supported” by their students in technology or students supported each other in class made the class more relaxing and effective. This cooperation would, in their opinion, result in the development of their language skills and background knowledge.

Students’ active learning and cooperation were also observed by the teachers to be increasing throughout the project time. Evidence included the fact that the students became more responsive to teachers’ questions and teaching activities in class: the number of students who volunteered to answer questions increased, more questions were asked, some requested more homework, and more cooperation was seen among students and with the teachers to fulfil class tasks. The
evidence cited by the teachers in the interviews includes that their students sent more emails to them asking for help about homework, or exchanged information about websites among themselves and with the teachers. Some students asked the teachers to recommend other websites for extra home listening practice. In Tania’s journal, she wrote:

*I felt so happy when the students became more eager to participate in class activities. They asked more questions about the lessons, helped one another more, became more active in class, and even offered to help me with technical problems at times.* (Note sourced from Tania’s journal entry on 19th April, 2011)

The teachers’ opinions of their students’ positive attitudes and collaboration in learning with computers described above were also supported by the notes taken during and after observations by the researcher. From the notes taken by the researcher in all the observation sheets (see Appendices 7a and 7b), the students were observed to become increasingly animated and motivated in their computer-assisted listening classes.

Autonomy was mentioned either directly or indirectly by many students in the survey (45%), which had not been anticipated by the researcher prior to the project time. They believed that the computer encourages them to work by themselves more in terms of both quantity and frequency. The reasons mentioned included greater access to more diverse resources, and increased efficiency in terms of time, energy, and knowledge improvement. Computers could encourage pair work or group work not only inside but also outside class. The students believed that working by themselves or with their classmates outside class allows more flexibility and more efficiency in terms of time, online resources, support, and cooperation among themselves which, in turn, would increase their confidence in self-study and would, thus, encourage further self-study. The students’ perceived autonomy was also supported by the data from teacher journals,
opinions of students and teachers during informal conversations, and researcher observation
notes. In Heather’s journal entry on March 29th, 2011, she wrote: “My students became more
active in asking for more homework or new websites to practice listening by themselves at home,
which is encouraging”.

Answering the question posed by the researcher’s regarding what made their students become
positive about learning listening with computers (i.e. Question 5 of the interview), the teachers
suggested the following factors. All the four teachers agreed that their students had more positive
attitudes toward computer use in language teaching and learning thanks to good facilities on
campus such as sufficient access to computers. Also, they all believed that listening classes with
computer use with interesting, varied content, computer skills support by the teachers and
technicians at the university, and regular listening tasks assigned for students made them become
more confident in learning listening with computers. Three teachers (Helen, Nancy, and Heather)
shared the idea that clear instruction both technically and academically, as well as team or group
work organised by the teacher made their students more secure in using online resources. Nancy
also stated that teacher’s regular feedback about students’ listening self-practice and homework
assignments contributed to students’ positive attitudes toward computer-assisted listening
instruction. A final point suggested by Heather was that teachers’ demands of students’ outputs
in both quantity and quality were reasonable, which encouraged them to practice with the
computer on campus and off campus. She explained:

A reasonable amount of work assigned would be good (Interviewer prompt: “Why would
a reasonable amount be necessary?”) ... because too much work would discourage the
students right from the beginning and, with too little homework, they would put it off until
later, neither of which would encourage them to make full use of computers for listening self-practice. (Interview with Heather on 30th May, 2011)

The results discussed in this section provide additional data to answer research question 1 (the effects of computer-assisted listening instruction on the students’ language-related skills) and research question 2 (the way computer-assisted listening instruction affected the students’ attitudes toward computer use). These findings will be discussed further in Chapter Six (Sections 6.2.1, 6.2.2, and 6.2.3).

5.1.4. Students’ Concerns and Suggestions about Computer-Assisted Listening Instruction

There were some concerns among a small number of students (evident in responses to the questionnaire) about several aspects of computer use in language learning in general, and in listening learning in particular. Their opinions can be categorised into effectiveness, interaction, health, and self-directed learning. First, just under a fifth of the students were concerned about the effectiveness of computers in teaching listening skills. Specifically, when asked to describe the least useful aspects of computer use, 15 students (17%) believed that they sometimes used the pictures shown on the video clips to work out or confirm orally presented material, which may not be good for their listening comprehension skills. Ten students were concerned about the possible use of inappropriate listening resources by the teachers once the project was over. In her questionnaire, one student in Nancy’s class shared:

My concern is about whether the resources chosen by the teachers for listening skills in the future will be appropriate in terms of relevant or suitable topics or level of difficulty
after the project. **How would we students be sure that we will be taught with good quality resources in the future?**

About 14% of the students said that they may be distracted if technical problems occur, or if computer skills of either students or teachers were not good enough. A small number of students (nine) even expressed their concern that several video clips with “strange” accents (e.g., Indian, Singaporian, or South African) may impair their listening comprehension.

Ten students expressed their concern that the computer may discourage interaction among students and between teachers and students. One student in Heather’s class wrote in the questionnaire that “looking at the monitor more would mean our communication with classmates and the teacher is less”. Among those ten students, six believed that computers may remove the teacher from class. They explained that, as students could check answers by themselves with online resources or software, the teachers’ presence may not be needed in class. Another concern shared by a small number of students (only five among 86) was health. In one survey question, a student in Helen’s class wrote:

> If students spend too much time on the computer, for study or anything else, it will do harm to their eyes, heads, and other parts of the body. This also means we don’t do enough exercise sitting in front of the computer screen, which may lead to some health problems.

The last concern among some students was self-directed learning. Sixteen students were not sure about the future use of computers in their listening self-practice. Among these, some were afraid that their cultural or background knowledge was not sufficient to comprehend the listening resources obtained from the Internet. Others were worried that without their teachers’ help, guidance or feedback, they may not be interested in “self-practice of listening skills outside the
classroom”. Teachers’ guidance inside and outside class was considered essential in supporting students’ computer-assisted language learning. These students also believed that in-class practice with computers would be enough, and self-practice could be done without computers. One student wrote in the questionnaire: “there are other resources available for listening practice, such as listening textbooks, or radio or TV programmes, while searching online listening materials is not always available if we don’t have the Internet connected”. In general, only a small number of students were doubtful about the use of computers in future listening practice by themselves.

Besides comments regarding current use, suggestions were made by the students for better use of computers for developing listening skills in the future. To improve their listening skills with computer use, it was suggested by over a third of the students that they need to, first of all, enhance their computer skills. It was believed by these students that competent computer skills would make students more confident and efficient in searching for suitable online resources for listening practice. Otherwise, it would take too much time and effort for little pay off. One student in Tania’s class wrote in the questionnaire: “Without good computer skills, students don’t really know how to search for online resources for listening skills, or handle technical problems during practice, which would discourage them from using computers for listening practice”. Another student suggested that “more workshops on computer skills should be held for both teachers and students” so as to encourage more computer-assisted language learning. Other suggestions were made by about a quarter of the students about technical facilities improvement on campus. They suggested that the university “should replace some too old computers and set up more computer rooms to make computers more available to students”, or “there should be more technical support”. Fifteen students suggested that more suitable resources relevant to the
syllabus and listening tests at the department needed to be explored and exploited for further effective use of computers in language teaching. Those students stated that although the online resources used by the teachers so far were good, there were other resources more “test-oriented” and “more relevant” to their proficiency levels and interests that could be used. When asked whether they would like to have computer-assisted listening instruction in the future, the majority of students said “yes”, suggesting also that, as long as teachers could maintain their clearly defined tasks and clear instructions while using computers in teaching, students would be in favour of computer use.

5.2. Effects of CALI Intervention on EFL Teachers

5.2.1. Quantitative Data Results

5.2.1.1. Backgrounds of the Teachers

The data collected in Part I and Part II of the teacher questionnaire (see Appendix 1) provided information about the professional and computer experience of the four teachers participating in this project. The fact that all of the teachers learned English at high schools in Vietnam, a non-native English-speaking environment, means they did not have the best conditions for their EFL learning. They all have Master’s degrees in TESOL (Teaching English to Speakers of Other Languages). Their ages ranged from 31 to 40 at the time of the intervention. None of the teachers had any official training in computer skills from either on or off campus courses. They learned computer skills mostly by themselves or from their relatives, friends, or colleagues. Basically, the teachers’ reported personal computer use ranged from “some extent” to “reasonable amount” for word processing, email, surfing the Internet, communicating with friends by email or chatting, and entertainment (games or movies). Three out of four teachers (Helen, Tania, and
Nancy) stated that computer use is supplementary to their teaching, and Heather believed that computer use is essential for her instruction. In answering question 10 (Part II) of the questionnaire, self-rating her skill in computer use, Heather was also the only one who rated herself at an average level, while the other three rated themselves as below average as computer users (see Appendix 2).

5.2.1.2. Changes in Attitudes and Motivations of Teachers

At the end of the project, Part III of the pre-intervention questionnaires was filled out once more by the teachers in order to discover any changes in their attitudes towards computer use in language teaching. In general, the questionnaire responses showed that the teachers had developed more positive attitudes to computer use in their teaching by the end of the intervention. Figures 5.2 and 5.3 show the percentages of responses that showed negative, neutral and positive attitudes towards computer-assisted listening instruction of each of the four teachers before and after intervention (these figures are discussed in more detail following).

Vignettes of the four teachers, drawn from their responses to the pre-intervention questionnaire, are presented below.

Case 1: Helen

Helen, at the time of the study, was the oldest among the teachers of the second year students in the department. She had been teaching English at the department for 18 years, since graduation. She reported she had about ten years experience in “some” personal uses with computers (e.g., word processing, entertainment, communication with others, surfing the Internet, and learning), she had only about four years using computers in teaching, and the frequency of her using computers for teaching was limited. Apart from about two hours spent on class preparation or
one hour on administration, she spent no other time using computers for teaching language skills in class. The extent she used computers in teaching (PowerPoint, software, movies, websites, in-class activities, assessment, and communication with students) was reportedly not very much. In answering Question 9 about the reasons why computers were not used in her teaching, she agreed with two items (“no one modeling technology use for me” and “students may be distracted from tasks in class”), and strongly agreed with the remaining ones. Below is an extract of Part II of the teacher questionnaire, showing the categories of use the teachers were asked about.
Q7: Personally, to what extent do you use computers for:

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<td></td>
<td>a.  word processing</td>
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<td>b.  playing games</td>
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<td>c.  e-mail</td>
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<td>d.  surfing and searching the Internet</td>
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<td>e.  learning</td>
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<td>g.  researching</td>
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<td>h.  data organisation</td>
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<td>i.  building websites</td>
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Q8: In your teaching, to what extent do you use computers for:

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<td>a.  PowerPoint</td>
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<td>b.  software accompanying textbooks</td>
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<td>c.  movies</td>
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<td>d.  websites</td>
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<td></td>
<td>e.  in-class activities</td>
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<td>f.  assessment</td>
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<td>g.  communication with students</td>
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Q9: Reasons (s) why you do not use technology in teaching:

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<td></td>
<td>a.  no personal confidence</td>
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<td>b.  no one modeling technology use for me</td>
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<td>c.  no training or ineffective training</td>
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<td>d.  it has no useful role in teaching</td>
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<td>e.  no technical support</td>
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<td>f.  it takes too much time for little benefit</td>
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<td>g.  students may be distracted from tasks in class</td>
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Helen’s answers in Part III of the pre-intervention questionnaire, which was concerned with attitudes to using computers specifically in language teaching, showed that she had quite negative attitudes toward computer use in language teaching. Her responses to questions about computer use in teaching listening suggested a negative attitude in over half (seven) of the questions. Specifically, she was not confident or comfortable using computers; she did not think that computers should be as important or available to students as pencils and books or that they would make her teaching listening easier; she believed that computers may interfere with her student interactions, and she strongly agreed with the idea that there are too many kinds of resources to choose from and it would take too much time to choose good websites for teaching listening. About a third of Helen’s responses were neutral, namely, to Items 2, 5, 8, and 10 of Part III of the questionnaire (i.e. “computer use takes her students away from important instructional time”, “there is enough time for computer-assisted listening instruction”, “teaching quality is improved by computer use”, and “she really enjoys using computers and the Internet in her listening instruction”). She had only one positive attitude and that was about her readiness to learn more about computer-assisted listening instruction (see Figure 5.2). Reflecting on her views on teaching and learning, she reported that she often searched for some extra listening materials to supplement the listening syllabus. Most of her supplementary resources came from listening textbooks or radio news in English rather than online materials or software programs. She believed that students should build up a reasonable sized vocabulary in order to have good listening comprehension skills. Teachers should support students by teaching them subskills in listening, such as listening for gist, note-taking, or listening for key information. Responses to the pre-intervention questionnaire suggest that Helen did not have a strong belief that computers could or did play a very important role in teaching language skills in general and in listening
skills in particular. In her opinion, the teaching resources used by her at the time of the survey were very reliable and sufficient to supplement for her teaching listening skills in class. She said that it would take too much of her time for preparation and practice in class, and would be a disaster were there to be technical problems. She also expressed her worries that her lack of confidence in computer skills may make her lose face in front of the students.

After the project, Helen changed her attitude markedly towards computer use in teaching listening skills. Specifically, 50% of her responses were now positive, about 33% neutral, and only 17% suggested a negative attitude (Figure 5.3). Helen continued to hold two negative opinions, relating to items 9 and 11, yet she softened her responses from ‘strongly agree’ to ‘agree’ about the fact that there are too many kinds of online resources, and it is time-consuming and difficult to choose good websites for listening teaching. She still chose a neutral option about sufficient time to incorporate computers into listening instruction. Her negative attitudes on items 3, 4, and 7 became neutral after the project (i.e. computers should be as important and available to students as pencils and books, she is confident using computers in teaching, and she is concerned that technology may interfere with student interactions). Moreover, she shifted from negative to positive in items 1 and 6 (i.e. she now believes that computers make her teaching easier and she feels more comfortable when confronted with computers after the project), and from neutral to positive attitudes in items 2, 5, and 10, which means computer use in listening classes did not take the students away from important instructional time, the quality of teaching is improved by computer use, and she really enjoys using computers in teaching listening). She also strengthened her positive attitude from “agree” to “strongly agree” about her readiness to learn more about computer-assisted listening instruction.
Figure 5.2: Percentages of negative, neutral and positive attitudes towards computer use in language teaching at baseline

Figure 5.3: Percentages of teachers’ attitudes towards computer use in language teaching after the intervention
Case 2: Tania

Tania had 13 years teaching experience in the department at the time of the study. She reported using computers to some extent, mainly for personal purposes (i.e. in word processing, entertainment, communication with others, surfing the Internet, and learning) for ten years, but for teaching for only five years. The frequency of her use of computers for teaching was limited, and she spent three hours preparing for her classes with the computer, but only one hour per week teaching with the computer in class and another hour per week for administration work. She did not have a positive attitude towards computer use in teaching. The extent to which she used computers for PowerPoint, software, movies, in-class activities, and assessment was “a little” (more than Helen’s), and she sometimes used the computer for websites and communicating with students (she chose “some” for these two items). Tania agreed with all the reasons for not using technology in teaching mentioned in Question 9, yet to a lesser extent than Helen. She strongly agreed that she did not use computers much in teaching because of a lack of personal confidence and no technical support, and agreed with the rest of the reasons mentioned in this question (see Appendix 2).

Tania’s answers to Part III of the questionnaire ranged from “strongly agree” to “strongly disagree”. Half of her answers (i.e. items 1, 4, 5, 7, 9, and 11) suggested negative attitudes (with half of these “very” negative answers) about computer use in teaching listening skills. Specifically, she was not confident in using computers for teaching, and did not believe that computers would make her teaching of listening easier or better. She was worried that technology may interfere with student interactions. She strongly believed that it is too time-consuming and difficult to select good websites for teaching listening skills as there are so many to choose from. She chose a “neutral” option for items 2, 3, 4, 6, and 8 of Part III of the teacher
questionnaire (see Appendix 2). Two of her items were positive, that is she enjoyed using computer-assisted listening instruction and was prepared to learn more about it (Figure 5.2). Tania said she used supplementary textbooks, radio, or TV programmes in her listening teaching. She utilised the topics or subskills suggested in the syllabus to search for something relevant to add to the lessons. In her opinion, it is important for students to have good background knowledge so as to understand the listening texts. Teachers should act as facilitators in guiding students to build up their background knowledge by using different online or offline resources. Although Tania thought that the computer is necessary in teaching listening skills, she believed that there are many other effective ways to teach language skills.

Tania also showed a quite a considerable change in her attitudes towards computer-assisted listening instruction (Figure 5.3) after the intervention. Her negative attitudes to computer use in teaching listening dropped from 50% to 17% (only items 9 and 11 remained negative but to a lesser extent than before); a third of responses (answers to items 2, 4, 7, and 8) suggested a neutral attitude, and six answers were positive (50%). After the intervention, instead of having a negative attitude, she agreed that computer use can improve teaching quality, and strongly agreed that computers make her teaching of listening easier. She also became more comfortable using computers in her teaching, and now believed that computers should be as important and available to students as pencils and books (i.e. her attitudes changed from neutral to positive in these two categories). Her attitudes increased from negative to neutral in items 4 and 7 (see Appendix 2). Moreover, she changed her attitude from “agree” to “strongly agree” in items 10 and 12 (i.e. she enjoys and is prepared to learn more about computer use in teaching listening skills). She kept the same neutral attitude about her concern that there is sufficient time
to incorporate technology into listening instruction, and that computer use may take her students away from important instructional time.

**Case 3: Nancy**

Nancy had ten years teaching experience at the university. Like Helen and Tania, Nancy described herself as a “below average” user of computers in language teaching. She usually spent four hours working with computers for her class preparation, one hour per week teaching with computers in class, and one hour for administration. She has been using computers for her teaching for over six years to date and her frequency of in-class computer use was about once a week. Her answers about the reasons for using computers in teaching in Question 8 were exactly the same as Tania’s, that is she used computers for PowerPoint, software, movies, in-class activities, and assessment to “a little” extent, and she used computers to “some” extent for web sites and communicating with her students. Besides a reasonable amount of computer use, basically for personal reasons, over about ten years, in word processing, entertainment, communication with others, surfing the Internet and learning, she used computers to “some” extent to organise data. The extent to which she reported using computers for PowerPoint, software, movies, in-class activities, and assessment was more than Helen and Tania. She chose “some” for those items, “a reasonable amount” for websites, and “a little” for the communication with students. In Question 9, her response to most statements was neutral, except for her disagreement with the last reason why she did not use technology in class (“students may be distracted from tasks in class”); she believed that students were not distracted from class tasks or activities when taught using computers.

In answering the questions in Part III of the questionnaire before the intervention, Nancy expressed a negative attitude to computer use for around half of the questions. Specifically, she
feared that computer use may interfere with student interactions, or too much time and hard work may have to be expended to select good online resources among so many available for teaching listening skills. She felt uncomfortable when confronted with technology. She did not believe that computer use would make her teaching listening easier or better. Like Helen and Tania, Nancy held a neutral attitude for a third of the questions in items 2, 3, 4, and 8 of Part III of the questionnaire. Like Tania, Nancy enjoyed using computers in teaching listening skills and would like to learn more about it (Figure 5.2). She often searched relevant online and offline resources for supplementary resources for her teaching. She said that online resources are very interesting, varied, and up-to-date. However, as it usually takes a long time to find a good online resource for just one listening class, she could not afford time to do it for all her classes. It was suggested by Nancy that, to have good listening skills, students should develop very independent learning styles. They should be encouraged by teachers to have the habit of self-study, searching resources for their own study at home, and practice by themselves as much as possible. Teachers should suggest reliable online or offline resources for students to study by themselves as the number of hours in class is very limited whereas the resources around are plentiful and various for their listening practice. Like Tania, Nancy agreed that the computer could be useful, but that there are other ways to perform good language instruction and learning.

Like Helen and Tania, Nancy also shifted to holding more positive attitudes toward computers in teaching listening after her participation in the project. Her proportion of items suggesting positive attitudes increased from 17% to 50% (with four “very” positive answers), and the remaining 50% fell into the neutral category (Figure 5.3). She shifted from six (50%) to zero responses indicating negative attitudes towards computer-assisted listening instruction. She completely changed her views about items 1, 5, and 6 from negative to positive views. After the
project, she stated that computers make her teaching job easier, and even strongly agreed that teaching quality is better with computer use and she felt comfortable when confronted with technology. From choosing a neutral option, at the end of the project, she believed that computers should be as important and available to students as pencils and books. She also changed from negative to neutral views in her concerns that technology may interfere with student interactions, and that it is time-consuming and hard to select good websites from the many online resources for teaching listening skills. She still maintained her neutral stance to three items, namely, computer use may take students away from important instructional time; she is confident using computers, and there is enough time for computer use in listening teaching. Her positive attitudes in items 10 and 12 increased one rating, from “agree” to “strongly agree”.

**Case 4: Heather**

Heather had been teaching for nine years at the university. She described herself as an “average” computer user, and had been using computers for her teaching since she started her teaching career. She reported spending five hours with computers preparing for her teaching, and another five hours teaching in class with computers per week. In other words, she used computers for every class at university. She believed the computer to be essential for her teaching. In Question 7, the only function of the computer that she did not report using much (she chose “a little”) was for building websites; she used it a reasonable amount for all the other functions. She reported using much computer software for accompanying textbooks, a reasonable amount of computer use for movies, websites, in-class activities and communicating with her students, and to some extent for PowerPoint and assessment in her teaching. In Question 9, she confirmed that she had confidence in using computers for teaching, and that computers are useful in teaching. The two factors preventing her from teaching with computers were having ineffective training and no
technical support. She held neutral attitudes for the remaining reasons mentioned in this question (see Appendix 2).

In about 50% of her answers Heather chose a neutral option: for items 1, 2, 3, 4, 5, and 8 of Part III of the teacher questionnaire (see Appendix 2). She reported only negative views in two questions, namely, her concerns were that there were too many kinds of resources to choose from and it might be time-consuming and hard to choose good websites for teaching (i.e. questions 9 and 11). Thus, all the four teachers chose negative attitudes to these two items of the questionnaire. Like Tania and Nancy, Heather enjoyed and was prepared to learn more about computer-assisted listening instruction. Additionally, she felt comfortable when confronted with technology and believed that her technology would not interfere with her students’ interaction. In total, a third of her attitudes towards computer use in language teaching were positive. She said that her teaching embraced a student-centred approach, in which she always encouraged her students to find Internet resources, software programs, or textbooks for their self-practice outside classes. She often suggested reliable Internet resources to her students, and guided them in exploring and exploiting the resources. She felt that students should always be very active and independent in listening practice outside class to improve their listening skills. They should find resources that allowed them to practice listening skills, and only ask teachers to explain things that are not clear. Like Helen and Tania, Heather stated (in answering the open-ended questions) that the more background knowledge and better vocabulary the students have, the better they can understand English listening texts. Although she was still a bit doubtful about her competence with respect to computer skills, she believed the computer is useful for the language teaching and learning process.
Heather’s attitude toward computer-assisted listening instruction appeared to have changed very significantly after the intervention. In the baseline questionnaire, she selected “neutral” options in half of the attitude questions, because, as she later reported later at interview, she was not very sure. However, after the project, her positive rating of items about computer use in teaching listening increased from four (about 33%) to seven (about 58%) (i.e. in items 2, 3, 5, 6, 7, 10, and 12). She still had 42% of responses categorised as representing a neutral attitude (she still kept her opinions neutral in three items- 1, 4, and 8- after the intervention). She changed her concerns about too many kinds of resources to choose from and too much time and hard work exerted on selecting good websites for listening instruction from negative to neutral stances. This means there was no negative attitude towards computer use in language teaching in Heather’s ratings (Figure 5.3). After the project, instead of being neutral, she agreed that computers make her teaching more time-efficient and of better quality, and that computers should be much more important than pencils and books for language teaching in modern times. Three out of her four pre-intervention positive views also became stronger (i.e. she chose “strongly agreed” for items 6, 10 and 12).

5.2.2. Qualitative Data Results

The researcher’s observation notes, teachers’ journals, and post-intervention interviews with the teachers were examined for insights into teachers’ reactions toward the intervention. The categories deriving from these data include factors affecting success of the intervention, changes in teachers’ motivation and attitudes towards computer use in listening instruction and in their computer self-efficacy after the treatment, and teachers’ concerns and suggestions about computer-assisted listening instruction.
5.2.2.1. Factors Contributing to Success of Intervention

The qualitative data (including teacher interviews, journals, and informal conversations) obtained in the current study reveal the four main factors contributing to success of the intervention, namely, preparation, high quality online resources, modelling, and practice in computer use in teaching listening skills.

All of the four teachers shared the idea that the careful preparation for computer skills in the workshop at the beginning of the project was an important factor leading to the success of the intervention. They all reported that the computer skills provided by the research team were very useful for their computer-assisted teaching. Helen, for example, said:

\begin{quote}
I strongly believe the primary thing to make this project successful was the thorough preparation provided by the research team right from the start. If it hadn’t been for this initial step of preparing teachers for new computer skills, I may have failed from the beginning of the project. (Interview with Helen on 20\(^{th}\) May, 2011)
\end{quote}

Tania also shared:

\begin{quote}
I think the introductory step was very good. It’s actually the first time since I started working as a teacher at the department we have had such professional training on computer skills. The preparation did help me a lot in preparing the lessons as well as teaching listening skills with computers. (Interview with Tania on 28\(^{th}\) May, 2011)
\end{quote}

Another preparation step pinpointed by Heather and Nancy was that teachers should have a good understanding of students’ family as well as technical backgrounds so as to offer proper support to each and every student. Nancy said:
A good understanding of students’ technical background would enable teachers to help each and every student the most effectively. We should all be aware that some of our students come from the countryside, or some from economically poor family background, so possessing a computer is kind of luxury for their study. I think those “disadvantaged” students should be instructed more carefully and thoroughly so as to catch up with their classmates with better computer skills. (Note sourced from informal conversation with Nancy on 2nd May, 2011)

The second factor contributing to success reported by the teachers was the good-quality online resources employed for teaching listening skills by the research team. The links of online resources explored and exploited in the project can be seen in Appendix 10. When asked in the interviews about the quality of the websites recommended by the research team, all the teachers said that they were varied, interesting, and sufficiently academic to teach with. During the interviews, the teachers also agreed that the online resources used for the listening classes had rich and diverse content, and very good sound and picture quality, which made the lessons interesting. The evidence given was the students’ active cooperation and positive responses to the questions or class activities assigned by the teachers. As confirmed by Tania, “all the resources were very interesting, varied, and useful to the students in terms of language skills and academic knowledge. They also meet the teaching objectives set in the listening syllabus” (Interview with Tania on 26th May, 2011). In general, the good quality of those websites was highly motivating to the teachers in the project. The teachers were provided with different websites, chosen due to their high quality for teaching listening skills in terms of academic content, sound, and images. Also, these online resources were suitable for the students’ interest, ages, and ability. According to the data from informal conversations, teacher journals, and post-
intervention interviews, the teachers believed that the high quality online resources chosen during the project played a very important role in the success of the intervention. As stated by Nancy:

*The websites chosen in teaching should have suitable content in terms of topics and subskills to be covered, and of good quality sound and picture. Also, they should be suitable for the students’ age and interest. Otherwise, they would not focus enough in the lesson, and the computer-assisted listening class would become a waste of time and effort. And the websites chosen in this project were generally of high quality, so my students were all more interested and motivated in learning.* (Interview with Nancy on 25th May, 2011)

The high quality of the websites were also noted every now and then in the four journals by the teachers. For example, in the entry on 19th April, 2011, in item 9 of the journal (see Appendix 6), Heather wrote: “*I thought I was very good at searching for online resources, yet the video clip suggested and used today was amazing! It has everything, from images, colours, music, and especially the fascinating content to supplement my class! I’m so impressed*”. It was also observed by Helen (the least “keen” teacher at the beginning of the project) that the increasing experience in computer skills during the intervention enabled her to select better quality websites by herself for her own teaching as well as for suggesting materials for students’ listening self-practice outside class. In the informal conversation near the end of the intervention (on the 12th May, 2011), she said, “*the websites I selected recently seem to improve in quality, I think it’s thanks to more experience in computer skills I’ve gained*”.
The third factor mentioned by the teachers was modelling, which means the demonstration of how to use computers in teaching listening during the weekly coaching sessions. Even Heather, the most competent computer user teacher, said:

Seeing is believing. I think explaining how to use computers in teaching listening, which means presenting a model of how computers assist teaching, did help a lot, and was also interesting. During the workshop training and coaching sessions, I could see with my own eyes how the research team demonstrated computer use in teaching, how they searched and selected online resources, or how they solved accidental technical problems, which gave me more confidence, experience or skills in using computers.

(Interview with Heather on 30\textsuperscript{th} May, 2011)

The last factor reportedly contributing to the intervention success was computer skills practice. It was agreed among the teachers that repeated extensive practice with computers in teaching listening skills every week in the coaching sessions, as well as in their other listening classes, provided the teachers with opportunities to learn, practice, revise, and consolidate the skills. As the project lasted over three months, the teachers shared the idea that they had sufficient time to practice their computer skills in teaching. As shared by Nancy: “At the beginning of the project I felt a bit nervous about how I can integrate computers into my teaching, but the more I practiced with computers, the less fear I had” (Interview with Nancy on 25\textsuperscript{th} May, 2011). In the informal conversation on 10\textsuperscript{th} May, 2011, Tania said, “Practice makes perfect. It’s been three months and now I can use my improved computer skills to search for more suitable websites for teaching”. 


In summary, the four factors described above (namely, preparation, high quality online resources, modelling, and practice in computer use in teaching listening skills) were reportedly important in contributing to the success of the intervention.

5.2.2.2. Changes in Attitudes and Motivation of Teachers

Besides the quantitative data (see Section 5.2.1.2), the varied sources of qualitative data also suggest positive changes in teachers’ motivation and beliefs in computer use in listening instruction that were considerable. The fact that all the four teachers volunteered to participate in the project suggested that they had certain initial motivation in using computers in their teaching. However, the pre-intervention teacher questionnaire results show that the four teachers were initially motivated to different extents. Helen’s level of motivation was the least, Tania’s and Nancy’s motivation was a bit higher, and Heather showed the highest motivation level before the project started. For example, when asked whether computers are useful for teaching and learning, Helen said she was not very sure, but would like to “give it a try” by participating in the project. Tania and Nancy both said “yes, to some extent…” for the same reasons: computer use may take too much time and effort, while the quality of online resources is still “questionable”, and stated that they were curious to see how computers would work in language teaching. Heather, the most competent computer user, said she was excited about the idea of using computers and seeing how computers would be best used in teaching listening. In answering the last open question in the questionnaire at the beginning of the project, Heather said:

I can’t wait to see how the project team will work with me to make the most use of computers in teaching listening. I’ve always been aware that computers do help with language teaching, but really want to see something sort of professional in computer-assisted listening instruction!
The post-intervention interviews, teacher journals, informal conversations, and researcher’s observation data also suggested that all the teachers were more motivated regarding using computers in their listening teaching. According to these research sources, all the teachers shared the idea that computer use made them increasingly excited and enthusiastic in teaching. For example, Tania said:

*Although I volunteered to take part in the project, I was still wondering between the pros and cons as I thought it would take too much time to prepare for not so many benefits. However, after a while, I seemed to get more and more excited and motivated by the rich interesting content of those online resources. Now I’ve even started to search for more online resources by myself to add to the ones suggested by the research team.* (Interview with Tania on 28th May, 2011)

In the interview at the end of the intervention, Helen shared that she no longer worried about losing face in front of the students when using technology. She believed that computer use had made her teaching of language skills less difficult and more effective. In one of her journal entries, she wrote:

*Now I am very convinced that the computer makes my teaching listening skills much easier and more effective. If it had not been for computer use, I would be exhausted by this time of the day. I had a busy day today and the computer did a lot of work for me!*

(Note sourced from Helen’s journal entry on 12th May, 2011)

Moreover, it was asserted by Nancy and Heather that teaching listening with computers was very useful and efficient. They believed that the computer saved them more time and energy in class. According to Nancy:
Searching listening resources with the computer was much faster than looking for relevant texts in listening coursebooks, or TV or radio programmes, cos I could click the mouse for the information I needed without turning pages or playing the CD.... Also during the teaching in class, it didn’t take me too long to rewind or fastforward the clips, as I just used the mouse to click the part I wanted the students to listen to again, which was more exact and faster. (Interview with Nancy on 25th May, 2011)

Heather, the most computer-competent teacher, became even more motivated in using computers for her teaching. She wrote:

_I did know before that the computer helps a lot in language teaching, but with the research team’s support with their technical and academic assistance, my computer use in class became even faster and more effective to student learning and cooperation than I could imagine! I have become more and more excited about teaching listening with computers now!_ (Note sourced from Heather’s journal entry on 5th April, 2011)

All of the teachers in the post-intervention interviews shared the same view that their positive attitudes and motivation in teaching listening with computers markedly increased as a result of the CALI teacher workshop, websites, and professional coaching by the research team during the project time. “If it hadn’t been for your technical support, I wouldn’t have attempted to use computers in my listening classes. I would have thought it would take me too much time and effort to prepare a lesson with the computer” (Interview with Helen on 20th May, 2011). Nancy believed that “the technical and academic support by the research team made my teaching much more efficient in terms of time, effort, academic knowledge, and language skills” (note sourced from informal conversation with Nancy on 20th April, 2011).
The systematic notes taken during and after observations (based on the recordings) also showed the consistent increase of teachers’ motivation and positive attitudes toward computer use in their teaching. Although the four teachers volunteered to participate in the project, three of them (except Heather) were still somewhat sceptical about the effects of computers in teaching. However, according to the observation notes, by the third week of the project, they all seemed to be very positive and excited about searching and using appropriate websites for teaching listening skills.

5.2.2.3. Changes in Computer Self-Efficacy of Teachers

The interviews also showed that all the four teachers agreed that the project helped them improve their computer skills in teaching. Similar to their rating in the survey questions, they all confirmed in the interviews that they had increased their computer skills after the project: Helen, Tania, and Nancy from below average to average level, and Heather from average to above average level. For example, Helen said:

At the beginning, I was not confident using computers in teaching at all. I was not even so good at such things as adjusting the volume, or I often spent too much time just learning how to rewind or fastforward the clips... But after some time, I got more and more familiar with computers and managed to do all these things quite well... Yes, I’m sure that my computer skills have been upgraded (with a prompt from the interviewer: “You mean from below to average level?”) ... yeah I believe from below average to average level.

(Interview with Helen on 20th May, 2011)

Helen was a typical case. Data from the interview, informal conversations, teacher journal, and observations show that in the first classes of the project, Helen was quite nervous and very slow
in managing a video clip, and not familiar with rewinding, fastforwarding, or dealing with minor technical issues. However, after the third week, she seemed to be more confident and to have improved her computer skills. She became quicker and more flexible in integrating the computer into her class activities. Compared to Helen, Tania and Nancy had quite similar experiences in reported computer skills and, as they had more experience in computer use, it took them a shorter time to manage their listening classes with computers. They said their skills in using computers improved quickly due to frequent practice and continuous support from the research team. Nancy even spontaneously reported that she had learned some new tips about searching online resources from the research team. In her journal entry on 21st of March, 2011, she wrote:

> Before the project time, I was not aware that some websites are more language-teaching oriented than others, so I used to type the content I wanted to look for in Google, and normally too many of those came up, which confused me. Now I have already bookmarked all the websites suggested by the research team to get access to the topics I need. This saves me so much time and effort.

Similarly, Tania wrote in one of her journal entries:

> I have become more confident after sometime teaching with the computer. Especially, with the researcher’s support in the coaching sessions, now I can search for online materials very fast and exactly, and can deal with technical mistakes at work sometimes. I feel very confident now. (Note sourced from Tania’s journal entry on 19th April, 2011)

In Heather’s case, being the most competent in computer use from the beginning to the end of the project, she was even more engaged in using computers in her classes than before the project. She was searching more websites to supplement her lessons, and found some good quality websites to suggest to the research team. For example, she suggested that the website
http://dsc.discovery.com/videos/ with many interesting and useful video clips about nature and people on the earth would be interesting to the students, which was later exploited by the research team with great success.

Data from the interviews and informal conversations showed that the teachers in the project highly appreciated the encouragement and support from the university, English Department, and the research team. According to Nancy, “the continuous academic and technical support by the research team was always prompt and in time, making it easier for us in teaching with computers” (Interview with Nancy on 25th May, 2011). The presence of the department leaders at the workshop as well as their verbal encouragement whenever they met the intervention teachers and research team, to some extent, contributed the success of the project. This was showed in the informal conversations with the teachers and the fieldnotes taken by the researcher. Heather said:

*I was surprised the other day when the Dean of our department asked me about how the project was going, and if we needed any further support from the departmental level. This really encouraged me to try harder to contribute to the success of the project.* (Note sourced from informal conversation with Heather on 19th April, 2011)

Another factor that helped to build up the teachers’ self-efficacy was other people’s use of computers in teaching. Mentioning the research team’s use of computers in teaching in the workshop and coaching, Helen said, “It is like a live example of how things work. To me, it is like if the research team, as my colleagues, can do it, then I can do it” (note sourced from informal conversation with Helen on 17th March, 2011).
Another important source of data collected about teachers’ computer self-efficacy was the observation notes taken by the researcher during the whole project time. In her observation notes, the researcher noticed that from just the second week of the intervention (i.e. the second week of February), Heather became very skilled in using the computer in searching websites and teaching in class. By the fourth week, Tania and Nancy became much more confident and skilled in computer-mediated listening teaching. For the case of Helen, the least computer-oriented teacher, this happened in the fifth week of the project (i.e. early March) (see items 7 and 9 in one journal entry by Helen below).

CALL-BASED LISTENING TEACHER JOURNAL

1. Date: 03/03/2011 (9th listening class)
2. Time: 9:30 - 11:30 (AM)
3. Topic taught: Adulthood
4. Sub-skill(s) taught:
   - Using schema to support audio text comprehension
   - Listening for signal words, recording numbers,
   - Summarising main ideas
   - Creating charts from listening texts
5. Website(s)/video clip(s): sources, contents:
   - http://www.youtube.com/watch?v=prD3UHDQ-2M: documentary about emerging adulthood: general introduction about the topic
   - http://www.youtube.com/watch?v=VE17009bX8: interview with a professor (Prof. Jeffrey Jensen Arnett) & a psychiatrist (Dr. Janet Taylor) about when people become grown-up
   - http://www.youtube.com/watch?v=Y7DmU-qQQ: interview with Prof. Jeffrey Jensen Arnett about emerging adulthood: students listen and take notes of the interview
6. Observation/remarks about students’ preparation for classes:
   • Most students brought some information about the topic to class
to share with others (as required by teacher in previous lesson).
   • Amazing background knowledge exchanged among students

7. My computer skills obtained:
   • I could locate the teaching resource fast, focus on key teaching
   points better, and deal with a minor technical problem today ->
   I think I became more skilled with the computer now than before

8. Students’ improvement? (language skills, attitudes…):
   • Students became more motivated & engaged in class activities
     (including listening, speaking, writing)
   • Students’ attitudes to teacher’s computer-assisted lesson became
     more positive

9. My feelings/thoughts about computer use in teaching:
   • I’ve been more interested in teaching with the computer now: I
     started searching more online resources by myself for other
     classes (i.e. speaking, reading, and writing classes).
   • I’ve become more confident using computers now

10. Other comments/suggestions/recommendations:
    • How to control the class when students get too excited and
      noisy???
To sum up, the qualitative data showed that the computer self-efficacy of the four teachers increased significantly during the project time, a finding which had not been anticipated by the researcher before the research commencement.

5.2.2.4. Teachers’ Concerns and Suggestions about Computer Use in Future Language Teaching

Regarding administration, all of the teacher participants shared their concerns about the availability of computer rooms on campus for all the classes during the semester. They worried that, as there are not enough computers available on campus, they would not have all their listening classes taught with computers. It was suggested by Heather that the teachers should submit timetables of the classes to the university Information Technology (IT) Section well in advance so that all the computer rooms could be properly allocated for all the classes. Heather also suggested that whether computer rooms are available for all listening classes or not, the university should consider offering flexible options for students to access online resources and practice with them out of class. This would help both teachers and students to make the most use of modern technology facilities on campus. Another concern shared by Helen and Tania was technical problems that may occur, which, without support, could have negative effects on their teaching. Helen said, “Technical staff may not be available to help at the time we need them, then the computer-assisted class will fail” (Interview with Helen on 20\textsuperscript{th} May, 2011). Without technical support, the teachers believed the computer-assisted class may even become a “disaster”. It was suggested by these two teachers that the university should employ more technicians to meet the increasing demand for computer use on campus. Besides, another good suggestion made by Nancy during the informal conversation dated 21\textsuperscript{st} April, 2011 was that teachers should consider developing more technical skills by themselves so that they could solve
technical problems if they arise in computer-assisted classes. By mastering computer skills, teachers would be more active, confident and efficient in computer-assisted language instruction.

When asked whether they feared that the computer would replace their roles in the classroom, all the teachers believed that it would, on the contrary, help them improve their teaching, and bring them closer to the students. Helen, who previously was concerned about losing face in front of the students, became convinced that as the students would ask the teachers more questions about computer and language skills, or about cultural or background knowledge, there would be more communication which would help strengthening the bond between teachers and students. Similarly, Tania believed that students still needed support in terms of skills, knowledge, or feedback from the teachers for their outside-classroom practice. Also, it was observed by Heather that to bring success to computer-assisted listening lessons, besides the use of computers, the teacher should be very flexible and active in encouraging students to participate and cooperate with the teacher and among themselves in class. Moreover, it was shared by Nancy and Heather that the students’ positive attitudes and cooperation in class activities also contributed much to teachers’ confidence in computer-use listening instruction. Nancy said:

   *When the students became more motivated, cooperative, and enthusiastic participating in all class activities, the teacher would feel very encouraged and highly motivated. From my personal experience, I always felt like I was rewarded and became more motivated in teaching in class. It works both ways, I mean.* (Interview with Nancy on May 26, 2011)

However, all of the teachers, to different extents, shared the concern that it may take time to search for other appropriate websites without the research team’s support in the future. Three of the teachers (except for Heather) raised the problem that, despite the fact that the researcher provided them with criteria for website evaluation, online resources are too plentiful and diverse
to readily choose suitable ones for teaching. Another issue raised by Helen and Tania was designing exercises for online resources. They were not very sure if the listening exercises designed individually by the teachers would be “up to standard”. However, all of the teachers believed that their skills in computer use, surfing to find websites useful for teaching, and designing suitable language exercises would improve with more practice and with colleagues’ support. Another point shared among the four teachers was that inside and outside class computer-assisted listening learning activities need further guidance from the teacher because without teachers’ guidance or feedback, it would be hard to measure students’ progress in learning listening.

Further suggestions about how to use computers in teaching listening skills were also made by the teachers in the informal conversations and post-intervention interviews. First, Helen and Tania suggested that the online resources used or found during the intervention project should be compiled and uploaded into the department websites for future teaching. Another suggestion by Nancy and Heather was that a teaching team with a specific focus (e.g., CALL-based listening teaching team) should be established at the department to promote further cooperation among teachers. They believed that team work would enable everyone to cooperate more actively in teaching language skills with computers, such as updating new language teaching websites, supporting one another in solving technical or academic problems, or in designing “standard” skills exercises. The team would also work together towards similar research-informed programmes for teaching other language skills (i.e. formation of CALL-based speaking, reading, and writing teaching teams). If these could be realised, the quality of teaching and learning at the department would potentially be much enhanced.
The findings presented in Section 5.2 provide data to answer research question 3 (the way computer-assisted listening instruction affects teachers’ attitudes toward computer use). Further analysis of these findings will be presented in Sections 6.2.4 and 6.2.5 of the study.

5.3. Summary

This chapter has offered a detailed report of the results of the study. From the chapter, we can see that the computer intervention had some positive effects on both EFL teachers and learners. Students enhanced their listening skills, and found the intervention beneficial in terms of increased motivation in learning, autonomy and cooperation with peers and with teachers. Teachers in the project reported positive changes in a number of areas including higher motivation and positive attitudes toward computer use in teaching, and improved computer self-efficacy. In the data presented in this chapter, teachers and students also mentioned a small number of their concerns over the use of computers in language teaching and learning and suggested some ideas for improvement. From these results, results discussion, implications, and recommendations will be presented in the coming chapter (Chapter Six).
In this chapter, the main findings of the study are discussed. The first section revisits the line of argument of the thesis, including its rationale both theoretically and empirically as laid out in Chapter Two and Chapter Three. A discussion of the major findings from the research, and implications particularly for practice are suggested, followed by some consideration to the limitations of the study. Finally, its contribution to the existing literature and theory, and recommendations both for practice and potential further research are presented.

6.1. Study Overview

The driving aim of this study was to seek ways to improve listening teaching in Vietnam. The study sought to examine the effects of computer use in teaching listening skills on EFL teachers and students in a Vietnamese university.

The theoretical framework of the study was mainly established in Chapters Two and Chapter Three, which reviewed the relevant literatures. The literature regarding CALL development in Chapter Two illustrates the increasing importance of computers in language learning. It appears that language learning has been optimised with computer use due to the rapid development of technology in modern times. Affordances of technology create new opportunities for teachers to apply learning design theories to develop highly effective learning environments. Next, the main factors affecting CALL adoption were presented. The literature covered in Chapter Two contributed to defining the theoretical background of the current study.
Chapter Three introduced constructivism, which helped to locate, theoretically, the design of the learning and the intervention. After the significance of listening skills to language learning was established, the relationship between listening skills and cognitive theory of multimedia learning was discussed. The next section of this chapter explored previous studies of computer-assisted listening instruction to highlight the positive effects of computers on this area of language teaching and learning. This analysis helped to contextualise the current study and its empirical findings in CALL literature. In the last section, after different sets of criteria for selecting CALL materials for listening skills by previous researchers were presented, one set was chosen as the most appropriate and effective in terms of promoting listening skills with computer technologies.

The rationale for the positive relationship between computer use and listening skills development can be clarified as follows. As listening input refers to aural, pictorial, or written information that students ultimately process (Chapelle, 1998; Krashen, 1982), computer-assisted listening instruction means providing students with such input from computer resources. As discussed in the literature review, there are theoretically-based explanations for the effectiveness of computer use. From an information-processing perspective, there are three cognitive assumptions related to multimedia learning, namely, dual-channel processing, limited memory capacity, and active learning (Mayer, 1997, 2001). In the dual-coding theory, there are dual channels for processing and storing visual and verbal information (Clark and Paivio, 1991). In the dual coding process, text is processed and encoded in verbal systems while pictures are processed in both verbal and visual systems, which means pictures are coded twice, and hence may be remembered better than text (Paivio, 1986). When visual and verbal information is presented contiguously, students can build referential connection between the two modes, which would enable new knowledge to be retained and learning to be enhanced (Paivio, 1971, 1986). Further, in the cognitive theory of multimedia learning
suggested by Mayer (1997, 2001, 2002), the means to increase learners’ comprehensible input and output is through their interaction with multimedia. According to this theory, with multimedia resources, learning would be more likely to occur as students select relevant verbal and visual information from those resources, organise verbal information into their own coherent written/aural mental representations and visual information into pictorial/visual representations, build these two representations using referential connections, and integrate them into a new mental model. When meaningful connections between those mental representations are formed and integrated into the cognitive system of language learners, listening comprehension is likely to increase (Jones, 2004; Jones and Plass, 2002). Relating these explanations to the current study, when the students were taught with supplementary multimedia resources in listening classes, they had opportunities to access both verbal and visual information at the same time, which helped them to further develop their listening skills.

Chapter Four started with an overview of the background of the study in Vietnam to provide the broader context for the research. A detailed investigation of the context helped the researcher to consider the situation, time, place, and people involved in order to conduct the project in the most appropriate way. The second section examined the methods applied in previous CALL studies from 1990 to the time of the current study, which helped to inform the research methodology of the current study. From this empirical foundation, an overview of the research design, participants, research team and procedures, instruments, and data analysis methods were presented in the third section of this chapter.

In Chapter Five, results based on quantitative and qualitative data established the impact of a computer-assisted listening instruction intervention on listening test scores of EFL students in a Vietnamese university. Specifically, the groups receiving instruction supplemented with
computer-delivered materials did significantly better than a matched comparison group, suggesting that the form of Computer-Assisted Language Learning (CALL) improved outcomes for EFL students. In addition, the study examined the effects of computer use on attitudes toward computer use in listening instruction of EFL teachers and students. Findings of the study showed that supported computer use in teaching listening skills had positive effects on motivation and attitudes of both teachers and students, and enhanced teachers’ computer self-efficacy and students’ autonomy.

6.2. Discussion

The following section discusses findings that emerged from the research, namely, the relationship between computer-assisted listening instruction and: students’ motivation and attitudes towards computer use in language learning; students’ language proficiency; the promotion of learner autonomy; teachers’ motivation and attitudes towards computer use in language teaching; teachers’ self-efficacy, collaboration among participants, and teacher training approaches.

6.2.1. CALI and Learners’ Motivation and Attitudes towards Computer Use in Language Teaching

Both quantitative and qualitative data of this quasi-experimental study presented in Chapter Five showed that the students’ positive attitudes and motivation were enhanced during the intervention of computer-assisted listening instruction.

The students’ positive attitudes toward computer use were indicated in the teachers’ journals, researcher’s observation notes, informal conversations, post-intervention student questionnaires, and teacher interviews at the end of the project (see Section 5.1.3). Although there was no intended specific measure of students’ motivation, most of these data showed
that the motivation of the students continued to develop as the project went on (samples of observation notes taken in Nancy’s class can be seen in Appendices 7a and 7b). This was evidenced by the fact that nearly all the students attended the classes regularly, and participated in class activities enthusiastically and actively. This supports findings from meta-analysis CALL literature (see Section 2.3.2.2) and also of previous empirical CALL-intervention studies, where nearly half of these (over a hundred studies) showed that there are positive relationships between CALL and favourable attitudes and/or higher motivation of language learners (see Appendices 1a and 1b). When learning listening skills with computers, students were interested in high quality computer-assisted listening lessons (i.e. good sound and picture quality, and suitable video clips supporting the syllabus topics), which could be classified as intrinsic motivation (i.e. they enjoyed learning with the computer) (see Section 2.3.2.1). This intrinsic motivation could also be related to some typical characteristics of young people (all the student participants were about 19 or 20 years old), such as a high level of adaptability and flexibility, and their desires to explore new things or prove themselves by overcoming difficulties or new challenges in learning with computers (i.e. the feeling of enhanced empowerment). Another reason for the students’ increased motivation could be their feeling to be part of the learning community (when working with other students and/or with the teachers), which would help them gain more academic and technical knowledge and skills from their teachers and peers (see Section 5.1.3). This was also classified as intrinsic motivation by Warschauer (1996a).

The students’ increased extrinsic motivation (see also Section 2.3.2.2) resulted from encouragement by the teachers and the research team during the intervention and by their perceived improvement in listening skills (i.e. better note-taking skills) and increased vocabulary and background knowledge. In addition, experiencing the affordances of technology that made their study inside and outside class faster, easier, more flexible and
creative compared to non-computer learning seemed to motivate the students in learning with technology. The increase in both intrinsic and extrinsic motivation would, in turn, help students learn listening skills with the computer more effectively.

Data from the student surveys also showed that the majority of students in the project agreed that learning listening skills with computers was very interesting, useful and of the right level of difficulty for them. According to Gillespie and McKee (1999), students’ motivation in learning can be affected by infrastructural, psychological, and educational factors. Applied in this study, the students’ high motivation and positive attitudes toward computer-assisted listening instruction can be explained in the three categories accordingly. The infrastructural factor suggests that when provided with good facilities for learning listening with computers inside and outside classes, the students seemed more encouraged to work online in class, as well as outside (i.e. learner autonomy, which will be discussed in Section 6.2.3) classes for listening practice. Good facilities here refer to computer access, reference material, equipment and compatibility, software, and management of computing activity.

Psychologically, as the students initially reported feeling insecure using technology in language learning, the teachers’ support ranging from explaining how to use computers in learning with listening, to answering any questions related to CALL, to observing and giving feedback about the students’ listening performance was significant in helping them become more confident. Equally important was the educational factor, which included clear instruction and clearly defined tasks, sufficient demand for quantity and quality of student output, work regularity, and immediate appropriate teacher feedback. Besides that, team work or pair work in class, engaging computer lessons and teachers’ technical assistance helped to increase students’ confidence and security. Those three factors helped to explain why the
participant students’ were mainly motivated, and only a very small number of students believed that the computer is unuseful, uninteresting, and distracting.

6.2.2. CALI and Students’ Language Proficiency

The quantitative and qualitative data discussed in Chapter Five showed that the students improved their listening performance over the course of the intervention. While findings from a small number of previous CALL studies (e.g., Barr, 2008; Barr, Leaky, and Ranchoux, 2005; Ducate and Lomicka, 2009; Chang and Smith, 1991; Chen and Zhang, 2011; Lee, 2007; Sciarone and Meijer, 1993) suggested that there were no significant changes in students’ language performance due to computer use, either by teachers in class or by themselves at home (see also Appendices 1a and 1b), the review of literature in Chapter Two and Chapter Three showed clearly that computers have a very significant role in language teaching and learning. The significant role of computers was emphasised in developing language proficiency of L2 learners by Boswood (1997); Chapelle (2001, 2003, 2009); Debski and Levy (1999); Egbert et al. (2007); Felix (1998); Fotos and Browne (2004); Hanson-Smith (2000); Hubbard (2009); Kern and Warschauer (2000); Lamy and Hampel (2007); Levy (1997), and Levy and Stockwell (2006). The current study found that computer use had positive effects on the development of the language proficiency of EFL/ESL learners. This finding of the positive relationship between computer use and language skills proficiency also supports similar findings of meta-analysis CALL research (Section 2.3.2.2) and of a majority of previous empirical CALL-intervention studies (See Appendices 1a and 1b). However, the additional contribution of this study is that it focussed on listening proficiency, a neglected area in both language learning study, and on the use of computers in language learning. The use of online resources inside and outside classes was found to enhance the students’ listening comprehension skills in the current study.
Another area of improved language proficiency that the current study found was the students’ perceived enhancement of background and cultural knowledge as a result of computer-assisted listening instruction. This reflects the finding of Kern and Warschauer (2000) that as technology advancement has created endless multicultural communication opportunities for language learners, computer resources with motion pictures, soundtrack, and authentic English offer students diverse cultural lessons from different English-speaking countries. Through these resources, students can access various accents, dialects, traditions, customs, people, life styles, or environments, which would enable them to gain more cultural knowledge of English-speaking countries.

While listening helped to improve cultural knowledge, the cultural knowledge, in turn, may become a factor contributing to the improvement of students’ listening comprehension as well (see Section 3.2.3.2). Previous research also found that rich, diverse, stimulating cultural schema provided via the computer could help to promote listening skills more quickly and more effectively. When terms related to customs and traditions are familiarised in listeners’ memory, their schema activation is boosted (Alptekin, 1981). When listeners’ schematic knowledge, systemic knowledge, and knowledge of contexts of listeners are built up, successful listening comprehension is more likely to occur. This means that when students are provided with background and systemic knowledge, they will have information needed to facilitate their listening comprehension (Anderson and Lynch, 1988; Hayati, 2009; Othman and Vanathas, 2004; Park, 2004; Sadighi and Zare, 2002; Schmidt-Rinehart, 1994) (see also Section 3.2.3.2).

As reflected in the student questionnaires, teachers’ journals, researcher’s observation notes, and post-intervention teacher interviews, the students reported being more motivated in actively learning more English vocabulary with computer resources. The evidence of the
students’ vocabulary development was that they started using new vocabulary they learned from the computer-resource listening lessons afterwards (see Section 5.1.3). This is supported by nearly ten percent of previous empirical CALL-intervention studies which proved that computer use helped students develop their vocabulary (e.g. Jones, 2003, 2004, 2008; Jones and Plass, 2002; Morley, 2001; Smidt and Hegelheimer, 2004) (see also Appendices 1a and 1b for additional studies). Like reading, listening plays a vital role in linguistic acquisition. The more L2 listeners listen to comprehensible input, the more lexical acquisition will occur. As mapping is an initial step in acquiring vocabulary, a map of referent and meaning is developed in the mental lexicon. Successful students can access these mental representations to further develop, revise or distinguish their maps. Exposure to new vocabulary in listening can be a means of L2 lexical acquisition (Rost, 2011). L2 learners will benefit when they encounter lexical items not only repeatedly but also in different contexts (Chapelle, 2003). Therefore, with websites containing stimulating pictures and sounds, computer resources exploited in the intervention of the current study facilitated the mapping process of lexical acquisition for the students, helping them build more vocabulary. As the larger vocabulary learners acquire, the better they can comprehend aural texts (see also Section 3.2), vocabulary gained from computer-assisted learning would, in turn, facilitate L2 learners’ listening comprehension in their further practice.

This finding about the positive effects of this computer-assisted instruction project on the participant students helps to show that the CALI plan, which was based on the constructivist approach (i.e. fostering creativeness, metacognitive strategies, and group cooperation skills of the intervention students) (see Sections 3.2.3.4 and 4.3.4.3.1), had a positive effect on the students’ language proficiency in general and in their listening performance in particular.
6.2.3. CALI and Learner Autonomy

The relationship between computer use in language teaching and learner autonomy was another finding of the current study. The data collected from the study showed that computer-assisted listening instruction had an effect on enhancing students’ autonomy. As reported earlier in Chapter Five, feedback from a majority of students’ in the student questionnaires (i.e. Question 7 – Part II) provided evidence that they started feeling more independent in practising listening by the end of the project. In other words, the students believed that they developed their autonomy in listening skill practice. They were able to apply the computer skills to search for appropriate online resources for their extended listening practice outside class. Further evidence for this can be found in the informal conversations with teachers and students, teacher journals, and teacher interviews. This result contributes to findings of previous CALL studies mentioned in Section 2.3.2.2 as well of a small number (under five percent) of empirical studies with CALL interventions (e.g., Finlay, Desmet, and Evans, 2004; Smidt and Hegelheimer, 2004; Schwienhorst, 2008) (see also Appendix 1a for additional studies), which show that computers promote an increased level of learner autonomy. As indicated in Chapter Two, affordances of technology helped to promote learner autonomy because: they allow greater self-awareness; enhance linguistic and cognitive awareness of learning process; support interaction by locating learners in a shared environment for common linguistic reference; enhance conversation management and group work through collaboration in rapidly changing group work scenarios; organise information resources more naturally than an interface; enable learners to collaborate on resources in real time; encourage learners to actively participate in creating and organising learning environment; provide support for the teacher as facilitator, counsellor, and resource (Schwienhorst, 2002). These reasons help to explain the positive relationship between computer-assisted teaching and learner autonomy in the current study.
According to Littlewood (1996), an autonomous learner “has an independent capacity to make and carry out choices which govern his or her actions” (p. 428). This independent capacity depends on two components: ability (knowledge and skills) and willingness (motivation and confidence). A successful autonomous learner needs to have all the four components, namely, knowledge, skills, motivation, and confidence. Applying Littlewood’s (1996) view about autonomy of to the current study, the data showed that the students developed their independent capacity, including knowledge, skills, motivation, and confidence in learning. With the research team’s support, the students’ listening skills as well as computer skills were improved during the project time. As discussed in the previous section, motivation and confidence of the students were also built up during the project time. With the enhancement of these four factors (i.e. building knowledge and skills, being motivated and confident), the students’ independent listening activities were initiated and nurtured. Learner autonomy developed as a result of the intervention of computer-assisted listening instruction based on the constructivist approach (see Section 3.1). This increased learner autonomy due to computers would, in turn, lead to deeper and better learning (Najeeb, 2013).

6.2.4. CALI and Teachers’ Motivation and Attitudes towards Computer Use in Language Teaching

The next finding that emerged from the study was the effect of computers on teachers’ motivation and attitudes towards computers in language learning and teaching. The results in Chapter Five show that the teachers’ attitudes became more positive during the intervention of computer-assisted listening instruction. As teachers’ attitudes are closely related to motivation in social sciences (see Section 2.3.2), the teachers’ increasingly positive attitudes toward computer use in language teaching during the intervention would also imply they
increased their motivation in teaching with computers. Therefore, the two terms, attitudes and motivation, are sometimes used interchangeably in this section.

Although there was no intended specific measure of teacher motivation, the data from interviews, teacher journals, open-ended questionnaires and researcher’s observation notes suggested that the teachers in the project were highly motivated (see Section 5.2.2.2). The teachers’ motivation was first expressed in their volunteering in the project. This initial motivation could be explained by the rapid development of technology in Vietnam, which made the teachers think they needed to keep pace with their colleagues and their students in this field (see also Section 1.2.3). Their voluntary participation in the project can be considered a sign of motivation, which was observed to be increasing as the project progressed. Also, during the whole project time, the teachers participated very enthusiastically, actively, and creatively. The motivation of the teachers was reflected in the qualitative data including the teacher interviews, teacher journals, and fieldnotes reported in Chapter Five. Their increased level of motivation during the project may be related to experiencing achievements, such as their enhanced computer skills, better listening teaching quality in terms of content and class activities, students’ higher engagement in learning resulting from stimulating computer-assisted lessons, or students’ improved listening skills (this was reflected in the interviews with the teachers (see Chapter Five). The teachers’ sense of satisfaction when their computer-assisted listening instruction became increasingly effective in helping their students improve their language as well as listening skills could be related to intrinsic motivation (see Section 2.3.2.1). An additional factor in teachers’ increased motivation was encouragement and academic and technical support from the research team and the department leaders, which can be classified as providing factors that contribute to extrinsic motivation.
The finding about the positive relationship between computer use and teachers’ favourable attitudes and high motivation challenges some previous studies which showed teachers’ reluctance, resistance or stress in using computers in their teaching practice (e.g., Fabry and Higgs, 1997; Finley and Hartman, 2004; Gilbert and Kelly, 2005; Hodas, 1993; Stimmel, Connor, McCaskill, and Durrett, 1981) and in language teaching in particular (Fang and Warschauer, 2004). This result supports the findings in a small number (under five percent) of previous empirical CALL-intervention studies (e.g. Albirini; 2004; Hassanzadeh et al., 2012; Kamhi-Stein, 2000; Timuçin, 2006) that the teachers were highly motivated in teaching language with the computer (see also Appendices 1a and 1b for additional studies). The reasons for increased teacher motivation provided by the teachers in some of these studies include: availability and flexibility of computers (i.e. computer materials can be accessed any time and place convenient for the teachers and students); abundant authentic materials; opportunities for collaboration between teachers, teachers and students, and students and students, and involvement of teachers in (web-based) materials development. There was also the suggestion from teachers that support from institutions and from technical experts for pre-service and ongoing CALL teacher education also affects teacher motivation. Support by the research team helped to make the teaching more effective, which would motivate the teachers to use more online resources in teaching listening. As reported in Chapter Five, some of these external factors found in the current study help to explain the increased motivation of language teachers. In addition, there is an interactive relationship between students’ and teachers’ motivation, in which students’ motivation can affect teachers’ motivation and vice versa (Dörnyei, 2001).

6.2.5. CALI and Computer Self-Efficacy of EFL Teachers

The next issue highlighted by the current research was the effect of the computer-assisted listening instruction intervention on the teachers’ computer self-efficacy.
Similar to motivation, there was no specific measure collected for teacher self-efficacy, but the teachers’ answers to questions from both the quantitative teacher questionnaires (before and after the project) and the qualitative teacher interviews after the intervention helped to show that the project enhanced teachers’ self-confidence in teaching listening with computers (see Chapter Five). As there has been little research on effects of computer use on language teachers’ computer self-efficacy (see Appendices 1a and 1b), this finding may contribute to empirical research in this area.

According to Bandura (1997), there are four information sources of self-efficacy. First, enactive mastery experiences are considered the most influential source as they are based on authentic mastery experiences, which means successes increasing efficacy and repeated failures lowering it. Second, vicarious experiences such as seeing others’ performances can influence observers’ efficacy in comparable activities either positively or negatively. Third, verbal persuasion is getting people to believe they have capabilities for things they seek. Fourth, physiological state means mental or physical conditions would affect people’s self-efficacy of performing activities. Applying this theory in the current study, the teachers’ repeated practice and experiences with computers helped them to increase their efficacy with time (enactive attainments). Second, as the intervention teachers had opportunities to observe the researcher and academic research assistant modelling computer use during the workshop and weekly coaching sessions, their computer self-efficacy was potentially built up through vicarious experiences. Third, the teachers were encouraged with positive comments and feedback during the workshop as well as in the coaching times by the research team during the whole project time (verbal persuasion). Besides these, organisational support is mentioned as another factor which helps to increase the teachers’ computer self-efficacy in the model by Compeau and Higgins (1995). In addition, Milbrath and Kinzie (2000) contend
that computer training with sufficient time, ideally together with course exposure to computers and frequency of use would also help to increase teachers’ perceived self-efficacy. In the current study, the teachers in this project received such support from the organisation in the form of university and department facilities, the university and department leaders’ support, and the research team’s technical and academic support during the training and coaching sessions, all of which likely helped to promote their computer self-efficacy. As self-efficacy is positively related to motivation (Dörnyei, 2001), teachers’ increased computer skills and perceived self-efficacy in computer use would help to further motivate them to use computers in their teaching practice.

6.2.6. CALI and Student-Student and Teacher-Student Collaboration

Another important finding of the current study was the positive relationship between computer use and collaboration among the participants. The data in Chapter Five including teachers’ journals, teacher interviews, observation notes by the researcher, and students’ opinions in the questionnaire indicate that there was more collaboration among the students and between teachers and students during the project (see Sections 5.1.3 and 5.2.2). This finding supports results found in previous meta-analysis CALL studies (see Section 2.3.2.2) and six previous empirical CALL-intervention studies (e.g. Darhower, 2002; Nah et al., 2008; Zähner, Fauverge, and Wong, 2000). This improved collaboration could be explained by the fact that computer affordances, especially synchronous and asynchronous CMCs (some of which were used during the project), would allow one-to-one and one-to-many communication, thus facilitating collaboration among students and between teachers and students (Levy and Stockwell, 2006; Stockwell, 2010; Warschauer, 1997).

The collaboration enhancement found in the current study was also partly attributed to the teachers’ changed role during the computer-assisted listening instruction process. As
discussed in Section 3.1, the constructivist approach was employed in the context of the study, which means the teacher would play a new role as a facilitator in computer-assisted language instruction (Jonassen et al., 1999; Lee, Jor, and Lai, 2005; Roblyer, 2006; Sandholtz et al., 1997). In the intervention of this study, the role of the teacher as a facilitator or collaborator rather than provider of knowledge (which is considered the traditional role of a teacher in Vietnam) was emphasised in the CALI teacher training workshop and in the coaching sessions for the teachers (see Sections 4.3.4.3.2 and 4.3.4.3.3). The teachers were, therefore, aware of their new role in the computer-assisted language teaching class. This changed role of the teachers helped to narrow the gap between teachers and students, thus promoting more collaboration between them. In the meantime, as the students needed to exchange information about computer-assisted homework assigned by their teachers, the collaboration among them would be boosted. The enhanced collaboration among participants found in the current study would likely result in further language and technical skills enhancement.

6.2.7. CALI and Language Teacher Professional Development Approach

The final issue that emerged from the current study is the approach in terms of computer skills and pedagogy for the teachers. Factors in the training approach adopted that may contribute to outcomes include preparation, high quality online resources, modelling, and practice with regular just-in-time coaching for computer-assisted instruction. These four factors are likely to have contributed to the favourable results. Each of the factors had a role in assisting the teachers to apply computer skills successfully in their listening instruction. The roles of preparation, high quality online resources, modelling, and sufficient computer-assisted listening instruction practice are discussed following.
The first factor bringing success to the project was good preparation for computer skills in the training workshop at the beginning of the project. The workshop for computer-assisted listening instruction included introduction to, and training of, computer skills, and instruction in how to select relevant online resources for academic listening teaching. As discussed in Chapter Four, during the workshop, the benefits as well as risks of computer use in language teaching were discussed, and criteria for websites selection were introduced. Also, after the research team demonstrated how sample websites were analysed, the teachers in the project practiced analysing other online resources suggested by the research team in order to select suitable ones for their own teaching situations. All these steps during the workshop were considered good preparation and highly appreciated by the teachers as evidenced in the post-intervention interviews and journals (see Section 5.2.2.1).

Providing teachers with suitable online resources is another important factor in supporting computer-assisted listening instruction. In this project, the primary condition for computer use was reliable online resources, which would contribute to the success of the CALI project. As discussed in Chapter Two, criteria for website selection suggested by Yang and Chan (2008) were drawn on to choose the suitable resources for teaching listening skills, which should be grounded in students’ language proficiency level, interest, and age. The researcher’s support in providing such appropriate websites aimed to ensure basic conditions for continuous engagement in teaching listening with computers. The teachers were also guided through self-selection of online resources using the criteria set by the research team. This ongoing support helped to develop teachers’ knowledge and skills in selecting suitable online resources for their teaching in the future. Also, findings of the study indicated that the more time, computer skills and experience the teachers have, the higher quality websites they can select for teaching language skills (see Section 5.2.2.1). High-quality websites can influence the teaching and learning styles, and influence students’ learning outcomes, as well
as teachers’ and students’ motivation and attitudes towards computer use in language teaching.

The modelling of computer use by the research team proved to be an effective method which helped to instruct the teachers in using computers in their teaching listening. Modelling, in principle, would give the teachers opportunities to see how technical experts used computers in teaching listening skills, what available online resources were accessed and how they made use of those, and how they solved technical problems. By observing the research team selecting suitable websites for listening, operating computers during the lessons, and handling technical problems, the teachers in the project became more skilled in choosing suitable online resources, and using computers in their teaching. Modelling in this study, therefore, was very important to the teachers in their initial stage of using computers to teach listening skills effectively.

Providing the teachers with frequent opportunities for practice in computer-assisted listening instruction is another defining feature of the teacher professional development approach. While teachers may already have some computer skills for daily life activities, they may not be able to apply them to the greatest effect in class without guidance from CALL professionals. Academic and pedagogic skills are essential in teachers’ decision and use of computers in teaching listening. The literature in Chapter Three showed that listening can be taught with computers very effectively if teachers are given detailed guidance and feedback. As shown in the qualitative data presented in the previous chapter (Chapter Five), all four teachers in the project shared the view that the practice provided in the workshop, regular coaching times, and listening classes with the research team support were significant factors that contributed much to the success of the intervention. In particular, during the whole time coaching, the research team nurtured the teachers in applying what they had learnt about
computer use (including how to explore and exploit online resources, how to manage the computer effectively during their teaching and how to solve minor technical problems), encouraging them, reminding them of the strategies needed, and pointing out when their practices of computer-assisted teaching were successful as well as when they were less effective. In addition, as described in Chapter Four, while new skills in computer-assisted instruction were practiced, previously learned skills were revisited during weekly coaching. This intentional repetition of practice enabled the teachers to reinforce and combine computer skills in their teaching.

Some concerns are evident in a consideration of the four factors (namely good preparation, suitable online resources, modelling, and opportunities for practice) mentioned above. It seemed that the students became increasingly autonomous through the use of CALL whereas their teachers were still largely dependent on the research team in CALL-based teaching. There is, therefore, an implication for sustainability of CALL-based teaching when there is no research team to support, model, or select online resources for the teachers in their future teaching practice. This will be discussed in more detail in Section 6.3.

There were connections between Computer-Assisted Language Learning and language proficiency of students, motivation and attitudes of EFL teachers and students, computer self-efficacy of teachers, learner autonomy, and collaboration among students and between teachers and students. The view held by the researcher is that the interaction of all these factors would produce the best results for computer-assisted listening instruction in the EFL teaching and learning context in Vietnam.
6.3. Implications

The findings of the current study have significant implications for the work of language teachers, teacher professional developers, policy-makers, and researchers in improving the quality of language teaching in Vietnam, as the following sections explain.

6.3.1. For Language Teachers

The first implication for language teachers is that computer use is successful in listening skills instruction. Specifically, the teachers and their students in the project experienced more positive attitudes and higher motivation toward computer use in teaching; student-student and teacher-student collaboration was fostered; teachers increased their computer self-efficacy, and students improved their listening performance as well as gaining greater learner autonomy. Teachers should, hence, help students to understand the benefits of using computers in their language study (i.e. enhanced language skills and learner autonomy). Also, teachers should help raise awareness of language students in using computers for their study both inside and outside classrooms, which could be realised in the forms of emails, online forums, or informal face-to-face chatting outside class.

The positive effects of computers on teaching and learning listening skills compared to traditional tools such as cassettes, CDs, radio or TV programmes, DVDs (Dinh, 2007) imply that computers should find an important place in language teaching. Language teachers should, therefore, learn to use computers effectively in their teaching. As computer technologies have been developing rapidly, language teachers should always position themselves as explorers and exploiters of suitable websites for language teaching. Teachers should improve their skills to make the best use of modern technology in their teaching, such as mastering the techniques of podcasting or video sharing (as described in Section 2.2.1) to teach language skills as well as to share knowledge and experience with colleagues and
students. This could be realised by teachers learning modern technology skills online by themselves or from friends or colleagues, or attending online conferences and seminars on CALL. These activities of teachers may further contribute to strengthening the EFL teacher network, which would enable them to share experience in language teaching skills and computer skills, as well as helping to ensure sustainability of language teachers’ practice with computers in the longer term.

Another implication is that teachers should play the key active role in supporting their students in CALL-based activities inside and outside class. Through CALL teaching in class, teachers need to explore their students’ different experiences in learning with computers in order to individualise their teaching activities and materials. The more understanding teachers have of their students’ computer-assisted language learning experience, the more effective and appropriate support they can give to each individual. Further, language teachers should encourage and support their students in additional practice with computer resources by themselves, outside class. For example, when homework for listening practice with online resources is assigned, students should be guided by teachers to explore and exploit suitable audio or video websites which should also be up-to-date, useful, and have an element of fun. Students should also have support available from their teachers or technicians to help them make the optimum use of technology. Regular feedback on homework should be provided by the teachers to ensure that students’ CALL practice is on the right track. As Vietnamese students are generally characterised as being shy and passive in contacting their teachers about their academic issues, communication via CALL activities through the use of discussion forums between teachers and students should be encouraged and promoted so that students can make the most effective use of computers in language learning. Meanwhile, pair work or group work among the students should also be encouraged for collaboration in
outside-class activities. This could, to some extent, help those students who do not have computers or an Internet connection at home.

6.3.2. For Language Teacher Professional Developers

The positive attitudes and motivation of language teachers and their students during the computer-assisted listening instruction project indicated that computer use in language teaching should be emphasised in professional development programmes for teachers. In these programmes, language teachers should be apprised of and shown the benefits of computer use in language teaching (see Section 3.5.1). The first implication for teacher developers, therefore, is that there is a requirement to raise language teachers’ awareness in greater use of computers in teaching. Another implication is that teacher professional developers, who are more skilled and experienced in CALL, should encourage and guide EFL teachers to explore and exploit high-quality online resources, which are updated constantly. There also needs to be shared experience between teachers and teacher professional developers on choosing the most suitable and high-quality websites for teaching. This two-way communication would help teacher professional developers to ensure that good online resources are not missed. Also, teachers should be encouraged to share these resources with one another in their community. More availability and accessibility of high-quality websites shared in the community would promote the teaching and learning English with computers. The third implication is that professional developers should create as many opportunities as possible for language teachers to practice teaching with computers. Teachers should be able to find both academic and technical support not only during a CALL workshop or a project but also after professional development sessions. By doing this, language teacher professional developers can likely ensure the sustainability of computer use in language instruction in the long term.
The outcomes mentioned above can be achieved through the use of resources for CALL activities including Web browsing, peers or colleagues, courses, books, conferences, journals, electronic discussion lists, self, AskEric, and publisher promotions (Egbert et al., 2002). Specifically, regular seminars or workshops on computer use in language teaching and learning could be done both online and in real life. In these workshops, the role of preparation, modelling, and practice should be emphasised, and some of the technology being promoted could be used for professional development activities. It may be argued that even when teachers have skills (mostly skills in using technology) gained from workshops and when they employ technology in their personal lives, they may not use it in their teaching because of either their pedagogical views or their inability to apply technology in teaching. However, from the knowledge and experience of the researcher of this study, CALL workshops and conferences have contributed to a certain level of success in CALL teacher professional development in Vietnam and some other countries. In addition to more formal professional development activities, teacher professional developers can encourage small-scale CALL activities among teachers such as departmental or institutional CALL teacher networks, or institutional CALL journals, so that professionals can share and contribute CALL experience and skills. There could be other professional development strategies, namely, conducting collaborative development projects, and establishing communities of professional practice embedding the learning in daily activities and educational programmes. Collaboration would enable teachers to learn together, share and sustain knowledge and skills, thus fostering teacher learning and instruction (Borko, 2004; Garet, Porter, Desimone, Birman, and Yoon, 2001; Hanson-Smith, 2006; Smith, 2003; Williams and Ritter, 2011). Further, it is necessary for professional developers to make teachers aware all the time that successful language teaching and learning with technology requires the combination of three important factors: teachers, students, and technology. The role of the teacher is to design teaching and learning
activities, give feedback, and monitor strategies for activities; technology should be in the role of facilitating all aspects of activities, and students should play the role of contributing to the teaching and learning process by sharing their knowledge and skills with others (Collis and Moonen, 2006). Appropriate manipulation of these three factors by language teachers would result in optimal computer-assisted EFL teaching and learning in Vietnam.

6.3.3. For Policy Makers

Findings from the current study show that computer use was associated with certain positive changes in language teaching and learning. Therefore, a broad picture implication for policy makers is that they may explore feasible options for promoting the use of computers in language teaching as well as in other areas of education. They may consult with university teachers or even with students in Vietnam or elsewhere, or adopt (with adaption) benchmarks developed for other teaching contexts to make appropriate policies for the teaching situation of Vietnamese higher education.

The first implication is that computer use in language instruction could strengthen the collaboration between teachers and students (i.e. narrow the gap between them). This narrowed gap would help students to mobilise their full potential in study (see also Section 6.2.6). From the points mentioned above, it is suggested that policy makers should consider steps appropriate to their contexts to ensure optimal use of technology in language teaching and learning, (at least at tertiary level) to promote language teaching and learning as well as teacher-student collaboration.

Another implication affirmed from the findings of this research is that language teachers should be well supported by institutions in using computer technology for teaching. This means staff should be aware of and have access to comprehensive technical and pedagogical support before, during, and after technology-based teaching. They should be equipped with
good computer skills in order to select suitable computer resources (both online and software programs) for teaching, and to use computers more effectively during the teaching time. Policy makers could support by organising computer skills workshops for language teachers. If training cannot be held locally, they could send teachers to those workshops, seminars, or conferences in other areas to improve their skills and knowledge with respect to computer use in learning language. Besides workshops, teachers should be supported with integrating computers into their pedagogy on a regular basis in their institutions. Technical trouble encountered by teachers can be solved by contacts via phone, email, or personal meetings with IT staff, which need much support from policy makers.

The next implication drawn from the study is that IT infrastructure should be well supported by institutions in using computers for teaching. IT infrastructure includes productivity software, learning management systems, library systems, the World Wide Web, mobile technologies, hardware (i.e. computers, telecommunications and ancillary equipment), and internal and external networks. Specifically, computers and Internet connections should be readily accessible in tertiary institutions including universities, colleges, and even vocational schools, where English is taught as a major, or as a main foreign language (being a means for students to develop their majors). Provision of modern and up-to-date equipment and efficient technological skill support would be very important and necessary for in-class teaching and students’ self-practice outside class. This would also mean finance should be appropriately allocated so that teachers and students in language and non-language tertiary institutions can have the best facilities for language teaching and learning with computers.

One more implication that seems to be often neglected by policy makers, especially in Vietnamese institutions, is training and support for students for effective use of computers in learning. Although most students may be skilled in using computers for their personal life
purposes, they need support and guidance in computer skills for language learning. Institutional training and support for students should be resourced, flexible, available and accessible to students, tailored to students’ needs, have suitable materials for student training and support, and integrate students’ feedback for improvement.

If all of these implications are taken into consideration by policy makers, the quality of teaching and learning in Vietnam may be much enhanced, thus contributing, indirectly, to economic development of Vietnam.

6.3.4. For Researchers

An important implication of this thesis is that it has contributed to a growing number of studies in the CALL area which maintain that the computer plays an essential role in teaching language skills in general and in listening skills in particular. Although the affordances of social media and mobile technology are more recent examples that may extend the range of options and effectiveness reported in earlier research (see Chapter Two), this study added an up-to-date perspective on studies that employed less sophisticated forms of technology (i.e. the use online resources for language skills teaching) (see Appendices 1a and 1b), as appropriate to the context of the study. The study also confirmed the interaction of four main factors which were prerequisites for effective computer-assisted listening instruction, namely, preparation, high-quality online resources, modelling, and practice. In addition, as noted in Section 5.2.5, there should be further investigation into the cause-effect relationship between computer use and language teachers’ computer self-efficacy, which has not been explored much by previous CALL researchers.

As far as methodology is concerned, using a shared (by researcher and participants) first language helped to express the information the most effectively. Also, the use of mixed method in this research, which enabled quantitative and qualitative methods to support one
another, proved useful in providing insight into factors affecting both the teachers and students in the intervention project. Another methodological implication is that retrospection, which was captured in the teacher journals, teacher interviews, and Part 3 of the teacher questionnaire after the intervention, was a powerful data elicitation technique. And, the use of multiple methods to collect these reflections allowed for some check of consistency of response.

In addition, the model of teaching listening skills with the computer in this study (including the CALI teacher training workshop, online resources provision, and regular coaching sessions) could provide a framework for designing and implementing effective conditions for computer-assisted language instruction. The quasi-experimental mixed-methods study also showed the feasibility of conducting ongoing professional development which would prepare teachers for using the computer to promote listening skills for Vietnamese students of English. Finally, the current study introduced to Vietnamese higher education a new aspect in terms of computer use, an intervention project in the area of listening instruction in language teaching.

6.4. Limitations

There are certain limitations in this study that should be noted for further research and also as a consideration when viewing the findings. These limitations are discussed in three sub-areas, namely, subjects, scale, and methodology.

Firstly, the fact that the subjects of the study were all Vietnamese sharing the same first language background and the same level of education may be a limitation of the study. This homogeneity means the levels of success of the computer intervention in the current study may be not be similar if applied to subjects of different language backgrounds or education levels. Therefore, the current study may not be immediately generalised to subjects of different language backgrounds or education levels. An extension of research would be
examining subjects of other first language backgrounds, or subjects of mixed language backgrounds, and comparing the results with this study.

The second limitation is the scale of the study. The number of teachers involved in the project was small (four teachers) and, as they all volunteered to participate, it may not offer a very broad range of teacher opinions for a balanced view across different initial motivation positions. Also, the sustainability of the study is another issue. The timeframe of the study was rather limited (over three and a half months) for impact evaluation, which may question the sustainability of teacher practice with computers in the future. Further research may employ a CALL programme over a longer period of time, employ more teachers, and cover other (and maybe integrated) language areas (i.e. speaking, reading, writing, grammar, vocabulary) to compare with the results of this study. An additional point is that the participants had extensive technical and academic support from the research team, which is very likely to have contributed to the success of the study. Besides that, the study only employed a small subset of professional development options (i.e. CALI teacher training workshop and coaching sessions), which may have limited the results. Extended activities for professional development such as promoting collaborative development projects or CALL professional communities could be applied in future CALL for further CALL effectiveness investigation.

Another area of limitation is methodology. The study used retrospection as a data elicitation technique which offered very rich information and insights into teachers’ views about computer use in teaching. However, as the relationship between the researcher and the intervention teachers had been established before and during the project, this technique may have caused the teachers to be biased to a certain extent, which may affect the reliability and validity of data collected. In addition, as the researcher herself with her own perspective was
one research instrument (Patton, 2002); her experiences in working with the teachers during the training may not be widely generalisable. A final point to make is that the students reported their opinions only at the end of the project, so no comparison could be made about their attitudes before and after the intervention. In most previous empirical CALL-intervention studies, investigations into students’ attitudes and motivation were also conducted only at the end of the interventions. Future research would, therefore, be extended to a more thorough investigation into changes in students’ attitudes before and after CALL intervention.

6.5. Contributions

The current study has made contribution to the field of ELT in Vietnam in two main areas, namely, computer use in ELT and cultural practices in Vietnam.

6.5.1. In English Language Teaching (ELT) in Vietnam

The current study could make the following contributions to the area of ELT in general and in listening instruction in particular in the Vietnamese context.

The study has offered Vietnamese teachers of English insights into one among many approaches to teaching language skills, namely, a computer-assisted language teaching approach. Challenging the shared opinion of a number of Vietnamese teachers of English that non-computer listening classes can be as good as computer-mediated ones, the findings of the study have illustrated the effectiveness of computer use in listening teaching. Other language teachers could learn from this project to be encouraged to incorporate computers in their own teaching contexts in order to enhance their language teaching quality as well as their students’ language skills.

The results of this study have also initiated an attempt to promote computer use in teaching language skills in Vietnam by giving EFL teachers, as well as professional developers,
insights into the importance of computer-assisted language instruction. Besides highlighting the importance of raising English teachers’ awareness in using computers in language teaching, the study has called for inclusion of how to teach language skills with computers in EFL teacher training programmes. As discussed in Section 1.2.3, the issue of computer use in language teaching was not officially raised in Vietnam until the ‘National Foreign Language Project 2020’ was approved in December 2012. Prior to that, there had been a limited number of CALL teacher training workshops held locally for language teachers, which had been the only form of ongoing teacher professional development in Vietnam. Small scale as the current study might be (only four teacher participants, and only listening was taught with computers), its positive results are expected to initiate computer-assisted language teaching projects on a larger scale, that is other (and integrated) language skills can be taught with computers similarly, and to larger numbers of teachers in other tertiary education institutions in the whole country. If applied successfully, other computer-mediated language teaching projects would contribute to enhancing the quality of English language teaching and learning in Vietnam.

6.5.2. In Cultural Practices in Vietnam

The present study shows that when teachers of English were given direct practical guidance (e.g., discussions about the benefits of CALL, technical support, useful and appropriate online resources, and regular coaching sessions), they would gain more confidence in their English teaching with computers, which is considered a new pedagogical approach in English teaching in Vietnam. This finding of teachers’ increased computer self-efficacy, which had not been anticipated by the researcher prior to the project, could be a good sign for Vietnamese education in which many language teachers seem still not confident about their computer skills. In the world’s situation of rapid growth of computer technology, the present study may contribute to changing Vietnamese teachers’ views about their computer
competence, and encourage them to make better use of technology in their teaching practice. This positive change in the teaching style of Vietnamese teachers would contribute to the quality of language teaching in the country.

Moreover, the results of this study show that, taught English language skills with computers appropriately, Vietnamese students would gain self-confidence and autonomy in language learning. Similar to the teachers’ increased computer self-efficacy, this finding had not been anticipated by the researcher. Although English language teaching in Vietnam has been applying the communicative language teaching (CLT) for a long time in theory and official documents (see Section 1.2.2), Vietnamese students by nature are generally timid, passive, dependent on teachers, and are not confident in study. With the students’ increased autonomy during the computer-assisted listening instruction intervention, it is hoped that the study would help to change the learning style of Vietnamese students in a positive way, enabling them to be more active, autonomous, independent, confident and creative in learning English. This positive change in learning style would enable Vietnamese students to learn English more effectively.

Another contribution that the current study may make is improving the relationship between Vietnamese teachers and students. As discussed in Section 6.2.6, when the computer was used as a means to develop students’ listening skills in the project, more collaboration was seen between the teachers and students, thus narrowing the gap between them. This means computer adoption made Vietnamese teachers more willing to “lower themselves” from the high honourable position of most knowledgeable to that of collaborators and facilitators of their students. Although the gap between teachers and students has been narrowing in many international higher education contexts, this trend has been something quite new in Vietnamese universities. It is hoped that the present study illustrates ways of improving the
relationship between Vietnamese teachers and their students in tertiary institutions, thus supporting the process of tertiary education quality improvement of the country.

Furthermore, the use of computers in language teaching could be expanded to other Asian countries where Confucianism (with its attendant views of unequal relationships between people in the society) still exists in many aspects of life, including education (see Section 1.2.3). It is expected that the success of this project in using computers to teach listening skills in the Vietnamese tertiary context would be expanded to other tertiary level contexts in other Asian countries with similar cultures and on a larger scale (in size, integrated language skills, etc.). Employment of new CALL-based projects similar to the current study would likely bring about positive changes in language teachers, students, and collaboration among them, thus contributing to promoting the culture and tertiary level education of these Asian countries.

6.6. Recommendations for Further Research

The present study has raised the following issues for further research.

Firstly, there could be an investigation into how sustainable the practices and outcomes are when the project is over (i.e. there is no more support from the research team). For sustainability, it is suggested that the department and university should set up a CALL-support team of language teachers with good computer skills, which can provide technical support to language teachers when necessary. The intervention should also be investigated in other language teaching institutions with different populations, practitioners and researchers once human and material resources are accessible. This study might set an example for further research on the potential of computer use in developing language skills in general, and in listening instruction in particular in EFL contexts, especially in developing countries. It is expected that the study would trigger more research, both small and large scales, in the area
of computer-assisted language instruction in the future. Findings from studies of other contexts would further support the results, findings, and implications of this study, and would convince more teachers and students to use computers in English teaching and learning. Future studies would also investigate how different contexts and circumstances might influence outcomes. This is a practical idea in the Vietnamese contexts, where “doing/seeing is believing”. Small workshops or journal articles can also be presented for the findings of this research to be disseminated. Meanwhile, user-friendly documents could be prepared in both English and Vietnamese for practitioners and policy-makers. Secondly, a majority of students at the university where the study took place will become teachers of English in the future (see English Department Brochure, 2012). Future research may examine how the effects of CALL influence the student teachers’ actual English instruction practice. The long term impact of computer use while studying will be an interesting development to monitor, as well other long term effects of this CALL intervention.

Thirdly, this study took place over fifteen weeks, four hours each week. Therefore, the issue of whether the nature of findings would vary and it would make a greater difference if the intervention were conducted over a longer duration could be examined in future research. The intervention in the current study should, therefore, become an integral part of practice, and looking into how this might be achieved is an important issue for further research in the future.

Fourthly, the findings of students’ autonomy and teachers’ computer self-efficacy were not deliberately planned as variables to investigate systematically as part of the present study. Future research may conduct thorough investigation into the relationships between computer-mediated language instruction and learner autonomy and teacher self-efficacy. Direct investigation into the relationships between these would enable researchers to discover other
characteristics of computer resources that may contribute to increasing learner autonomy and teacher self-efficacy. This is especially necessary for the computer field which is developing rapidly. Findings of further studies in this specific area would help teachers to make optimal use of computers to increase their self-efficacy, and students to learn how to become more autonomous in learning with computers.

Finally, as indicated by the students and teachers in this study (in Sections 5.1.3 and 5.2.2.4), there should always be guidance from teachers both inside and outside class CALL-based practice. There are a number of reasons for this: computer use in learning listening may be something new so that learners are unsure of what is required during practice; the cultural factor reflecting a teacher dependent situation needs gradual withdrawal of dependency, and some computer-mediated language learning tasks may be higher than the students’ levels. Further research may be conducted exploring the important role of language teachers in using computers for teaching listening skills.

6.7. Conclusion

Computer technology has been developing so rapidly that it is challenging teachers to keep up, to adapt and to utilise its ability to provide increasingly rich opportunities for learning. New CALL developments also mean shifting pedagogies accompanying these developments and implications for changes in a “traditional” teaching culture such as the one existing in Vietnam. The rise in popularity of informal learning, online learning, open access resources and all other current trends may influence opportunities and designs for learning has far reaching implications. All of these should provide much new and fertile ground for future research on relationships between computer technology and language learning.

The present study has provided useful data to support previous studies that showed positive effects of computer use in promoting listening skills for EFL learners, and motivation of ELF
teachers and learners towards computer use in language teaching and learning. Success of the study may be explained by three main factors: the teachers in the project understood the theoretical rationale for their actions in a constructivist way using computers; the research team endeavoured to help the teachers understand the reasons for collaboration associated with a constructivist approach during the PD process; the regular coaching by the research team helped the teachers employ the constructivist approach in their teaching. The study showed that the time and effort devoted to teaching listening with computers was well worth investing. The results of this study also helped to refute some arguments by previous researchers that computer use does not contribute positively to learning or can even become a source of fear or a barrier in language teaching and learning. While more research needs to be conducted, it is hoped that the study has made a contribution to the area of language teaching and CALL teacher professional development.
REFERENCES


Sze, P. M. (2006). Developing students' listening and speaking skills through ELT podcasts. Education Journal-Hong Kong – Chinese University of Hong Kong, 34(2), 115-134.


Machnaik, J. (2002). Investigating the effect(s) of technology integration on teaching practices that may lead to the development of a community of learners. Retrieved from http://www.usask.ca/education/coursework/802papers/machnaik/


## Appendix 1a: Research Studies on Computer Use in Second Language Learning
(from 2000 to the time of the current study)

<table>
<thead>
<tr>
<th>No</th>
<th>Reference</th>
<th>Research Focus</th>
<th>Research Design</th>
<th>Technology Used</th>
<th>Sample Size and Grade Level</th>
<th>Research Instruments</th>
<th>General Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abdous, Camarena, and Facer (2009)</td>
<td>Compared academic benefits of integrating podcasts into the curriculum against using them as a supplemental or review tool</td>
<td>Pre-experimental</td>
<td>Podcasts and podcasts via Mobile Assisted Language Learning (MALL)</td>
<td>8 foreign language classes at the Department of Foreign Languages and Literatures at Old Dominion University</td>
<td>Test scores, closed-ended + open-ended surveys, interviews</td>
<td>Language learners’ perceived language skills enhancement (i.e. listening, speaking, reading, writing, grammar, and vocabulary, with listening improving by most students, next was vocabulary; integrated use of podcasts into curriculum was rated more highly than the podcasts used as supplementary materials; positive attitudes of learners</td>
</tr>
<tr>
<td>2</td>
<td>Abrams (2003)</td>
<td>Exploring effects of synchronous and asynchronous CMC on oral performance in German</td>
<td>True experimental</td>
<td>CMC</td>
<td>96 students in intermediate, 3rd semester of German at a large Midwestern university</td>
<td>Test scores</td>
<td>Increased quantity of language produced by synchronous group compared to asynchronous and control groups, but asynchronous students did not outperform the control group, no significant lexical and syntax differences</td>
</tr>
<tr>
<td>3</td>
<td>Alastuey (2009)</td>
<td>Analysing how changes in layout and organization of WebCT affected students of English (for Agriculture)</td>
<td>Pre-experimental</td>
<td>WebCT (online management software that aids students in classes by creating, managing, organizing and housing a Web-based learning environment)</td>
<td>Three classes of three academic years, 82 students in 1st year, 78 in 2nd year, 83 in 3rd year, aged 23-24</td>
<td>Test scores, closed-ended + open-ended questionnaires</td>
<td>A significant increase in students’ satisfaction about the course and WebCT (perceived usefulness, ease of use, learning)</td>
</tr>
<tr>
<td>4</td>
<td>Albirini (2004)</td>
<td>Exploring EFL teachers’ attitudes toward ICT technology in Syria</td>
<td>Pre-experimental</td>
<td>ICT technology</td>
<td>A random sample of 326 high school EFL teachers</td>
<td>Closed-ended questionnaires</td>
<td>Teachers have positive attitudes toward ICT in education, which were predicted by computer attributes, cultural perceptions and computer competence.</td>
</tr>
<tr>
<td>5</td>
<td>Al-jarf (2004)</td>
<td>Investigating effects of web-based instruction on EFL low-ability college writing</td>
<td>Quasi-Experimental</td>
<td>Internet sites: Yahoo! Movies; WebMD</td>
<td>113 female EFL freshmen students (aged 17-19) at College of Languages and Translation, King Saud University, Riyadh, Saudi Arabia</td>
<td>Pre-test and post-test scores</td>
<td>Experimental group greatly improved writing ability, enhanced their self-esteem, motivation, and sense of achievement in writing</td>
</tr>
<tr>
<td>6</td>
<td>Allum (2002)</td>
<td>Designing, implementing, and evaluating a CALL programme based on SLA criteria</td>
<td>Comparative</td>
<td>Hot Potatoes 5.2</td>
<td>26 non-English majors, first year at university</td>
<td>Test scores, closed-ended questionnaires</td>
<td>Students enjoyed CALL classes, desired combination of textbook and CALL materials, there was much more improvement in grammar in CALL group but not much in other areas (phrases, vocab, listening, spelling)</td>
</tr>
<tr>
<td>7</td>
<td>Alm (2013)</td>
<td>Exploring effects of Web 2.0 on students of German</td>
<td>Pre-experimental</td>
<td>Web 2.0</td>
<td>20 students of intermediate German at a New Zealand university</td>
<td>Blogs, closed-ended and open-ended questionnaires</td>
<td>Web 2.0 informed and supported language learning environments fostering learner autonomy and had a positive impact on learners’ perception of language awareness and development</td>
</tr>
<tr>
<td>8</td>
<td>Almekhlafi (2006)</td>
<td>Investigating effects of CALL on achievements and attitudes of EFL school students in the United Arab Emirates</td>
<td>True experimental</td>
<td>CD-ROM, EFL Skills Developer</td>
<td>83 students in Al-Tamayoz Elementary-prep school: 43 for experiment group and 40 for control group</td>
<td>Test scores, closed-ended + open questionnaires</td>
<td>CALL helped to improve students’ knowledge and competency in EFL; Experimental students had a positive attitude toward CALL, and strong intention to use it in future</td>
</tr>
<tr>
<td>9</td>
<td>Anzai (2007)</td>
<td>Effects of podcasts to empower EFL learning</td>
<td>Pre-experimental</td>
<td>Podcasts (e.g. Steve Jobs’ speech at Stanford, Paging Dr. Gupta on CNN, and some podcasts from National Geographic)</td>
<td>113 students, 35 females and 78 males of three universities (82 freshmen, 30 juniors, and one senior)</td>
<td>Student surveys (open + closed-ended)</td>
<td>Students were positive about podcast use in class, teacher found podcasts effective in EFL teaching</td>
</tr>
<tr>
<td>10</td>
<td>Arnold and Ducate (2006)</td>
<td>Investigating effects of a asynchronous discussion between foreign language</td>
<td>Pre-experimental</td>
<td>CMC</td>
<td>2 graduate level courses at two different universities: U1</td>
<td>Transcripts, survey</td>
<td>Students engaged in a high degree of interactivity as well as all types of social and cognitive activity evident in the discussions; students progressed in</td>
</tr>
<tr>
<td>No.</td>
<td>Author(s) Year</td>
<td>Research Question</td>
<td>Study Type</td>
<td>Methodology</td>
<td>Participants</td>
<td>Data Collection</td>
<td>Findings</td>
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<td>11</td>
<td>Audy (2008)</td>
<td>Investigating effects of “Surf Equipment Design Materials and Construction 1 and 2” courses</td>
<td>True experimental</td>
<td>49 students of Surf Science and Technology course students at Edith Cowan University, Australia</td>
<td>Students’ test scores, students’ surveys</td>
<td>Students’ improved scores, students enjoyed the course, found materials very helpful</td>
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<tr>
<td>12</td>
<td>Bakar, Noor, Azman, Nor, and Hamat. (2011)</td>
<td>Students’ evaluation of an online reading system</td>
<td>Pre-experimental</td>
<td>Online reading system (Intelligent English Language Literacy System (I-ELLS))</td>
<td>Closed-ended questionnaires, interviews</td>
<td>General positive feedback about the system from students</td>
<td></td>
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<tr>
<td>13</td>
<td>Banados (2006)</td>
<td>Effects of a blended-learning pedagogical model for EFL teaching and learning</td>
<td>Pre-experimental</td>
<td>Online interactive multimedia environment</td>
<td>Student closed-ended surveys, teacher interviews, test scores (diagnostic tests, unit tests)</td>
<td>Substantial students’ language skills improvement (listening = highest achievement), high satisfaction levels with the programme</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Barr, Leaky, and Ranchoux (2005)</td>
<td>Investigating effects of a combination of CALL programmes and online activities alongside traditional face-to-face conversation classes</td>
<td>Quasi-experimental</td>
<td>Digital multimedia laboratory; software TellMeMore® (Version 5) by Auralog</td>
<td>Language experience questionnaires, ICT-use surveys, journals, pre and post tests</td>
<td>Progress was made by both groups, but progress made by those not using technology was significantly greater than that made by students using technology over a short-term study.</td>
<td></td>
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<tr>
<td>15</td>
<td>Barr (2008)</td>
<td>Examines effects of technology on students’ attitudes toward learning grammar through computers</td>
<td>Pre-experimental</td>
<td>First year undergraduate students of French at University of Ulster</td>
<td>Test scores, questionnaires</td>
<td>Students’ grammar knowledge was not quantifiably improved with computer use, but they had very positive feedback about computer use in their learning grammar</td>
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<td>ID</td>
<td>Authors</td>
<td>Title</td>
<td>Design</td>
<td>Methodologies</td>
<td>Findings</td>
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<td>16</td>
<td>Bibbee, Smidt, and Lazar</td>
<td>Evaluating the pedagogical significance of a digital language lab as French phonetics course at university</td>
<td>Pre-experimental</td>
<td>Digital language learning software 12 full-time students of French at a university</td>
<td>Test scores, focus group interviews Students enjoyed the course, found they improved their oral proficiency in French; measurable progress was made by participants in two targeted phenomena: unstable e and re-syllabification in French</td>
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<tr>
<td>17</td>
<td>Baten, Bouckaert, and Yingli</td>
<td>Describing how a project-based approach offers opportunities for graduate students to equip themselves with necessary competencies and skills for company performance in English</td>
<td>Pre-experimental</td>
<td>Beta Google applications 1 tutor and 27 MA students of Faculty of Business and Economics, Catholic University of Leuven (Belgium)</td>
<td>Questionnaires Majority of students agreed that the project was meaningful, good way to improve English skills and management competence; discovered opportunities computers offer</td>
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<tr>
<td>18</td>
<td>Bingham and Larson</td>
<td>Investigating the use of CALL for English skills improvement</td>
<td>Pre-experimental</td>
<td>New Dynamic English (NDE) courseware produced by DynEd International, Inc. 140 second-year university students at a small liberal arts college in Miyazaki, Japan. Students were separated into 3 groups according to their ID numbers</td>
<td>Pre and post test scores, questionnaires, Target language improvement, students’ positive attitudes toward learning with CALL</td>
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<tr>
<td>19</td>
<td>Blake</td>
<td>Negotiation in the electronic discussion</td>
<td>Pre-experimental</td>
<td>RTA (Remote Technical Assistance)-a synchronous chat program 50 intermediate L2 Spanish learners at college level</td>
<td>Surveys, tasks counts, discussion transcripts, interviews Jigsaw tasks promote negotiations in synchronous electronic discussion</td>
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<tr>
<td>20</td>
<td>Bloch and Crosby</td>
<td>Using blogging to develop academic writing at beginning level</td>
<td>Case study</td>
<td>Blogging assignment An African student Blogs</td>
<td>Use of blogs helps students develop rhetorical strategies beyond the writing course</td>
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<tr>
<td>21</td>
<td>Bradley and Lomicka</td>
<td>Learner reaction to technology</td>
<td>Case study</td>
<td>Computer-enhanced classroom 5 undergraduate French and Spanish students</td>
<td>Closed-ended questionnaires, interviews, observations Students enjoyed learning with computers. They found lab environment more relaxed than learning in traditional classrooms.</td>
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<tr>
<td>22</td>
<td>Brussino and</td>
<td>Learning partnership</td>
<td>Pre-</td>
<td>Italian web-based Australasian Open</td>
<td>High score of student satisfaction with</td>
<td></td>
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<tr>
<td>Gunn (2008)</td>
<td>between Italian websites and Australasian language learners</td>
<td>experimental</td>
<td>resources</td>
<td>students of different backgrounds aged from 18 to 23 (a few over 50) learning Italian at beginner level (number not stated)</td>
<td>questionnaires</td>
<td>overall learning experience, and high score of satisfaction in identified criteria (i.e. the task supports language learning strategies, they learnt language structures, cultural information, and lexicon)</td>
<td></td>
</tr>
<tr>
<td>Buranapatana and Zhang (2008)</td>
<td>Effect of a language teaching approach (Somatically-Enhanced Approach) in teaching Vietnamese students of Thai at beginning level</td>
<td>True experimental</td>
<td>Somatically-Enhanced Approach</td>
<td>28 students studying Thai at Faculty of Oriental Studies, University of Social Sciences and Humanities, Ho Chi Minh City, Vietnam</td>
<td>Test scores, utterances quality analysis, closed-ended questionnaires</td>
<td>Experimental group (EG) students performed equally well as control group (CG) students; CG students produced more fillers than EG students, EG students found the programme helped them to remember the language and particularly vocabulary</td>
<td></td>
</tr>
<tr>
<td>Chen and Brown (2012)</td>
<td>Investigating the effects of task-based computer-mediated teaching on ESL language writers</td>
<td>Action research / case study</td>
<td>Internet tools, specifically, Wikispaces, and Weebly</td>
<td>Six adult (aged 18-33) English language learners of an intensive English programme at a research-oriented university, learning English for academic and professional reasons.</td>
<td>Interviews, project work, participant observation</td>
<td>Students were motivated to focus on sentence complexity and variety and engaged in the autonomous learning of vocabulary, students’ awareness of audience and sense of ownership were raised</td>
<td></td>
</tr>
<tr>
<td>Chen and Zhang (2011)</td>
<td>Investigating effectiveness of Web-based computer assisted language learning (CALL) on EFL tertiary students’ comprehension</td>
<td>True experimental</td>
<td>Web-based CALL</td>
<td>All first year non-English majors (N = 556) from School of Humanities and School of Education at Guangzhou University</td>
<td>Test scores (pre and post), open-ended questionnaires</td>
<td>No significant difference between the Web-based CALL and the traditional groups in listening skills performance, but students responded to Web-based CALL positively, and lower-level students, were more motivated than their higher-level peers in practicing with computers</td>
<td></td>
</tr>
<tr>
<td>Chenoweth and Murday (2003)</td>
<td>Measuring an online course on students of French</td>
<td>Quasi-experimental</td>
<td>Online French course</td>
<td>12 students of conventional Elementary French I and 8 students in</td>
<td>Test scores, course evaluations, interviews</td>
<td>Online students outperformed the offline students in written production task, had positive opinions about the course, and reported spending less time studying</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Chenoweth, Ushida, and Murday (2006)</td>
<td>Investigating effectiveness of online language courses for students’ learning outcomes in four hybrid online language courses (elementary and intermediate levels)</td>
<td>Quasi-experimental</td>
<td>Online French and Spanish courses</td>
<td>Eleven teachers and 354 students</td>
<td>Test scores, course evaluations, interviews</td>
<td>Students in most online courses made progress in L2 performance similar to that of offline students (in two online courses offline students outperformed online ones).</td>
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<tr>
<td>28</td>
<td>Cinkara and Bagceci (2013)</td>
<td>Investigating learners’ attitudes towards online English course, and correlating their attitudes with their success determined with end-of-the-year grades</td>
<td>Pre-experimental</td>
<td>Modular Object Oriented Distance Learning Environment (MOODLE)</td>
<td>7000 freshmen at a state university in south-eastern Turkey, but only 3516 filled in questionnaires, and only 1783 were considered qualified for the study</td>
<td>Closed-ended questionnaires</td>
<td>More than 50% of learners had positive attitudes, just 11% had negative attitude towards the course.</td>
</tr>
<tr>
<td>29</td>
<td>Collentine (2010)</td>
<td>Measuring complexity in task-based synchronous CMC</td>
<td>Pre-experimental</td>
<td>Interrupted task chatting activity and post-task chatting activity</td>
<td>18 advanced 3rd-year students and 12 intermediate level students at a medium-sized university in the US</td>
<td>Analysis of transcripts</td>
<td>Producing narrative cluster seems preferred strategy for both levels of learners under time pressure. Compared to intermediate-level learners, advanced learners produced higher concentrations of propositional complexity cluster, using high degree of nouns, verb+noun clauses, and prepositions in both tasks.</td>
</tr>
<tr>
<td>30</td>
<td>Darhower (2002)</td>
<td>Exploring social interactive features of synchronous (CMC)—or “chat”—in two fourth-semester college Spanish classes</td>
<td>Case study</td>
<td>Computer-mediated communication (CMC)</td>
<td>33 learners and the teacher of two intact fourth-semester Spanish classes at University of Pittsburgh</td>
<td>Analysis of transcripts informed by Vygotskian sociocultural theory, observation</td>
<td>Students established and maintained inter-subjectivity and engaged in collaborative dialogue focused on tasks. Enjoyment and risk-taking involving language play. Some flaming, off-task discussion and L2 use still occurred.</td>
</tr>
<tr>
<td>31</td>
<td>Demouy and</td>
<td>Discovering effects of</td>
<td>Pre-</td>
<td>Ipods and MP3</td>
<td>Two groups of 35</td>
<td>Weekly online</td>
<td>Mobile devices can support the practice</td>
</tr>
<tr>
<td>Reference</td>
<td>Study Title</td>
<td>Research Question</td>
<td>Experimental Group</td>
<td>Control Group</td>
<td>Data Collection Methods</td>
<td>Findings</td>
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<tr>
<td>Kukulska-Hulme (2010)</td>
<td>A mobile language learning project in an undergraduate distance-learning French programme</td>
<td></td>
<td>Experimental players</td>
<td>Students (one using iPod/MP3 players, the other using mobile phones) at The Open University (UK)</td>
<td>Questionnaires, recorded oral feedback and email</td>
<td>Of listening and speaking skills effectively</td>
<td></td>
</tr>
<tr>
<td>Derwing, Munro, and Carbonaro (2000)</td>
<td>Does popular speech recognition software work with ESL speech?</td>
<td>Pre-experimental</td>
<td>Automatic Speech Recognition Software</td>
<td>N=30 (speakers) N=41 (listeners)</td>
<td>Listeners’ intelligibility scores and software recognition scores, discourse analysis</td>
<td>SR software is not feasible for FL students since it recognises only a low percentage of non-native speaker utterances</td>
<td></td>
</tr>
<tr>
<td>Ducate and Lomicka (2009)</td>
<td>Examining effects of podcast use to improve pronunciation in second language learning and how students’ attitudes changed toward pronunciation over the semester</td>
<td>True experimental</td>
<td>Podcasts</td>
<td>22 students in intermediate German and French courses</td>
<td>Pronunciation attitude inventory, recordings, closed-ended + open-ended pre / post surveys</td>
<td>Students’ pronunciation did not significantly improve in accented ness or comprehensibility, but was perceived positively by students, and they appreciated feedback given for each scripted recording and enjoyed opportunities for creativity during extemporaneous podcasts</td>
<td></td>
</tr>
<tr>
<td>Egbert, Paulus and Nakamichi (2002)</td>
<td>Examining how language teachers apply practical experiences from CALL coursework to their teaching, ways teachers continue CALL professional development</td>
<td>Pre-experimental</td>
<td>CALL course</td>
<td>20 ESL/EFL teachers of the same graduate level CALL course</td>
<td>Surveys, interviews</td>
<td>Teachers using CALL are those who had previous CALL experience prior to the PD course; lack of time, support, resources prohibits use of CALL in some classrooms; colleagues are the most common resources of new CALL activities ideas outside formal coursework</td>
<td></td>
</tr>
<tr>
<td>Facer, Abdous, and Camarena (2009)</td>
<td>Investigating the impact of podcasts on students’ learning outcomes</td>
<td>Pre-experimental</td>
<td>Podcasting project named “Podcasting and Podagogy: The New Generation of Technology for Foreign Language”</td>
<td>48 students at Department of Foreign Languages and Literatures of Old Dominion University used</td>
<td>Closed-ended surveys</td>
<td>The project suggested that podcasting has positive effects on students’ acquisition of language skills</td>
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<tr>
<td>Article</td>
<td>Title</td>
<td>Methodology</td>
<td>Group</td>
<td>Participants</td>
<td>Design</td>
<td>Main Findings</td>
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<tr>
<td>37</td>
<td>Finkbeiner and Knierim (2008)</td>
<td>Using online resources to facilitate the development of L2 strategic competence</td>
<td>Pre-experimental</td>
<td>Online Learner ABCs</td>
<td>Advanced EFL students of EFL teacher education programme at a German university (number not stated)</td>
<td>Students feedback</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Finlay (2004)</td>
<td>Investigating effects of online teaching on composition English classes</td>
<td>Quasi-experimental</td>
<td>6 classes selected from 72 classes for sample of face-to-face students, 3 online classes at a public university in the southeast</td>
<td>Online teaching increased student satisfaction and increased student participation in the case of clear indicators of success, students’ perceived learning outcomes, increased learner autonomy</td>
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<tr>
<td>39</td>
<td>Fitze (2008)</td>
<td>Assessing benefit of prewriting conferences (face-to-face (FTF) and written electronic (WE) conferences) in an ESL classroom</td>
<td>Pre-experimental</td>
<td>4 FTF conferences and 4 WE conferences</td>
<td>27 ESL students from high-intermediate to advanced levels</td>
<td>Students’ writing draft</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Foroutan, Noordin, and Hamzah (2013)</td>
<td>Reporting on experience and perceptions of ESL students in applying Weblog in writing, and examining effects of Weblog on students’ writing autonomy</td>
<td>Pre-experimental</td>
<td>Weblog</td>
<td>Thirty undergraduate English major students of intermediate writing level at Universiti Putra Malaysia</td>
<td>Weblog, observation, interviews</td>
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Students enjoyed some features in weblog as experiencing unlimited time and place, more independency and freedom in publishing and exchanging comments.
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<tbody>
<tr>
<td>41</td>
<td>Fotos (2004)</td>
<td>Using email to promote proficiency and motivation of EFL students</td>
<td>Quasi-experimental</td>
<td>Email</td>
<td>20 volunteer students and 5 tutors</td>
<td>TOEFL-typed test scores, open-ended questionnaires</td>
<td>Significant gains in proficiency and motivation of the students</td>
</tr>
<tr>
<td>42</td>
<td>Franc and Morton (2013)</td>
<td>Using Virtual Learning Environment (VLE) for monitoring independent language learning</td>
<td>Case study</td>
<td>Blackboard 9 (MU’s new VLE)</td>
<td>Department of French at the University of Manchester</td>
<td>Student closed-ended and open-ended survey</td>
<td>Students had positive attitudes toward the program: majority found it useful, helpful, increased autonomy</td>
</tr>
<tr>
<td>43</td>
<td>Gamage and Chapelle (2013)</td>
<td>Exploring potential of using CALL to promote communicative competence in ESL students</td>
<td>Case study</td>
<td>CALL projects</td>
<td>12 participants from Sri Lanka and Australia</td>
<td>Questionnaires, interviews, school websites</td>
<td>Positive attitudes toward CALL use in promoting communicative competence of English</td>
</tr>
<tr>
<td>44</td>
<td>Ghandoura (2012)</td>
<td>Examining ESL students’ attitudes about a computer-aided composition (WebCT) class</td>
<td>Pre-experimental</td>
<td>Computer-aided composition (WebCT)</td>
<td>13 ESL students (aged 18-25) of a public university in the US</td>
<td>Student diaries, observation, interviews</td>
<td>Students enjoyed and valued the WebCT course; students’ acquisition of writing skills was facilitated by the course</td>
</tr>
<tr>
<td>45</td>
<td>González-Bueno and Perez (2000)</td>
<td>Grammatical and lexical accuracy and quantity of language using e-mail</td>
<td>True experimental</td>
<td>E-mail</td>
<td>30 community college students from two Spanish 111 classes</td>
<td>Words/errors counts, open surveys</td>
<td>Significant advantages of using E-mail over the paper-and-pencil based dialogue journal in terms of quantity of language, but no advantages in lexical and grammatical accuracy.</td>
</tr>
<tr>
<td>46</td>
<td>Grace (2000)</td>
<td>Personality types and vocabulary retention</td>
<td>Pre-experimental</td>
<td>CD-ROM in French</td>
<td>181 first year college level French students</td>
<td>Test scores</td>
<td>A combination of contextual and definitional approaches will increase retention</td>
</tr>
<tr>
<td>47</td>
<td>Grgurović (2011)</td>
<td>Examining the effects of a combined face-to-face classroom learning (face-to-face mode) and online learning in the computer lab and</td>
<td>Case study</td>
<td>MyNorthStarLab: online materials</td>
<td>1 instructor, 19 students (17 originally from China, 2 from Korea); at a large public university in</td>
<td>Closed-ended + open-ended questionnaires, test scores, interview, observation</td>
<td>students and instructor shared the view that online speaking and pronunciation activities added value to instruction because they were helpful and unique; online materials in the lab helped less attentive students control learning better</td>
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<td>Sl. No.</td>
<td>Author(s)</td>
<td>Title</td>
<td>Design</td>
<td>Tools</td>
<td>Participants</td>
<td>Methodology</td>
<td>Findings</td>
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<td>48</td>
<td>Gromik (2009)</td>
<td>Reporting on a project of producing cell phone video diaries for EFL students</td>
<td>Pre-experimental</td>
<td>Blip.tv, cell phone technology</td>
<td>7 students of intermediate communicative language course at Tohoku University in Japan</td>
<td>Observation, final examination</td>
<td>Students benefited from programme in speaking, creativity, and forming opinions about definition of Internet video broadcasting</td>
</tr>
<tr>
<td>49</td>
<td>Guo and Guo (2013)</td>
<td>Investigating effects of online activities on students’ language proficiency</td>
<td>Pre-experimental</td>
<td>Voice board, voice conference, e-portfolio via Mahara software (integrated within Moodle 2.0)</td>
<td>1st year: 69 students of intermediate Chinese; 2nd year: added 8 advanced students; 3rd year: all students</td>
<td>Oral exams, e-portfolios, closed-ended and open-ended questionnaires</td>
<td>Students enhanced language experience: voice tools for listening and speaking, sharing writing with learning community, documenting learning journeys with e-portfolio pages</td>
</tr>
<tr>
<td>50</td>
<td>Hadjistassou (2008)</td>
<td>Emerging feedback in asynchronous ESL writing forums</td>
<td>Pre-experimental</td>
<td>Blackboard System</td>
<td>17 ESL students enrolled in a university-level writing course</td>
<td>Asynchronous student postings for paper 2 and 54 for paper 3</td>
<td>Participation in asynchronous computer-mediated communication (ACMC) forums can help students develop better understanding of writing assignments and encourage them to implement describing and narrating strategies to provide feedback to peers</td>
</tr>
<tr>
<td>51</td>
<td>Haider and Chowdhury</td>
<td>Exploring how CALL aspects are integrated into CLT classes</td>
<td>Pre-experimental</td>
<td>CALL resources</td>
<td>425 learners of 4 foreign language training centres</td>
<td>Closed-ended + open-ended questionnaires</td>
<td>Learners gave a positive response about the contents, facilities, and organization of the course but not completely satisfied with the teaching techniques and participants’ role as independent learners</td>
</tr>
<tr>
<td>52</td>
<td>Halvorsen (2009)</td>
<td>Exploring potential use of Social Networking Sites (SNSs) for educators and second language learners</td>
<td>Pre-experimental</td>
<td>MYSpace SNS</td>
<td>27 students 2nd and 3rd year students at a private university in Japan</td>
<td>Closed-ended questionnaires, interviews, comments</td>
<td>Students’ perceived increase of identity formation, student empowerment, autonomy, and critical literacy</td>
</tr>
<tr>
<td>53</td>
<td>Hamilton (2013)</td>
<td>Investigating the relationship between blended learning and learner autonomy</td>
<td>Case study</td>
<td>English International (EI) blended lessons (Virtual Learning Environment)</td>
<td>20 students (8 men, 12 women), aged 19-37 in a public university in Mexico</td>
<td>Closed-ended questionnaires, interviews, observation</td>
<td>Students reported and showed signs of autonomous learning in a virtual learning environment</td>
</tr>
<tr>
<td>54</td>
<td>Hampel and Hauck (2004)</td>
<td>Examining the process of development and</td>
<td>Pre-experimental</td>
<td>Lyceum audio-graphic</td>
<td>15 participants at Open University</td>
<td>Logbooks, questionnaires,</td>
<td>Students commented the course was very interesting and worked well, yet requiring</td>
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<td>implementation of online tuition in terms of activity design, tutor training, and student support</td>
<td>conferencing software), course-specific Website</td>
<td>observations</td>
<td>more preparation than expected; tutors looked forward to teaching with computers</td>
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<td>55</td>
<td>Hassanzadeh, Gholami, Allahyar, and Noordin (2012)</td>
<td>Investigating motivation and personal traits of TESL postgraduate students toward ICT use in second language teaching</td>
<td>Pre-experimental</td>
<td>ICT technology</td>
<td>89 TESL postgraduate students in Malaysia randomly selected</td>
<td>Closed-ended surveys, interviews</td>
<td>Teachers were highly motivated in teaching language with computers; they were highly extrovert, agreeable, conscientious, open and moderately neurotic towards ICT usage.</td>
</tr>
<tr>
<td>56</td>
<td>Hayes (2009)</td>
<td>Demonstrating usefulness of iPods and podcasting technology in advanced Japanese language teaching and learning, and its impact on student motivation</td>
<td>Pre-experimental</td>
<td>iPod Project</td>
<td>74 students of Japanese at the Australian National University took survey (out of 320), 12 in focus group</td>
<td>Closed-ended + open-ended questionnaires, focus group interviews</td>
<td>Students preferred ‘blended’ learning approach for its flexibility of delivery; motivated students not only to develop linguistic skills but also intercultural awareness</td>
</tr>
<tr>
<td>57</td>
<td>He (2013)</td>
<td>Investigating effects of Network-Assisted Language Teaching (NALT) Model on undergraduate English skills</td>
<td>True experimental</td>
<td>Network-Assisted Language Teaching (NALT) Model</td>
<td>140 sophomores of non-English major from China university of Geosciences (Beijing)</td>
<td>Test scores</td>
<td>The experimental group’s scores in post-test is best, indicating NALT model is indeed more effective than the traditional classroom teaching model in improving undergraduate English skills</td>
</tr>
<tr>
<td>58</td>
<td>Hegelheimer and O’Bryan (2009)</td>
<td>Investigating podcast use in an ESL listening course</td>
<td>Case study</td>
<td>Podcasts</td>
<td>A teacher, 14 graduate and undergraduate ESL students at Iowa State University</td>
<td>Teacher journal, student self-reports</td>
<td>Teacher found podcast use allow class time expansion, students interacted with podcasts in different ways: Podcasts transformed language learning</td>
</tr>
<tr>
<td>59</td>
<td>Heift (2002)</td>
<td>Exploring impact of learner control on error correction process within a web-based Intelligent Language Tutoring System (ILTS)</td>
<td>Pre-experimental</td>
<td>Web-based Intelligent Language Tutoring System (ILTS)</td>
<td>33 students of 2 introductory classes of German</td>
<td>Computer log for detailed information of student-computer interaction</td>
<td>Majority of students sought to correct errors on their own most of the time, and minority abstained entirely from looking up answers</td>
</tr>
<tr>
<td>60</td>
<td>Holtzman</td>
<td>Examining process of</td>
<td>Case study</td>
<td>e-folio</td>
<td>4000 students of a</td>
<td>Students’</td>
<td>Increased communication in target</td>
</tr>
<tr>
<td>Year</td>
<td>Authors</td>
<td>Title</td>
<td>Design</td>
<td>Conditions</td>
<td>Methodology</td>
<td>Findings</td>
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<td>2009</td>
<td>(2009)</td>
<td>e-folio on second language writing</td>
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<td>4-year private university writing, weekly journals, field notes, written reflections</td>
<td>language for students, interaction with instructor in reduced-pressure atmosphere website interaction in target language</td>
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<tr>
<td>2009</td>
<td>Hui, Hu, Clark, Tam, and Milton</td>
<td>Comparing effectiveness and satisfaction associated with technology assisted learning with that of face-to-face learning</td>
<td>True experimental</td>
<td>Technology-assisted teaching</td>
<td>507 freshmen of English at a Hong Kong university, about 19 years old</td>
<td>Test scores, questionnaires</td>
<td>Technology-assisted learning better supports vocabulary learning than face-to-face learning but is comparatively less effective in developing listening skills; perceived ease of learning and learning community support significantly predict perceived effectiveness and learning satisfaction</td>
</tr>
<tr>
<td>2007</td>
<td>Hui, Hu, Clark, Tam, and Milton</td>
<td>Comparing effectiveness and satisfaction associated with technology assisted learning with that of face-to-face learning</td>
<td>True experimental</td>
<td>Technology-assisted teaching</td>
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</tr>
<tr>
<td>2007</td>
<td>Huot, Leomonnier, and Hamers</td>
<td>Influence of ICT use on L1 French and L2 English</td>
<td>True experimental</td>
<td>ICT use</td>
<td>French secondary school students learning L1 French and L2 English</td>
<td>Closed-ended questionnaires</td>
<td>For experimental groups, ICT use is closely linked to pedagogical context, motivation and attitudes remain more stable than in control groups, their texts produced are significantly longer and contain more complex clauses</td>
</tr>
<tr>
<td>2004</td>
<td>Hussin</td>
<td>Developing web-based programming activities among in-service language teachers in Malaysia</td>
<td>Pre-experimental</td>
<td>Educational Technology in TESL course, Multimedia Applications in ELT course</td>
<td>20 students, most were in-service teachers enrolling in MA programme in English Language Studies at the School of Language Studies and Linguistic, Universiti Kebangsaan Malaysia</td>
<td>Closed-ended surveys</td>
<td>Teachers showed positive attitudes toward web-based teaching and learning</td>
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<tr>
<td>2004</td>
<td>Hussin</td>
<td>Developing web-based programming activities among in-service language teachers in Malaysia</td>
<td>Pre-experimental</td>
<td>Educational Technology in TESL course, Multimedia Applications in ELT course</td>
<td>20 students, most were in-service teachers enrolling in MA programme in English Language Studies at the School of Language Studies and Linguistic, Universiti Kebangsaan Malaysia</td>
<td>Closed-ended surveys</td>
<td>Teachers showed positive attitudes toward web-based teaching and learning</td>
</tr>
<tr>
<td>2004</td>
<td>Iwabuchi and Fotos</td>
<td>Shows how to develop CD-ROMs for interactive language learning</td>
<td>Pre-experimental</td>
<td>Steps to develop courseware</td>
<td>160 Japanese students of English</td>
<td>Closed-ended + open questionnaires</td>
<td>Students’ positive attitudes toward the courseware</td>
</tr>
<tr>
<td>2004</td>
<td>Jia, Chen, Ding, Bai, Yang, Lit</td>
<td>Investigating effects of an intelligent web-based English</td>
<td>Quasi-experimental</td>
<td>Web-based English instruction system</td>
<td>Students from grades 1 to 3 in three junior high</td>
<td>Test scores</td>
<td>Language performances of all treatment classes were better than the control classes</td>
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<td>Qit (2013)</td>
<td>instruction system on students’ academic performance</td>
<td>schools and from Grade 1 to Grade 2 in a senior high school, and teachers with or without blended learning experience, and by various school locations in four provinces of China</td>
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<tr>
<td>66</td>
<td>Johnston (2008)</td>
<td>Applying a task-based design for integrating email with foreign language pedagogy</td>
<td>Case study</td>
<td>Email</td>
<td>Two teachers of Indonesian as a foreign language in Queensland high schools; their senior secondary classes (Year 11/12: 7 students; year 12: 11 students)</td>
<td>Closed-ended questionnaires, interviews, students’ email messages, researcher documentation (records of email, telephone, face-to-face meetings, and others)</td>
<td>Curriculum context can guide and give purpose to email exchanges, and impede implementation process when teachers are highly influenced by the need to assess and “finish” curriculum or when email tasks could not be a part of curriculum assessment process</td>
</tr>
<tr>
<td>67</td>
<td>Iskold (2008)</td>
<td>Investigating effects of research-based listening tasks for video comprehension on Russian students’ listening performance</td>
<td>True experimental</td>
<td>Nachalo (video-driven commercial package)</td>
<td>16 second-semester college students of Russian</td>
<td>Test scores, closed-ended questionnaires</td>
<td>Experimental group performed significantly better than control group, participants had a noticeably positive attitude toward Video Guides</td>
</tr>
<tr>
<td>68</td>
<td>Jones (2003)</td>
<td>Exploring students’ views on the effectiveness of multimedia annotations (visual and verbal) in assisting their comprehension and vocabulary acquisition from aural texts</td>
<td>True experimental</td>
<td>Four aural multimedia treatments developed with Adobe Premiere 4.2 and Authorware 4.0</td>
<td>171 English-speaking students enrolled in second semester beginning French at the University of Arkansas.</td>
<td>Test scores, closed-ended questionnaires, interviews</td>
<td>When students had both verbal and visual annotations while listening, they remembered word translations and recalled passage best and had a more positive view about treatment</td>
</tr>
<tr>
<td>Study Number</td>
<td>Author(s) (Year)</td>
<td>Description of Research Question</td>
<td>Research Design</td>
<td>Main Findings</td>
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<tr>
<td>69</td>
<td>Jones (2004)</td>
<td>Describing two studies that examined effects of pictorial and written annotations on L2 vocabulary learning from a multimedia environment</td>
<td>True experimental</td>
<td>Four aural multimedia treatments developed with Adobe Premiere 4.2 and Authorware 4.0. Study 1: 80 2nd-semester English-speaking beginning students of French, University of Arkansas (Fall); Study 2: 67 2nd-semester English-speaking beginning students of French, University of Arkansas (Spring). Test scores. 1st study: treatment students recognised English translations or pictorial representations of French keywords better than the control group that received no annotations during listening; 2nd study: students produced English translations of French keywords best when the mode of testing matched the treatment mode.</td>
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<tr>
<td>70</td>
<td>Jones (2008)</td>
<td>Applying aural multimedia treatments to process multimedia annotations in pictorial and written forms for students of French</td>
<td>True experimental</td>
<td>Four aural multimedia treatments developed with Adobe Premiere 4.2 and Authorware 4.0. 67 college students in second-semester French course. Test scores, interviews. Amount of invested mental effort applied in processing different annotation types varied in its influence on students’ abilities to learn French vocabulary and on their listening comprehension.</td>
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<tr>
<td>71</td>
<td>Jordan and Coyle (2013)</td>
<td>Examining a Moodle-based program of monitored quizzes to engage students of English in self-study and autonomous learning</td>
<td>Pre-experimental</td>
<td>Moodle. 99 1st-year students at an English medium university in China. Statistic data from Moodle, online closed-ended and open-ended questionnaire. Students reported that helped students learn how to organise self-study, high participation rates; however, Moodle statistics revealed: many participants did not take quizzes on regular weekly basis, implying that program was only partially successful in fostering autonomy.</td>
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<tr>
<td>72</td>
<td>Kamhi-Stein (2000)</td>
<td>Investigating teacher students’ participation in whole-class, face-to-face discussions and in Web-based bulletin board (BB) discussions in a TESOL teacher preparation course</td>
<td>Case study</td>
<td>20 students enrolled in Methods of Teaching Second Languages, TESOL MA programme at an urban university in southern California. videotapes of whole-class, face-to-face discussions; transcripts of Web-based BB discussions; interviews with selected students. Teacher students believed Web-based BB discussions allowed them to hear multiple voices and perspectives, receive input from peers who remained silent in whole-class, face-to-face discussions, thus creating more balanced participation contributed to a more diverse and ultimately richer learning environment.</td>
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<td>73</td>
<td>Kasper (2000)</td>
<td>Content-based pedagogy for</td>
<td>Pre-experimental</td>
<td>E-mail and electronic bulletin. 50 ESL college level, multi-ethnic. Portfolios, exam scores, closed-</td>
<td>Outperformed students in other ESL classes.</td>
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<td>ID</td>
<td>Author and Year</td>
<td>Title</td>
<td>Methodology</td>
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<td>Data Collection</td>
<td>Findings</td>
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<td>74</td>
<td>Kılıçkaya (2004)</td>
<td>Investigating effects of a CALL course on pre-service English teachers’ practice teaching</td>
<td>Pre-experimental</td>
<td>CALL</td>
<td>30 senior students of Department of Foreign Language Education at Middle East University in Turkey</td>
<td>Interviews</td>
<td>Participants benefited from the topics discussed; half of them tried to make use of the CALL tools in their practice teaching; they are willing to use these tools in their future career; however, some problems mentioned were lack of equipment, support and modelling.</td>
</tr>
<tr>
<td>75</td>
<td>Kirkgoz (2011)</td>
<td>Investigating designing and implementing a speaking course in which face-to-face instruction informed by principles of Task-Based Learning was blended with technology use and the video</td>
<td>Pre-experimental</td>
<td>Video-recorded task-based speaking course (TBSC)</td>
<td>28 first-year student teachers of English; 7 male and 21 female, aged 21-22, attending a state university in Turkey</td>
<td>recordings of a pre-and post-course speaking task, video-recordings of students’ speaking tasks, informal student interviews, written end-of-year course evaluation survey</td>
<td>noticeable improvement in students’ oral communication skills, and their positive perceptions of integrating technology in lesson, also video camera use had a positive impact on students’ viewing and critically evaluating their speaking tasks</td>
</tr>
<tr>
<td>76</td>
<td>Kung and Chuo (2002)</td>
<td>Investigating students’ perceptions of English learning through ESL/EFL websites</td>
<td>Pre-experimental</td>
<td>ESL/EFL websites</td>
<td>49 (10 male, 39 female) students majoring in French and minoring in English at a technological college of languages in Southern Taiwan, aged 17-18.</td>
<td>Closed-ended + open questionnaires</td>
<td>Students found that learning English through ESL/EFL websites was interesting; teaching strategies used by the teachers were effective and necessary. Results of follow-up study a year later supported the original findings.</td>
</tr>
<tr>
<td>77</td>
<td>Kynoshita (2008)</td>
<td>Using an audio-video chat program in language learning</td>
<td>Pre-experimental</td>
<td>iChat</td>
<td>14 3rd-year learners of Japanese at University of Canberra (UC), and</td>
<td>Observations, questionnaires, learners’ reflection</td>
<td>Students seemed to be highly motivated, seemed to have performed oral presentations better than similar students had done previously. Most students felt</td>
</tr>
<tr>
<td>Year</td>
<td>Author(s)</td>
<td>Title</td>
<td>Methodology</td>
<td>Participants</td>
<td>Findings/Inferences</td>
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<tr>
<td>2000</td>
<td>Lam</td>
<td>Use of Internet for writing</td>
<td>Case study</td>
<td>One male ESL student</td>
<td>Dramatic improvement in writing</td>
<td></td>
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</tr>
<tr>
<td>2001</td>
<td>Lee</td>
<td>Discussing the interaction between non-native speakers (NNSs) and types of communication strategies employed in online communication</td>
<td>Pre-experimental</td>
<td>40 students at a mid-size public university located in New England volunteered</td>
<td>Regardless of proficiency level, students used a variety of communication strategies, engaged in negotiation focusing on lexis, negotiation of form was infrequent; errors frequently ignored and avoidance strategies</td>
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<tr>
<td>2002</td>
<td>Lee</td>
<td>Reporting types of modification devices the NNSs of intermediate level of proficiency employed during synchronous online exchanges</td>
<td>Pre-experimental</td>
<td>34 students from two third-year Spanish classes at a mid-size public university in New England</td>
<td>Students appeared to be interested in exchanging ideas rather than trying to correct linguistic mistakes; learners negotiated meaning focusing on lexis by utilizing strategies; errors frequently uncorrected; limited use of complex target language constructions</td>
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<tr>
<td>2007</td>
<td>Lee</td>
<td>Exploring the use of E-Touch, a commercial Web-based English learning and testing system on reading and listening skills</td>
<td>True experimental</td>
<td>Six equivalent senior cadet classes, totalling 79 cadets, working at Republic of China Air Force Academy (ROCAFA)</td>
<td>No statistically significant differences, but experimental group showed greater improvement on the listening section; experimental group had positive attitudes toward the blended approach for learning and teaching</td>
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<tr>
<td>2008</td>
<td>Lindgren, Stevenson, and Sullivan</td>
<td>Using keystroke logging as a computer technology to support second language acquisition</td>
<td>Pre-experimental</td>
<td>10 volunteers, 13-year-old first language Swedish speakers, six female and four male</td>
<td>PBI was most successful for pupils with a low score on pre-test, and had greatest positive impact on descriptive assignments; use of computers to enhanced reflection in language teaching needs to be directed and structured by well-organised teacher-student and student-student collaboration for maximum learning outcomes</td>
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<td>Study</td>
<td>Title</td>
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<td>Participants</td>
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<td>Lin (2010)</td>
<td>Investigating whether news video in a CALL programme can foster L2 comprehension and incidental acquisition of adjectives, nouns, and verbs; examining the relationship between students’ vocabulary acquisition and their video comprehension</td>
<td>True experimental</td>
<td>Video-based CALL activity</td>
<td>121 Chinese-speaking freshmen of English at a public university in Taiwan: 44 proficient L2 learners and 39 less-proficient</td>
<td>CALL-based learning significantly enhanced less-proficient participants’ incidental vocabulary acquisition and comprehension. Both proficient and less-proficient groups made significant progress in incidental vocabulary acquisition</td>
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<td>Lord (2008)</td>
<td>Investigating impacts of a collaborative podcasting project on Spanish learners</td>
<td>True experimental</td>
<td>Podcasts</td>
<td>19 students in a university Spanish phonetic class</td>
<td>Podcast students improved both their attitudes and pronunciation</td>
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<td>Loucky (2009)</td>
<td>Describing a task-based assessment approach to teach ESL/EFL students online reading and writing</td>
<td>Pre-experimental</td>
<td>Web 2.0</td>
<td>2 groups: 1 of Japanese engineering students on master’s course; 1 of 2 classes of English and Applied English major students</td>
<td>Surveys, test scores, reports</td>
<td>High level of learner enjoyment, effectiveness of online courses</td>
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<tr>
<td>Lu (2009)</td>
<td>Exploring effects of podcasting in language education</td>
<td>Case study</td>
<td>Podcasts</td>
<td>Case 1: 23-year-old office worker; Case 2: 10 participants (university or graduate students)</td>
<td>Case 1: Journal, interview; Case 2: questionnaires, interviews</td>
<td>Case 1: Participant stated podcasts helped him better understand Skype talks; Case 2: students found audio and video podcasts very interesting and motivating</td>
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<td>Merlet (2000)</td>
<td>Effects of lexical and semantic previews on comprehension of a computerised illustrated dialog</td>
<td>True experimental</td>
<td>Computerised illustrated dialog</td>
<td>30 French undergraduate students of English as a foreign language</td>
<td>Recall writing test: number of recalled information units, recall</td>
<td>Lexical preview decreased frequency of control actions while listening; semantic preview improved quality of information recalled</td>
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<td>No.</td>
<td>Authors</td>
<td>Description</td>
<td>Type of Information Recalled</td>
<td>Summary of Findings</td>
<td>Research Design</td>
<td>Notes</td>
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<td>88</td>
<td>Meskill and Mossop (2000)</td>
<td>To characterise what language professionals and mainstream teachers do well with technologies</td>
<td>Pre-experimental</td>
<td>CALL, word processing, reference tools, presentation software</td>
<td>ESL learners in the State of New York: from elementary thru high school</td>
<td>Surveys, interviews</td>
<td>Computers are used in socio-collaborative ways</td>
</tr>
<tr>
<td>89</td>
<td>Mollering and Ritter (2008)</td>
<td>How CMC might contribute to language learning and teaching</td>
<td>Pre-experimental</td>
<td>WebCT/MOODLE</td>
<td>Australian students of German (advanced level) and German students of English</td>
<td>Email content</td>
<td>Students were more motivated, and developed linguistic skills</td>
</tr>
<tr>
<td>90</td>
<td>Morton, Davidson, and Jack (2008)</td>
<td>Evaluating a Speech Interactive CALL program</td>
<td>Pre-experimental</td>
<td>Spoken Electronic Language Learning (SPELL) program</td>
<td>52 language students of Italian (34) and Japanese (18) from 5 Scottish high schools, 19 female and 33 male, aged 13-17</td>
<td>Closed-ended questionnaires, participants’ speech recognition analysis</td>
<td>Limitations of speech recogniser, but language learners perceived that the program was very useful and enjoyable for them</td>
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<tr>
<td>91</td>
<td>Motteram and Brown (2009)</td>
<td>Exploring a context-based approach to Web 2.0 and language teaching</td>
<td>Case study</td>
<td>Web 2.0: blogs, wiki, social bookmarking, e-portfolio software, podcasts</td>
<td>2 MA students: Vida at University of Ljubljana and Andrew at Private Language School</td>
<td>Blogs</td>
<td>Vida found wiki well suited to her social constructivist teaching approach; Andrew shifted from teacher-centred to learner-centred approaches by creating courseware with blogs</td>
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<tr>
<td>92</td>
<td>Mullen, Appel, and Shanklin (2009)</td>
<td>Investigating effects of Skype service as a tool for tandem language learning</td>
<td>Case study</td>
<td>Skype</td>
<td>14 American students of Japanese at San Diego State University and volunteers of students of English at Tsuda College in Tokyo</td>
<td>Student questionnaires, automatic assignments and audio recordings</td>
<td>Skype enabled language students to benefit from communicative interaction with native speakers for target language</td>
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<td>93</td>
<td>Mutlu and</td>
<td>Exploring the use of CALL activities</td>
<td>Quasi-experimental</td>
<td>48 intermediate-</td>
<td>Questionnaires,</td>
<td>Experimental students had language</td>
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<td>Study</td>
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<td>Eroz-Tuga (2013)</td>
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<td>technology to promote language learner autonomy</td>
<td>experimental</td>
<td>level students at a private university in Ankara, Turkey</td>
<td>interviews, e-learning diaries, observation, CALL training</td>
<td>learning strategies usage improvement, higher motivation, more responsibility for learning, and more engagement in extracurricular study with CALL</td>
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<tr>
<td>Nah (2011)</td>
<td></td>
<td>Investigating Internet use barriers of EFL learners and proposing features to minimise them</td>
<td>Pre-experimental</td>
<td>30 undergraduate students who had enrolled in a required intermediate EFL listening course at a Korean university</td>
<td>Questionnaires, interviews</td>
<td>Learners’ attitudes towards using the WAP site changed after the experiment both positively and negatively – novelty, convenience and interactivity of the site on positive side, and limitations of mobile technology and extra expense of the Internet connection on negative side</td>
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<td>Nah, White, and Sussex (2008)</td>
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<td>Investigating potential of using a mobile phone to browse wireless application protocol (WAP) sites for the learning listening skills</td>
<td>Pre-experimental</td>
<td>30 out of 49 undergraduate students enrolled in a required intermediate EFL listening course at a Korean university (volunteers)</td>
<td>Closed-ended questionnaires, interviews</td>
<td>Language learners expressed positive attitudes towards the use of the WAP site; WAP site can be effective for learning listening skills and for student-centred and collaborative learning</td>
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<td>O’Bryan and Hegelheimer (2007)</td>
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<td>Investigating the role of podcasting in an ESL listening strategies course</td>
<td>Pre-experimental</td>
<td>6 graduate and undergraduate students at English Department of Iowa State University</td>
<td>Researcher’s journal, student semi-structured interviews, closed-ended surveys</td>
<td>The podcasts were viewed very positively by the students, yet some students remarked on initial technical difficulties when accessing the podcasts.</td>
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<td>O’Connor and Gatton (2004)</td>
<td></td>
<td>Implementing CALL in a university EFL program</td>
<td>Pre-experimental</td>
<td>About 300 students underwent the project from beginning to advanced levels of spoken English</td>
<td>Test scores</td>
<td>Real improvements were seen in the students’ performances in English tests</td>
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<td>Ogata, Feng, Hada, and Yano (2000)</td>
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<td>Describes a markup-based Communicative correction system called Communicative</td>
<td>Pre-experimental</td>
<td>N=6 in a Japanese language learning class at Fukui Prefectural University in Japan</td>
<td>Error frequency counts, writing error data</td>
<td>CoCoA is an effective environment for learning writing for foreign language students</td>
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<td>99</td>
<td>Osuna, (2000)</td>
<td>What happens when students used the Internet to gain cultural knowledge</td>
<td>Pre-experimental</td>
<td>WWW, PowerPoint</td>
<td>23 college level Spanish students</td>
<td>Closed-ended surveys, journals, conversations, observations</td>
<td>Learning can be assisted by computers when tasks are framed within a socio-constructivist model.</td>
</tr>
<tr>
<td>100</td>
<td>Patten and Valcarcel (2007)</td>
<td>Focusing on using Apple iPods with English-language learners (ELLs) to promote reading, writing, and listening skills</td>
<td>Action research</td>
<td>Podcasts</td>
<td>Four schools: two elementary schools and two middle schools in rural and urban locations</td>
<td>Journal writing, recordings of book talks, and student test scores on Accelerated Reader tests</td>
<td>Increase in student interest in reading, an increase in the amount of depth in journal writing, and an increase in comprehension and vocabulary use.</td>
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<td>101</td>
<td>Payne and Whitney (2002)</td>
<td>Testing the hypothesis that synchronous CMC can indirectly improve L2 oral proficiency</td>
<td>True experimental</td>
<td>Synchronous CMC</td>
<td>58 volunteers of 3rd semester Spanish course</td>
<td>Test scores</td>
<td>Experimental students scored higher than control groups in oral proficiency development.</td>
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<td>102</td>
<td>Pellettieri (2000)</td>
<td>Using chatting in developing grammatical competence for American learners of Spanish</td>
<td>Pre-experimental</td>
<td>Ytalk software program</td>
<td>20 American students of undergraduate Spanish (intermediate level) at University of California</td>
<td>Transcripts of language data produced by students</td>
<td>Task-based synchronous network-based chatting can foster negotiation of meaning and form-focused interaction.</td>
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<td>103</td>
<td>Puakpong (2008)</td>
<td>Effect of an individualised CELL Listening Program on student’s listening ability in EFL universities</td>
<td>Pre-experimental</td>
<td>MMExplore</td>
<td>20 first year students at Suranaree University of Technology in Thailand</td>
<td>Test scores, log files, questionnaires, interviews</td>
<td>Observable gain in student listening comprehension ability; students’ positive attitude toward the program.</td>
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<td>104</td>
<td>Putman and Kingsley (2009)</td>
<td>Exploring the use of podcasts to develop science vocabulary</td>
<td>True experimental</td>
<td>Podcasts</td>
<td>58 students of a suburban school</td>
<td>Test scores</td>
<td>Experimental students had significant improvement in vocabulary development and were more motivated in learning science vocabulary.</td>
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<td>105</td>
<td>Qasim and Fadda (2013)</td>
<td>Investigating effectiveness of podcasts on EFL higher</td>
<td>True experimental</td>
<td>Podcasts</td>
<td>46 female Saudi EFL students in higher education</td>
<td>Test scores, questionnaires</td>
<td>Significant differences between the two groups, favouring the experimental group in terms of listening comprehension.</td>
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<td>106</td>
<td>Raith (2009)</td>
<td>Investigating the use of weblogs in language education</td>
<td>Comparative</td>
<td>Weblogs</td>
<td>29 single cases</td>
<td>Questionnaires, journals</td>
<td>Higher motivation and positive attitudes toward podcast use</td>
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<tr>
<td>107</td>
<td>Reeder Shapiro, Early, Kendrick, and Wakefield (2008)</td>
<td>Effectiveness of automated speech recognition (ASR) software for ESL learners in early school years</td>
<td>True experimental</td>
<td>Reading Tutor (RT) prototype research software</td>
<td>49 boys and 32 girls of five schools, grades 2 to 6, aged 7 years 3 months to 12 years 2 months, from Hindi-Urdu, Mandarin, Spanish-speaking home language backgrounds</td>
<td>Test scores, closed-ended surveys, interviews</td>
<td>Most other language background students outperformed Spanish speaking students on all measures. Low proficiency group made greater gain than higher proficiency groups and native speakers; RT had positive affective impacts on students from all language groups and English proficiency levels</td>
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<td>108</td>
<td>Roche and Scheller (2008)</td>
<td>Application of grammar animations in grammar teaching</td>
<td>True experimental</td>
<td>Animated program for grammar teaching</td>
<td>89 first year university students aged 17-22, Russian speakers, intermediate to advanced students of German, enrolled in German Studies / translator program,</td>
<td>Test scores, questionnaires</td>
<td>Cognitive approach to teaching grammar produces positive performance effects, more motivating to students in foreign language learning</td>
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<td>109</td>
<td>Roed (2003)</td>
<td>Exploring communicative behaviour patterns among 1st and 2nd year students of Danish</td>
<td>Pre-experimental</td>
<td>WebCT chat room</td>
<td>13 1st and 2nd year students of Danish at University of Edinburgh and University College London</td>
<td>Students’ transcripts</td>
<td>A number of advantages for language students when working online: no accent distracting, no time pressure, no interruptions from teachers or peers, no immediate reactions, increased participation; there are minor disadvantages</td>
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<td>110</td>
<td>Romeo and Hubbard (2010)</td>
<td>developing a pervasive learner training component for an advanced ESL listening comprehension course to help students work</td>
<td>Pre-experimental</td>
<td>CALL-based materials</td>
<td>14 students in a morning section (3 students) and an afternoon section (11 students), from Korea, China,</td>
<td>Pre/post surveys, pre/post listening test, individual meeting notes</td>
<td>There is considerable room for refinement of the process, positive attitudes and performance of students</td>
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<td>Study ID</td>
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<td>Design</td>
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<td>Measures</td>
<td>Findings</td>
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<td>111</td>
<td>Sathe and Waltje (2008)</td>
<td>Investigating effects of an iPod project on language students</td>
<td>Pre-experimental</td>
<td>A set of iPods equipped with iTalk Recorder Plugins</td>
<td>9 classes of 121 students and their instructors</td>
<td>Students perceived they benefited from the project, and had positive attitudes toward iPod use in learning</td>
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<td>112</td>
<td>Schultz (2000)</td>
<td>Comparing effects of two process-approach formats, one computer-based and one face-to-face, on intermediate-level French students’ writing</td>
<td>True experimental</td>
<td>InterChange computer program</td>
<td>54 students participated in essay analysis, and 106 students participated in attitude questionnaire</td>
<td>For less advanced students, face-to-face interaction produced quantitatively more changes and qualitatively more extensive changes in content than Interchange; when advanced students alternate formats, they make much more interpretative-level content changes than in either pure mode</td>
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<td>113</td>
<td>Schwienhorst (2008)</td>
<td>Seeking to show whether CALL environments support learner autonomy development</td>
<td>Pre-experimental</td>
<td>MOO tandem project</td>
<td>22 German students and 29 Irish students at Trinity College Dublin</td>
<td>Two main strengths of MOO: learners in a virtual environment share same reference points and mental model for communication (compared to authentic environments); synchronous MOO tandem partnership forces learners to take responsibility for and control over their learning process</td>
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<td>114</td>
<td>Shen, Suwanthep and Zhang (2012)</td>
<td>Exploring effects of an e-learning platform EFL Chinese learners</td>
<td>True experimental</td>
<td>E-learning platform</td>
<td>6 classes of 50 students each (total of 300), of high, medium, and low proficiency; 2nd year non English majors at Guizhou University</td>
<td>Significant increase in experimental students` speaking proficiency; students may be motivated to practice with the platform, but some may be anxious.</td>
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<td>115</td>
<td>Shucart, Mishina, Takahashi, and</td>
<td>Using the CALL lab to facilitate autonomous learning</td>
<td>Pre-experimental</td>
<td>Computers and the Internet</td>
<td>About 240 students</td>
<td>Most students had a very positive attitudes toward computer use in language classrooms, and improved their language proficiency</td>
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<td>Author(s)</td>
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<td>116</td>
<td>Simon, Laine, Seppanen, Barata, and Carvalho (2009)</td>
<td>Exploring experience of Languages for E-commerce Course (LAFEC) for language skills acquisition</td>
<td>Pre-experimental MOODLE e-learning of 6 modules</td>
<td>28 students from Latvia, China, Portugal, Poland</td>
<td>Interviews</td>
<td>Although only 8 students remained till the end, they had positive opinions about the course; some students produced high-quality work, learned principles of good Web communication, were able to apply knowledge to their own work</td>
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<td>117</td>
<td>Smidt and Hegelheimer (2004)</td>
<td>Investigating effects of authentic web-delivered video on incidental vocabulary acquisition and listening enhancement</td>
<td>Pre-experimental Authentic web-delivered video</td>
<td>24 ESL adult learners of English (aged 18-42) at a major Midwestern university in the US</td>
<td>Test scores, questionnaires, interviews</td>
<td>Multiple media helped to enhance listening comprehension, incidental vocabulary acquisition, and self-study purposes</td>
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<tr>
<td>118</td>
<td>Smith (2003a)</td>
<td>Examining task-based, synchronous CMC among intermediate-level learners of English</td>
<td>Pre-experimental Synchronous CMC</td>
<td>14 nonnative-nonnative dyads of 2 intact classes of non-matriculated, intermediate-level students of intensive English classes at a large Midwestern university</td>
<td>Analysis of transcripts</td>
<td>Learners negotiated for meaning in the CMC environment when non-understanding occurs; engaged in frequent negotiation of meaning about 1/3 of turns focusing on low frequency lexical items; delays between turns negotiations</td>
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<td>119</td>
<td>Smith (2003b)</td>
<td>Examining communication strategy use by adult learners of English in a computer-mediated environment</td>
<td>Pre-experimental ChatNet (CMC)</td>
<td>18 intermediate low level ESL students at an American university, of mixed L1 backgrounds</td>
<td>Analysis of transcripts</td>
<td>Learners used a wide array of communication strategies during task-based CMC; CMC environment shaped this use. Learners also employed various compensatory strategies while navigating the tasks</td>
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<td>120</td>
<td>Sotillo (2000)</td>
<td>Comparison between synchronous and asynchronous chat in discourse functions and syntactic complexity</td>
<td>Quasi-experimental IRC (Internet Relay Chat) and the discussion forum on the World Wide Web</td>
<td>25 students from two advanced ESL writing classes</td>
<td>Teachers’ and students’ moves counts, discussion transcripts</td>
<td>Wider variety discourse functions in synchronous discussion, but syntactically more complex language output in asynchronous discussion</td>
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<td>Study Title</td>
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<td>122</td>
<td>Stockwell and Harrington (2003)</td>
<td>Examining effects of email interactions on incidental development syntax and vocabulary of L2 students</td>
<td>Pre-experimental</td>
<td>Email</td>
<td>Students’ emails analysis; these ideas to others; they produced shorter messages with more accuracy in shorter time, and more complex structures with less accuracy in longer time.</td>
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<td>123</td>
<td>Sun (2009)</td>
<td>Investigating the use of voice blogs in developing speaking skills</td>
<td>Pre-experimental</td>
<td>Voice blogs</td>
<td>46 college students in Taiwan in two oral communication classes of a Taiwanese university; Blogs, student closed-ended surveys, interviews; students developed blogging stages (conceptualizing, brainstorming, articulation, monitoring, evaluating), used a wide variety of strategies to cope with blogging-related difficulties; students perceived blogging as a means of learning, self-presentation, information exchange, social networking.</td>
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<td>124</td>
<td>Sun, Chen, and Oson (2013)</td>
<td>Developing and implementing an online Chinese program</td>
<td>Case study</td>
<td>PowerPoint, Camtasia, Desire to Learn (D2L) Course Management System, Webcam video applications, Skype Pro, video recording studio, other Web 2.0</td>
<td>Students of online entry-level Chinese course at a Midwestern University in the US; Online student survey, student reflections, course system data, student Facebook activities; Most successful: daily video clips, students were most consistent in completing daily course requirements, developed proficiency at similar rate as face-to-face learning student; students held positive attitudes toward the course, several expressed interest in continuing online learning.</td>
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<td>125</td>
<td>Taylor and Gitsaki (2004)</td>
<td>Implementing Web-enhanced language learning (WELL) for EFL teaching</td>
<td>Pre-experimental</td>
<td>Web-based activities</td>
<td>106 Japanese university freshmen taking EFL pre-intermediate level; Interviews, closed-ended + open questionnaires; Students found that WELL was a valuable tool, making EFL course more interesting, but may be better for certain aspects (culture, vocabulary, but not grammar).</td>
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<td>126</td>
<td>Thorson (2000)</td>
<td>Differences in writing in L1 and L2</td>
<td>Pre-experimental</td>
<td>J-Edit, a word-processing program</td>
<td>18 students of German at college level; Trace-It program statistics, playback system data; Students wrote less in L2, but revised more than when writing in L1.</td>
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<td>Methodology</td>
<td>Technological Tools</td>
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<tr>
<td>127</td>
<td>Timuçin (2006)</td>
<td>Implementing CALL in an EFL context in a Turkish university</td>
<td>Case study</td>
<td>CALL</td>
<td>14 teachers of a state university in Turkey</td>
<td>Closed-ended + open-ended questionnaires, interviews</td>
<td>The majority of teachers stated CALL is worthwhile with presence of teachers, and administration role is important for CALL implementation success</td>
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<td>128</td>
<td>Ting (2011)</td>
<td>Examining podcast use for ESL teacher students in Hong Kong</td>
<td>Case study</td>
<td>Podcasts</td>
<td>Two groups of students (IELTS preparation and classroom language modules), aged 21-25; 116 students</td>
<td>Closed-ended / open-ended questionnaires, interviews</td>
<td>Students’ positive attitudes toward podcast use; but just over half (54%) of them believed that podcasting would be useful for primary and secondary students</td>
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<td>129</td>
<td>Travis and Joseph (2009)</td>
<td>Exploring potential role of Web 2.0 technologies and podcasting to act as a transformational force within language education</td>
<td>Pre-experimental</td>
<td>Podcasts</td>
<td>Advanced learners of English (number not known)</td>
<td>Interviews,</td>
<td>Participants enjoyed experience, some made friendships with speaking partners</td>
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<td>130</td>
<td>Tsiriga and Virvou (2004)</td>
<td>Evaluating a Web-based ICALL system</td>
<td>True experimental</td>
<td>Web-based ICALL</td>
<td>102 students of 5th and 6th grades of an elementary school</td>
<td>Students’ logs, ICALL system feedbacks, closed-ended questionnaires</td>
<td>Students gained more knowledge of domain, more effective interaction with the ICALL system</td>
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<td>131</td>
<td>Ulitsky (2000)</td>
<td>Adult learning strategies in a multimedia environment</td>
<td>Pre-experimental</td>
<td>Destinos in Spanish and French in Action on laserdiscs</td>
<td>27 pre-service and in-service teachers</td>
<td>Interviews, open-ended questionnaires, journals</td>
<td>Participants preferred interacting with real-people in real situations. They needed feedback.</td>
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<td>132</td>
<td>Vinagre and Lera (2008)</td>
<td>The role error correction plays in fostering language development by email tandem exchanges</td>
<td>Pre-experimental</td>
<td>Email</td>
<td>10 specialist learners of English (advanced level) at Nebrija University, and 9 non-specialists learners of Spanish (beginner’s or intermediate level) at Trinity College Dublin</td>
<td>Email content (discourse analysis and errors counts)</td>
<td>Corrective feedback, especially in form of remediation, can foster language development in online exchanges since it encourages recycling of errors in later email</td>
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<tr>
<td>Page</td>
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<td>Methodology</td>
<td>Research Setting</td>
<td>Data Collection Methods</td>
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<td>133</td>
<td>Viswanathan (2009)</td>
<td>Using mobile technology and podcasts to teach soft skills</td>
<td>Action research</td>
<td>EFL/ESL podcasts</td>
<td>1st-year students in management studies in an Indian institution</td>
<td>Students’ feedback, written scripts, interviews,</td>
<td>Students appreciated the idea of uploading dialogues using podcast format, students concentrated more on communication skills</td>
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<td>134</td>
<td>Wang (2008)</td>
<td>Effect of training paradigms of extra-curriculum CALL activities for learning Mandarin tones in pedagogical contexts</td>
<td>True experimental</td>
<td>Perceptual Training (Auditory Input) and Perception and Production Training (Audio and Visual Input)</td>
<td>18 undergraduates of introductory Chinese level at a US university</td>
<td>Test scores</td>
<td>Both training groups improved significantly in perceptual accuracy and production accuracy of Mandarin tones compared to control group</td>
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<td>135</td>
<td>Wang (2011)</td>
<td>Investigating the effect of Computer-Assisted Whole Language Instruction on Taiwanese University Students’ English Learning</td>
<td>Pre-experimental</td>
<td>Computer-assisted whole class instruction</td>
<td>212 freshmen at National Kaohsiung University of Applied Sciences, Taiwan</td>
<td>Test scores, questionnaires</td>
<td>Most students evaluated the instruction positively; integrated instruction is effective in improving students’ reading ability (p=0.00), basic-level students had much greater improvement than advanced-level level students</td>
</tr>
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<td>136</td>
<td>Warschauer (2000)</td>
<td>Implementing online learning in ESL classrooms</td>
<td>Pre-experimental</td>
<td>Online learning</td>
<td>An undergraduate ESL writing class in a Christian college, a graduate ESL writing class in a public university, a writing-intensive undergraduate Hawaiian language class in a public university, an undergraduate English writing class at a community college</td>
<td>Interviews with students and teachers, audio and video taping of class sessions, students’ email messages and other electronic texts, participant observation</td>
<td>Computer use raises students’ expectation for full participation and determination of meaningful activity; authentic purpose generally coincides with rhetorical appropriateness; students were more motivated by online tasks perceived as larger, more important goals than those considered as meaningless by students; the Internet appears to be a particularly important medium for fostering exploration and expression of cultural and social identity</td>
</tr>
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<td>137</td>
<td>Watson and Miller (2013)</td>
<td>Investigating effects of a computer-based perceptual training program on ESL adult</td>
<td>Pre-experimental</td>
<td>Speech Perception Assessment and Training Program for ESL (SPATS-)</td>
<td>12 talkers, aged 21-80</td>
<td>Students’ performances</td>
<td>Most students achieved near-native recognition of English sounds and words in sentences spoken at normal conversational rates</td>
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<tr>
<td>138</td>
<td>Wehner, Gump, and Downy (2011)</td>
<td>Investigating effects of Second Life on motivation of undergraduate foreign language students</td>
<td>Quasi-experimental</td>
<td>Second Life</td>
<td>2 groups (each of 21 students) at a large university in the south-eastern United States, 2nd semester Spanish course</td>
<td>Attitude closed-ended surveys</td>
<td>Second Life group generally had a slightly more positive attitude toward Spanish culture and Spanish courses and higher motivation than control group</td>
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<td>139</td>
<td>Weinberg, Knoerr, and Vandergrift (2011)</td>
<td>Exploring the use of podcasts to support Anglophone French Immersion (FI) students in academic listening</td>
<td>Pre-experimental</td>
<td>Podcasts of academic lectures</td>
<td>75 1st-year students, 10 volunteers for focus group,</td>
<td>Closed-ended + open-ended questionnaires, focus group discussion</td>
<td>Most students enjoyed the podcasts and found them moderately useful (though with some contradictions); focus group discussion showed a somewhat higher degree of satisfaction both in enjoyment and usefulness</td>
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<td>140</td>
<td>Winther (2012)</td>
<td>Exploring the effects of CALL on language learners</td>
<td>Pre-experimental</td>
<td>Visual interactive syntax learning (Visl) tool / courseware</td>
<td>36 Danish students of English in two groups: EAP and ESP</td>
<td>Test scores</td>
<td>The courseware was effective for metalinguistic curriculum and acquisition of English structures (e.g. tenses and adverbials), but not for morphology</td>
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<tr>
<td>141</td>
<td>Yang (2001)</td>
<td>Effects of the world wide web on EFL learners’ attitudes and perceptions</td>
<td>Pre-experimental</td>
<td>Web resources</td>
<td>55 second-year EFL students at an American junior college</td>
<td>Observations, closed-ended + open-ended surveys</td>
<td>Most learners found the Web useful despite some technical problems; most students found their initial experiences with the Web to be a combination of positive, rewarding, constructive, empowering, exciting, and challenging; they appreciated the ease of accessing and viewing dynamic multiple information.</td>
</tr>
<tr>
<td>142</td>
<td>Xing, Zou, and Wang (2013)</td>
<td>Investigating the use of wiki platform for language and intercultural communication</td>
<td>Pre-experimental</td>
<td>Wiki platform</td>
<td>24 English students of Chinese (UK university) and 31 Chinese students of English (university in China), aged 19-21</td>
<td>Interviews, written messages, questionnaires</td>
<td>Students gained understanding of each other’s culture (business norms, rules, behaviours, business practices), thus empowered with rich experience of learning</td>
</tr>
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<td>143</td>
<td>Yang and Chen (2006)</td>
<td>Investigating the use of Internet tools in language learning</td>
<td>Case study</td>
<td>“Advanced Joint English Teaching” (AJET) project: incorporating</td>
<td>44 10th-grade male students and their teacher</td>
<td>Closed-ended + open-ended questionnaires, interviews, e-</td>
<td>Most learners were positive about potential of the Internet and believed that it can promote and enhance language learning by blending</td>
</tr>
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<td>144</td>
<td>Yu (2008)</td>
<td>Applying WebCT questionnaire to develop outside-class activities for students to internalise grammar rules</td>
<td>Pre-experimental</td>
<td>WebCT questionnaire</td>
<td>38 Chinese students of English</td>
<td>Closed-ended + open-ended questionnaires</td>
<td>Students were more motivated, participated in activities of testing and refining hypotheses than in the past, and were exposed to more inter-language samples</td>
</tr>
<tr>
<td>145</td>
<td>Zähner, Fauverge, and Wong (2000)</td>
<td>Establishing how well broadband telecommunications networks are suited to educational / language learning needs</td>
<td>Pre-experimental</td>
<td>LAVEARGE project (designing and implementing a network-based language learning environment)</td>
<td>28 university students of French in the UK, and 16 university students of English in France</td>
<td>Pre-trial questionnaire, post-trial questionnaire, interviews, session transcripts, system automatic tracking</td>
<td>LEVERAGE system was effective in supporting collaborative learning</td>
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<tr>
<td>146</td>
<td>Zhao (2013)</td>
<td>Arguing for a design framework of Computer-Supported Collaborative Learning (CSCL) environment for Chinese tertiary English students</td>
<td>Quasi-experimental</td>
<td>Computer-Supported Collaborative Inquiry Learning (CSCIL)</td>
<td>102 students: 53 for CSCIL group and 49 for regular-project based learning group</td>
<td>Exam results, survey, essays, focus group interviews</td>
<td>CSCIL group have significant higher gains in conceptual understanding and argumentative construction</td>
</tr>
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</table>
Appendix 1b: Research Studies on Computer Use in Second Language Learning (1990-1999)

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<tr>
<th>No</th>
<th>Reference</th>
<th>Research Focus</th>
<th>Research Design</th>
<th>Technology Used</th>
<th>Sample Size and Grade Level</th>
<th>Research Instruments</th>
<th>General Findings</th>
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<tbody>
<tr>
<td>1</td>
<td>Adair-Hauck Willingham-Mclain, and Youngs (1999)</td>
<td>Reports findings of an assessment of the integration of Technology enhanced language learning into a second semester college-level French course</td>
<td>True experimental</td>
<td>Dasher, instructional videos, online spellchecker, and online French / English Glossary</td>
<td>33 second semester French students</td>
<td>Closed-ended + open-ended questionnaires, test scores, quiz, interviews</td>
<td>In reading and writing and on overall achievement tests, students with technology enhanced language learning outperformed those who were in a traditional learning environment.</td>
</tr>
<tr>
<td>2</td>
<td>Beauvois (1994)</td>
<td>Attitudes and motivation toward computer assisted classroom discussion</td>
<td>Pre-experimental</td>
<td>InterChange (Daedalus)</td>
<td>41 college students in third semester of French course</td>
<td>Surveys, interviews</td>
<td>Students reported the positive attitudes and motivation in the use of CACD.</td>
</tr>
<tr>
<td>3</td>
<td>Beauvois (1998)</td>
<td>Exploring affective benefits of real-time computer networking to enhance student communication in the foreign language classroom.</td>
<td>Pre-experimental</td>
<td>LAN</td>
<td>41 students (20 women and 21 men) ranging in age from 18 to 22, with one 47-year-old, in third-semester of French</td>
<td>Closed-ended surveys, interviews</td>
<td>Students reported positive attitudes toward networking (from enjoyment to strong enthusiasm)</td>
</tr>
<tr>
<td>4</td>
<td>Beauvois and Eledge (1996)</td>
<td>Personality types and students’ attitudes toward CMC</td>
<td>Pre-experimental</td>
<td>Interchange (Daedalus)</td>
<td>19 students in an intermediate French course</td>
<td>Closed-ended + open-ended questionnaires, portfolios, interviews</td>
<td>Students’ perceived benefits from linguistic, affective, interpersonal perspectives</td>
</tr>
<tr>
<td>5</td>
<td>Blyth (1999)</td>
<td>Implementing a culture-based Language programme</td>
<td>Pre-experimental</td>
<td>CD-ROM multimedia and Internet</td>
<td>216 college level, beginning French</td>
<td>Closed-ended + open-ended questionnaires, logs, interviews</td>
<td>Students showed overwhelming support for the multimedia programme, but felt that cultural activities were a distraction from “more important” grammar and</td>
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<td></td>
<td>Author(s) (Year)</td>
<td>Description</td>
<td>Design</td>
<td>Participants</td>
<td>Methodology</td>
<td>Findings</td>
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</table>
| 6 | Borrás (1993)   | Chronicles the development and evaluation of PSF software, a multimedia program designed to assess the effects of subtitled video on oral communication | Pre-experimental     | Practicing Spoken French (PSF) authored with HyperCard 2.1 and Voyager VideoStack | 44 college students in an intermediate French reading conversation course and an intermediate French Reading course | Closed-ended questionnaires, test scores, observations

PSF has some limitations; however, overall, it was determined to be an effective FL learning / teaching tool (e.g. PSF created a meaningful learning context and provided a tension-free environment). |
| 7 | Brandl (1995)   | Investigating whether level of achievement and difficulty of task influenced students’ preferences for feedback options when doing computerised grammar exercises | Pre-experimental     | Computerised “The German Passive Voice Tutor” | 21 students in 3rd-semester language course at Department of German at University of Texas at Austin | Online record and interview protocol

Achievement and difficulty of task had not significant impact; all students preferred right or wrong (RW) option over error location (SE), grammatical description of correct response (F) and correct answer (A) options; deficiency in low-achievers’ skills may contribute to lowering their engagement in cognitive and motivational processing |
| 8 | Brett (1997)    | Which medium is better to teach listening skills?                             | Comparative          | CD-ROM- English for Business | 49 college advanced English learners | Test scores, closed questionnaires

Gains in learning in multimedia environment were reported |
| 9 | Bump (1990)     | Effects of a real time networking program (InterChange) in the classroom discussion | Pre-experimental     | InterChange (Daedalus) | 18 students in a freshman English class; 33 seniors of English; 12 graduate students of English | Closed-ended + open-ended questionnaires,

Increased student participation, esp., equal participation from those traditionally marginalised including women and shy students. |
| 10| Cahill and Catanzaro (1997) | To compare the writing performance of Electronic messaging system, multimedia, and the world wide | Quasi-experimental | 1st year university Spanish students: | Test scores

“On-line” students outperformed students who were enrolled in |
<table>
<thead>
<tr>
<th></th>
<th>Students enrolled in an online Spanish course with those enrolled in traditional classroom-based sections of Spanish</th>
<th>Web</th>
<th>43 students in traditional courses and 20 students in the online class (N=63)</th>
<th>Traditional classroom-based sections</th>
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<tbody>
<tr>
<td>11</td>
<td>Carel (1999)</td>
<td>Pre-experimental</td>
<td>Multimedia</td>
<td>Students using ethnographic procedures to learn pragmatic features</td>
</tr>
<tr>
<td>12</td>
<td>Chang and Smith (1991)</td>
<td>True experimental</td>
<td>Computer based interactive video</td>
<td>Which is better? Using CALL working alone or in pairs?</td>
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<tr>
<td>13</td>
<td>Chávez (1990)</td>
<td>Pre-experimental</td>
<td>Word processing in WTR laboratory</td>
<td>1 of 3 research questions was relevant: What types of primary or second language story writing patterns will develop within the Writing To Read (WTR)/ESL classroom.</td>
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<tr>
<td>14</td>
<td>Chun (1994)</td>
<td>Pre-experimental</td>
<td>Interchange (Daedalus)</td>
<td>The use of computer assisted classroom discussion and acquisition of interactive competence</td>
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<td>15</td>
<td>Chun and Plass (1996)</td>
<td>Pre-experimental</td>
<td>Cyberbuch for German</td>
<td>How well is vocabulary learned incidentally when the task is reading comprehension? How</td>
</tr>
<tr>
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<td>Effective are different types of annotation? What is the relationship between look-up behavior and performance on vocabulary tests?</td>
<td>Exploratory</td>
<td>Speech recognition software</td>
<td>N=20 (10 native speakers and 10 non-native speakers of English)</td>
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<tr>
<td>16</td>
<td>Coniam (1998)</td>
<td>Exploring the potential for the use of speech recognition technology to test the oral proficiency of ESL learners</td>
<td>Pre-experimental</td>
<td>Computer-based text on software authored by the researchers based on the Bernhardt model of L2 reading</td>
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<td>Davis and Lyman-Hager (1997)</td>
<td>How helpful is the use of glossing?</td>
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<td>MOO</td>
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<td>18</td>
<td>Donaldson and Kotter (1999)</td>
<td>Using Internet to increase language skills</td>
<td>Pre-experimental</td>
<td>The computer (in general)</td>
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<tr>
<td>19</td>
<td>González-Edfelt (1990)</td>
<td>Explores the computer as a tool for verbal/social interaction (i.e. students’ preference to work in groups at the computer). Can the computer provide opportunities for student interaction?</td>
<td>Pre-experimental</td>
<td>Three quantitative questions, statistical data on text indicators</td>
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<tr>
<td></td>
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<td>Title</td>
<td>Design</td>
<td>Methodologies</td>
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<td>20</td>
<td>González-Bueno (1998)</td>
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<td>Grace (1998a)</td>
<td>CALL and gender differences in vocabulary retention and access to translations</td>
<td>True experimental</td>
<td>CD-ROM with French program</td>
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<td>Grace (1998b)</td>
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<td>Personality types and vocabulary retention</td>
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<td>24</td>
<td>Gunn and Brussino (1997)</td>
<td>Integrating CAL (Computer Aided Learning) in teaching Italian</td>
<td>Pre-experimental</td>
<td>CAL included in courses</td>
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<td>27</td>
<td>Jaeglin (1998)</td>
<td>Investigating teachers’ and students’ attitudes toward computer-assisted class discussion</td>
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<td>Daedalus InterChange software</td>
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<td>Jakobsdottir</td>
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<td>and Hooper (1995)</td>
<td>Listening Comprehension</td>
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<td>students learning Norwegian.</td>
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<td>29 Johnston and Milne (1995)</td>
<td>Scaffolding L2 communicative discourse using software The Teacher’s Partner</td>
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<td>The Teacher’s Partner</td>
<td>1st year French and 2nd year French high school students</td>
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<td>30 Kang and Dennis (1995)</td>
<td>Can CALL improve vocabulary learning?</td>
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<td>Program authored in Hypercard</td>
<td>76 Korean elementary students</td>
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<td>31 Kassen and Higgins (1997)</td>
<td>Introducing foreign language teachers to Language-Learning Technology</td>
<td>Pre-experimental</td>
<td>Language-Learning Technology (LLT) Module</td>
<td>Graduate teaching assistants (number not stated)</td>
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<td>32 Kelm (1992)</td>
<td>Descriptive report on use of computer assisted classroom discussion</td>
<td>Pre-experimental</td>
<td>InterChange (Daedalus)</td>
<td>15 native speakers of English learning Brazilian Portuguese at college level</td>
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<td>33 Kern (1995)</td>
<td>Effects on students’ participation and language output in the electronic discussion</td>
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<td>InterChange (Daedalus)</td>
<td>40 students in French 2 at college level</td>
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<td>The Authors (Year)</td>
<td>Description of Project</td>
<td>Design</td>
<td>Mode</td>
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<td>Kubota (1999)</td>
<td>Description of 4 WWW projects</td>
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<td>WWW</td>
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<td>Lee (1997)</td>
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<td>On-line chat and online newspapers</td>
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<td>Liaw (1997)</td>
<td>Using computer books in an ESL class to encourage discussions</td>
<td>Pre-experimental</td>
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<td>Liaw (1998)</td>
<td>Efficacy of integrating email into EFL classrooms</td>
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<td>40</td>
<td>Liou, Wang and Hung-Yeh (1992)</td>
<td>Can Grammatical CALL help EFL writing?</td>
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<td>Researcher created, drill and practice courseware</td>
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<td>41</td>
<td>Liu (1995)</td>
<td>Contextual aids via hypermedia technology and vocabulary learning</td>
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<td>Hypermedia with videodisc</td>
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<tr>
<td></td>
<td>Authors (Year)</td>
<td>Methodology</td>
<td>Design</td>
<td>Software/Environment</td>
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<td>42</td>
<td>Liu and Reed (1994)</td>
<td>Pre-experimental</td>
<td>Hypermedia with videodisc</td>
<td>63 international students studying English in a university Intensive English Program</td>
</tr>
<tr>
<td>43</td>
<td>Liu and Reed (1995)</td>
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<td>63 ESL students, college level</td>
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<td>44</td>
<td>Lomicka (1998)</td>
<td>True experimental</td>
<td>Glossing Authentic Language Texts (Galt) program adapted from Une vie de Boy software</td>
<td>12 second semester French students at a university</td>
</tr>
<tr>
<td>45</td>
<td>Meskill (1993)</td>
<td>Case study</td>
<td>Computers</td>
<td>12 ESL college level</td>
</tr>
<tr>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Meunier (1995/1996)</td>
<td>Pre-experimental</td>
<td>Carmen Santiago Software</td>
<td>60 second year college level French</td>
</tr>
<tr>
<td>48</td>
<td>Nagata (1996)</td>
<td>True experimental</td>
<td>CALI computer instruction in grammar</td>
<td>26 college Japanese students</td>
</tr>
<tr>
<td>49</td>
<td>Nagata (1997)</td>
<td>Case study</td>
<td>2 programs to test students’ use of the Japanese particle</td>
<td>14 second year college students studying</td>
</tr>
<tr>
<td></td>
<td>Nagata (1998)</td>
<td>Examines the effectiveness of computer-assisted comprehension practice (input) and production practice (output) on second language acquisition</td>
<td>True experimental</td>
<td>2 programs called Banzai: Honorifics, which was developed in HyperCard by the researchers</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>50</td>
<td>Nagata (1999)</td>
<td>Effectiveness of glossing formats</td>
<td>Quasi-experimental</td>
<td>Software authored by researcher</td>
</tr>
<tr>
<td>51</td>
<td>Nicholas and Toporshi (1993)</td>
<td>Using a program with Russian film clips to promote speaking and writing</td>
<td>Pre-experimental</td>
<td>Program authored in ASYMetrIX TOOLBOOK</td>
</tr>
<tr>
<td>52</td>
<td>Nutta, (1998)</td>
<td>Computer-based grammar instruction and teacher Instruction</td>
<td>True experimental</td>
<td>CALL and English Language Learning and Instruction System (ELLIS) courseware</td>
</tr>
<tr>
<td>53</td>
<td>Oliva and Pollastrini (1995)</td>
<td>Self-assessment of skills and evaluation of tools</td>
<td>Pre-experimental</td>
<td>E-mail, Usenet, Gopher, IRC</td>
</tr>
<tr>
<td>54</td>
<td>Osuna and Meskill (1998)</td>
<td>Role of Internet and cultural learning</td>
<td>Pre-experimental</td>
<td>Internet</td>
</tr>
<tr>
<td>55</td>
<td>Plass, Chun, Mayer, and Leutner (1998)</td>
<td>For whom is multimedia instruction effective?</td>
<td>Pre-experimental</td>
<td>Interactive multimedia</td>
</tr>
<tr>
<td>56</td>
<td>Sciarone and Does autonomy lead to</td>
<td>True experimental</td>
<td>Computer Aided</td>
<td>30 adults seeking</td>
</tr>
<tr>
<td>Study</td>
<td>Title</td>
<td>Design</td>
<td>Context</td>
<td>Methods</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>--------</td>
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<td>---------</td>
</tr>
<tr>
<td>Meijer (1993)</td>
<td>Improved Language learning?</td>
<td>Pre-experimental</td>
<td>Learning systems</td>
<td>admissions to a Dutch University</td>
</tr>
<tr>
<td>Skinner and Austin (1999)</td>
<td>Effects of computer conferences on EFL students motivation for language learning</td>
<td>Pre-experimental</td>
<td>Computer Conferencing software program</td>
<td>22 intermediate to upper-intermediate level learners, mainly from East Asia</td>
</tr>
<tr>
<td>Soo and Ngeow (1998)</td>
<td>Can students working with Interactive media perform better than those in a regular classroom?</td>
<td>True experimental</td>
<td>Multimedia English Language Learning and Instruction System (ELLIS) courseware</td>
<td>188 college level preparing for TOEFL</td>
</tr>
<tr>
<td>Sullivan and Pratt (1996)</td>
<td>Comparing two ESL environments: a computer-assisted classroom and a traditional classroom</td>
<td>Quasi-experimental</td>
<td>Interchange (Daedalus)</td>
<td>38 students second year ESL in Puerto Rico</td>
</tr>
<tr>
<td>Van Bussel (1994)</td>
<td>A series of experiments aimed to help derive design guidelines from work on computer-supported learning of vocabulary in a second language (English)</td>
<td>Quasi-experimental</td>
<td>Computer based word translation tests created by the researcher</td>
<td>Experienced and novice language learners from Dutch elementary students to Dutch university students</td>
</tr>
<tr>
<td>Van der Linden (1993)</td>
<td>Feedback and language learning - Does it help improve writing?</td>
<td>Pre-experimental</td>
<td>CALL for French</td>
<td>23 students first year French, college level</td>
</tr>
<tr>
<td>Van handle and Corl (1999)</td>
<td>Use of e-mail</td>
<td>E-mail and Internet</td>
<td>Not stated</td>
<td>Open-ended questionnaires, interviews, students’ emails</td>
</tr>
<tr>
<td>Warschauer</td>
<td>Equality of student</td>
<td>Pre-experimental</td>
<td>InterChange</td>
<td>16 students from</td>
</tr>
<tr>
<td>Year</td>
<td>Study Title</td>
<td>Research Question</td>
<td>Methodology</td>
<td>Participants</td>
</tr>
<tr>
<td>------</td>
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<td>--------------</td>
</tr>
<tr>
<td>1995/1996</td>
<td>Participation in face-to-face vs. electronic discussion</td>
<td>Advanced ESL composition class at college level ended questionnaires, discussion transcripts in the electronic discussion</td>
<td>Pre-experimental processing, e-mail, the World Wide Web, MOOs.</td>
<td>167 ESL and EFL students in 12 university academic writing courses in Hong Kong, Taiwan, and the US Closed-ended questionnaires</td>
</tr>
<tr>
<td>1996</td>
<td>Warschauer (1996)</td>
<td>Effects of using computers for writing and communication on ESL/EFL students’ motivation</td>
<td>Pre-experimental processing, e-mail, the World Wide Web, MOOs.</td>
<td>167 ESL and EFL students in 12 university academic writing courses in Hong Kong, Taiwan, and the US Closed-ended questionnaires</td>
</tr>
<tr>
<td>1994</td>
<td>Wolach (1994)</td>
<td>Showing how a software developer can be used as the subject in a series of experiments to determine parameters for a program that presents English to Spanish and Spanish to English word pairs</td>
<td>Case study PresenPr.EXE 1 software developer Test data</td>
<td>1 software developer Test data A test with feedback should be administered for a given lesson at 5 to 10 day intervals. Lessons that occur in 3 consecutive days are more effective than repeated lessons on one day. Order of presentation does not seem to matter.</td>
</tr>
</tbody>
</table>
Appendix 2: Teacher Questionnaire

I. Personal Information

1. Your name: ____________________
2. Your preferred pseudonym: ________________
3. Your gender: female ______ male ______
4. Number of years teaching at university: _______
5. Number of hours teaching Listening at university per week (this semester): ________________
6. Your degree: Bachelor_________ Master________ Master_________ PhD________
   If other, please specify: _____________________________________
7. Your title: ☐ Professor ☐ Associate professor
   ☐ Lecturer ☐ Tutor
   If other, please specify: _____________________________________

II. Computer experience

1. How long have you personally been using computers? _____ (years)
   _______ (months)
2. About how many hours per week do you use computers in your professional practice?
   a. In-class teaching _______ (hours)
   b. Teaching preparation _______ (hours)
   c. Administration _______ (hours)
3. Have you received any computer training?
   ☐ Yes: Informal_______ Formal_________ ☐ No
4. Have you been using computers in your language teaching?
   ☐ Yes: About how long? _____ (years) _____ (months)
☐ No

*(If No, please proceed to Part III)*

5. How often do you use computers in the classroom to support your teaching and student learning?
   a. Less than once a month
   b. Once a month
   c. Once a week
   d. Every class

6. How would you rate your computer use in teaching practice?
   a. _____ I do not use computers in actual instruction
   b. _____ The use of computers is supplementary for my instruction
   c. _____ The use of computers is essential for my instruction

*For questions 7 and 8, please indicate:*

Very little: 1     A little: 2     Some: 3     Reasonable amount: 4     Extensive amount: 5

7. Personally, to what extent do you use computers for:

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. word processing</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>b. playing games</td>
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<tr>
<td></td>
<td>c. e-mail</td>
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<td></td>
<td>d. surfing and searching the Internet</td>
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<tr>
<td></td>
<td>e. learning</td>
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</tr>
<tr>
<td></td>
<td>f. chatting</td>
<td></td>
<td></td>
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<td></td>
<td>g. researching</td>
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<td></td>
<td>h. data organisation</td>
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</tr>
</tbody>
</table>
8. In your teaching, to what extent do you use computers for:

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>PowerPoint</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>software accompanying textbooks</td>
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<td></td>
<td></td>
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<tr>
<td>c</td>
<td>movies</td>
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<tr>
<td>d</td>
<td>websites</td>
<td></td>
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<tr>
<td>e</td>
<td>in-class activities</td>
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<td></td>
<td></td>
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<tr>
<td>f</td>
<td>assessment</td>
<td></td>
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<tr>
<td>g</td>
<td>communication with students</td>
<td></td>
<td></td>
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<td></td>
<td>other(s): (please specify):</td>
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</tbody>
</table>

No

0 items
For questions 9, please indicate:

Strongly disagree: 1  Disagree: 2  Neutral: 3  Agree: 4  Strongly agree: 5

9. Reasons (s) why you do not use technology in teaching:

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>no personal confidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>no one modeling technology use for me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>no training or ineffective training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>it has no useful role in teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>no technical support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>it takes too much time for little benefit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>students may be distracted from tasks in class</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>h.</td>
<td>other(s): (please specify):</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

10. How would you rate yourself as a computer user in general:

a. ________ expert
b. ________ above average
c. ________ average
d. ________ below average

III. Attitudes towards technology use in language teaching

Please show the degree of your agreement / disagreement with the following statements by using the scale below:

Strongly disagree: 1  Disagree: 2  Neutral: 3  Agree: 4  Strongly agree: 5

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
1. Computers make my job of teaching listening easier.

2. Computer use in listening classes takes my students away from important instructional time.

3. Computers should be as important and available to students as pencils and books.

4. I am very confident using technology for language teaching.

5. I do not believe the quality of listening teaching is improved by the use of computers.

6. I feel comfortable when confronted with technology.

7. I am concerned that technology may interfere with student interactions.

8. There is enough time to incorporate technology into listening instruction.

9. There are too many kinds of resources to choose from for language teaching.

10. I really enjoy using computers and the Internet in my listening instruction.

11. It is time-consuming and difficult to select good websites for teaching listening skills.

12. I am prepared to learn more about computer--assisted listening instruction.

### IV. My views on teaching and learning

1. How would you describe your preferred teaching style?

   __________________________________________________________

   __________________________________________________________

   __________________________________________________________
2. How do you believe students can best learn listening skills?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. Generally speaking, do you find computers useful for teaching and learning?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

THANK YOU FOR PARTICIPATION!

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS

ETHICS COMMITTEE ON 8/12/2010 for 3 years, Reference Number 2010/606
Appendix 3: Teacher Interview

1. Can you describe how you used computer technology in your teaching listening? Why did you choose to use it?

2. How confident were you using computers in your teaching listening? How would you rate your computer level now? What contributed to that level of confidence?

3. Thinking about the websites used in your listening instruction during the project:
   Probe:
   a. Which did you find most useful? Why?
   b. Which did you find least useful? Why?

4. Can you describe what worked well in your computer-assisted listening instruction? Why? What did not work so well? Why not?

5. How interested were your students in learning listening with computers? What evidence makes you say this? Why would they behave that way in your view?

6. Do you think your students’ learning has benefited through your computer-assisted listening instruction? If yes, what benefit(s) did they have?

7. What do you think helped teachers feel more confident about integrating computers in listening instruction during and after the project?

8. Where would computers fit in your teaching in the future?

9. What challenges would you anticipate using computers in your teaching in the future?

10. Could you suggest any other ways computers can be used in teaching listening skills?

(Prompts: Can you give me an example? Does it happen all the time? How come? Please tell me more! No way! I don’t really get it. I never knew that! Can you be more specific? When?.)

THANK YOU FOR PARTICIPATION!

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 8/12/2010 for 3 years, Reference Number 2010/606
## Appendix 4: Sample of follow-up categories (Part II – Student Questionnaire: Open questions)

<table>
<thead>
<tr>
<th>Categories</th>
<th>Subcategories</th>
<th>Frequency (86 students)</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive aspects</strong></td>
<td>Engagement in learning</td>
<td>55</td>
<td>S-Helen: It was really fun listening while watching people talk and act on the screen. This made us more interested and focused. Learning becomes more motivating that way.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-Tania: I think the good quality pictures and sound, and sometimes parts of a movie or games from online resources helped us to enjoy the classes much more than before. For example, I used to doze off sometimes before but this term, I’ve been quite excited (even) before and during every listening class.</td>
</tr>
<tr>
<td></td>
<td>Usefulness for language learning/ listening learning</td>
<td>49</td>
<td>S-Heather: The computer-mediated listening teaching has helped me improve my listening skills, especially the note-taking skill. I increased my speed and even accuracy of notes taken.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-Tania: With the Internet resources, we’ve learned more new words, varied accents of English, and new cultures of English-speaking countries, which will help to support my listening skills in return.</td>
</tr>
<tr>
<td></td>
<td>Collaboration in learning</td>
<td>41</td>
<td>S-Nancy: As the teacher asked us to search for some information before every class, we started to exchange information about websites and links outside listening classes (we sometimes got together to search things online).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-Heather: We had more group work and pair work in class thanks to multimedia listening texts, and we cooperated with the teacher in both listening practice and technical issues.</td>
</tr>
<tr>
<td></td>
<td>Learner Autonomy</td>
<td>39</td>
<td>S-Helen: I now search the Internet more frequently for online resources for my own listening practice. The websites suggested by the teacher are great, and I practice listening at home more often now.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-Nancy: Online resources make our listening learning more flexible and more effective. We can stay at home improving our listening using the online resources (i.e. Websites and links suggested by the teacher and friends), saving time, energy, and even money travelling anywhere to learn.</td>
</tr>
<tr>
<td><strong>Concerns</strong></td>
<td>Effectiveness in learning</td>
<td>15</td>
<td>S-Tania: Although images support our comprehension, I’m not sure if they are good for listening practice, as we just based on images to guess information sometimes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-Helen: Sometimes we were distracted by technical operation and problems. My concern is if other teachers are not skilled, technical mistakes may have negative effects on the class.</td>
</tr>
<tr>
<td>Topic</td>
<td>Level</td>
<td>Student Comments</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| Less interaction among students / with teacher | 10    | S-Heather: I think looking at the monitor more means communication with the teacher and classmates less.  
S-Nancy: I am afraid that the computer would enable us to work by ourselves, so no need to have the teacher or even other classmates around. |
| Health                                       | 5     | S-Helen: If students spend too much time on the computer, either for study or anything else, it will be harmful to their eyes, heads, and other parts of the body. This also means we don’t do enough exercise sitting in front of the computer screen, which may lead to some diseases. |
| Self-directed learning                        | 16    | S-Nancy: I’m not sure if I would use the computer for self-practice in the future, cuz I would need teachers’ help, feedback, and even encouragement in language skills and strategies.  
S-Tania: I think in-class practice would be enough, and some listening textbooks for outside class practice would be enough, online resources take time to search, and we are not sure whether they are suitable or reliable enough.  |
| Suggestions                                   |       | S-Tania: Without good computer skills, students don’t really know how to search for online resources for listening, or to handle technical problems during practice, which would discourage them from using computers for listening practice.  
S-Heather: There are not enough computer labs available for class teaching and students’ self-practice; some computers at the university are too old and therefore very slow. These should be replaced very soon.  
S-Nancy: I think we all want to get high marks at the exam, so if online resources are both suitable and more relevant to tests at the end of the term, that would be great!  |

**NB:**  
S-Helen: Student in Helen’s class  
S-Tania: Student in Tania’s class  
S-Nancy: Student in Nancy’s class  
S-Heather: Student in Heather’s class
Appendix 5: Student Questionnaire

Name: .......................................................... Male / Female (Please circle)
Class: ....................

I. Attitudes towards technology use in language teaching:
Please show the degree of your agreement / disagreement with the following statements by using the scale below:

*Strongly disagree: 1  Disagree: 2  Neutral: 3  Agree: 4  Strongly agree: 5*

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The teacher used computers in most listening classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.</td>
<td>The computer-assisted teaching contained interesting activities for listening practice.</td>
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<tr>
<td>3.</td>
<td>The computer-assisted teaching contained useful supplementary contents for listening practice.</td>
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<tr>
<td>4.</td>
<td>The listening content taught with the computer was too difficult for me.</td>
<td></td>
<td></td>
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<tr>
<td>5.</td>
<td>The computer-assisted teaching encouraged me to practise listening outside of class time.</td>
<td></td>
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</tr>
<tr>
<td>6.</td>
<td>The computer-assisted teaching helped me improve my listening skills.</td>
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<tr>
<td>7.</td>
<td>The computer-assisted teaching made the listening classes more enjoyable.</td>
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<tr>
<td>8.</td>
<td>I was distracted by the computer-assisted teaching.</td>
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<tr>
<td>9.</td>
<td>I learned more English vocabulary through computer-assisted listening instruction.</td>
<td></td>
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<tr>
<td>10.</td>
<td>I gained more cultural knowledge of English-speaking countries through computer-assisted listening instruction.</td>
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</table>
II. Open-ended questions: *(Please try to be specific by giving EXAMPLES)*

1. What would you find most useful about computer-assisted listening instruction? Why?

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________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. What would you find least useful about computer-assisted listening instruction? Why?

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________________________________________________________________________
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________________________________________________________________________

3. What aspects of computer-assisted listening instruction did you find the most enjoyable? Why?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. What aspects of computer-assisted listening instruction did you find the least enjoyable? Why?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. What comments/suggestions do you have which could improve the use of computers to help you develop your listening skills?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

6. Would you like to have computer-assisted listening instruction in the future? Why / Why not?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

7. Would you like to use computers to practise more listening by yourself in the future? Why / Why not?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

8. Other comments please?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

THANK YOU FOR PARTICIPATION!

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 8/12/2010 for 3 years, Reference Number 2010/606
Appendix 6: Checklist of Teacher Journal

CALL-BASED LISTENING TEACHER JOURNAL

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>Date: .................................................................</td>
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<tr>
<td>2.</td>
<td>Time: .................................................................</td>
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<tr>
<td>3.</td>
<td>Topic taught: .....................................................</td>
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<tr>
<td>4.</td>
<td>Sub-skill(s) taught:</td>
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<tr>
<td>5.</td>
<td>Website(s)/video clip(s): sources, contents:</td>
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<td>6.</td>
<td>Observation/remarks about students’ preparation for classes:</td>
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<td>7.</td>
<td>My computer skills obtained:</td>
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<td>8.</td>
<td>Students’ improvements (language skills, attitudes…):</td>
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<tr>
<td>9.</td>
<td>My feelings/thoughts about computer use in teaching:</td>
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<td>10.</td>
<td>Other comments/suggestions/recommendations:</td>
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</table>
### Appendix 7a: Observation Notes *(Sample 1, p.1)*

<table>
<thead>
<tr>
<th>Teacher's Name</th>
<th>Date</th>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nancy</td>
<td>40/3/2011</td>
<td>2:30 PM</td>
<td></td>
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</tbody>
</table>

**Skills/Subject: Listening for Details (signals, numbers, names)**

- No. of Conns: 25/25 (Missed: 2)
- No. of SS: 8
- SS were not collected in or as part of the lesson.

**Field Notes (Class Observation, Class 1):**

- I observed the class using the Internet
- SS were not observed in the main lesson.

**Discussion:**

- SS were not observed in the main lesson.

**Notes:**

- SS were not collected in or as part of the lesson.

---

*Sample text:*

- SS were not observed in the main lesson.
- SS were not collected in or as part of the lesson.
- SS were not observed in the main lesson.
- SS were not collected in or as part of the lesson.
Appendix 7a: Observation Notes (Sample 1: p.2)

After 1st knit listening: SS exchange information.

2nd time listening: SS take more notes.

SSs' ideas: 1. Add 15 mins. (Similar to 1st class.)

Call 2: SSs' presentations. SSs prepared ahead of time.

Last 5 mins: SSs answer questions.

Add additional material for next class.

[Notes on the page are handwritten and include observations about changes in students' behavior, participation, and notes taken during the class session.]
Appendix 7b: Observation Notes (Sample 2, p. 1)
Appendix 7b: Observation Notes (Sample 2, p. 2)

Note ab. ss.: "something, something..."

SS get more excited, animated.

Due to topic + clip content?

SS get more excited, animated.

Due to topic + clip content?

Some more

T (behind my back) asks to keep

Flexible thm. ups

Enthusiastic, class.

Can't control class (too noisy)

Some more

SS seems more

Halfway through discussion..."As for SS..."

SS do something.

More websites suggested.

More websites suggested.

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Appendix 8: Lesson plan : Class 13: Love (Pages 126 – 131)

Lesson Objective: To enable the students to:
- listen for main ideas
- listen for specific information
- outline notes taken from text
- memorize information
- summarize information

Links for supplementary resources:
- [http://www.youtube.com/watch?v=2rXvKkEoVGk](http://www.youtube.com/watch?v=2rXvKkEoVGk) (3mins)
- [http://www.youtube.com/watch?v=OYfoGTIG7pY](http://www.youtube.com/watch?v=OYfoGTIG7pY) (16 mins)
- [http://www.youtube.com/watch?v=nI25SI-Nd8g](http://www.youtube.com/watch?v=nI25SI-Nd8g) (suggested for homework)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Details</th>
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</table>
| 5’   | Pre-listening (Warm-up activity) | - Students groups (3 – 4) to share information about the topic (Love)  
 - Teacher gives feedback, provides further vocabulary |
| 10’  | Reading and thinking about the topic (pp. 126 – 127) | - Students predict reading text content  
 - Students read and answer questions individually  
 - Teacher gives feedback, explains new words (if any) |
| 7’   | Listening for details (p. 128) | - Students predict content of listening text  
 - Students listen and answer questions  
 - Teacher gives feedback |
| 10’  | Listening and note-taking (p. 128) | - Students listen to listening text once, take down as much information as possible  
 - Teachers reminds students to use abbreviations and symbols  
 - Teacher checks answers with students, corrects any misunderstanding or misinterpretation of information |
| 8    | Listening for specific information (pp. 129-130) | - Students predict listening text content  
 - Students listen and take notes of listening text  
 - Teacher asks students to summarize content based on notes taken |
| 10’  | Note-taking skills (pp. 129-130) | - Students listen to text again to take notes  
 - Teacher asks students to summarize based on notes taken |
<p>| 10’  | Note-taking skills | - Students predict listening text content |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity/Link Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| (p. 131) |                                                                                         | - Students listen to text to take notes once  
- Students summarize based on notes taken  
- Students exchange summary in groups |
| 12’’  | Link 1 (*How I Saved My Marriage*)                                                        | - Students listen once, memorize key information  
- Students exchange information in pairs  
- Second listening: students take notes  
- Teacher gives feedback (on slides)  
- Students discuss in groups the situation in the video clip |
| 25’   | Link 2 (*Helen Fisher: The Brain in Love*)                                                  | - Students listen once, memorize key information, try to take notes during listening  
- Students work in groups exchanging information  
- Second listening: students take notes  
- Teacher gives feedback (on slides)  
- Students discuss in groups the situation in the video clip |
| 18’   | Group presentation                                                                       | - Teacher divides students into groups of 4 for discussion (5’)  
- Group presentations (2 minutes each) |
| 5’    | Wrap Up                                                                                  | - Quick review of listening sub-skills and contents  
Homework assigned:  
- [http://www.youtube.com/watch?v=nI25SI-Nd8g](http://www.youtube.com/watch?v=nI25SI-Nd8g)  
(Students listen and take notes of the video clip content at home)  
- search for information about "Adulthood" (next class topic) |
Appendix 9: Sample of CALI-Teacher Training Workshop Slides

MORNING SESSION
Welcome, workshop objectives, overview (8:00)
8:30 AM: Group Discussion: CALL advantages and disadvantages, your computer skills experience
9:30 AM: Presentation on CALL + cognitive theory and multimedia
Coffee Break (10:00 – 10:30 AM)
10:30: Presentation on constructivism + 11:00: Group Discussion: Cognitive theory and multimedia + Constructivist approach

Overview of Constructivism
- Learners construct own understanding & knowledge of the world through experiencing things and reflecting on those experiences
- Learning is an active, contextualized process of constructing knowledge rather than acquiring it
- Information must be mentally acted on, manipulated, and transformed by learners in order to have meaning

Checklist
Constructivist Trends
- Authentic Learning/Authentic Assessment
- Authentic Products
- Messy Problems/Real Problems
- Implicit Instruction/Discovery
- Apprenticing
- Student empowerment
- Teacher as “Guide on the side”
- Collaborative/Co-operative learning

AFTERNOON SESSION
Online resources exploration and use
13:00:
- Presentation and discussion:
  - Sets of websites evaluation criteria
  - Watch this video clip
  - Guidance and modelling
Coffee Break (15:00 – 15:30)
15:30:
- Teachers’ practice with guidance
- Teachers’ exchange of views
Wrap-up (16:30 – 17:00)
Model by Roblyer (2006)

- To Foster creative problem solving and meta-cognition

<table>
<thead>
<tr>
<th>Integration Strategies</th>
<th>Needs/ Addressed</th>
<th>Problems</th>
<th>Example Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>Video-based scenarios pose problem, help support student problem solving.</td>
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<td>Graphic tools illustrate concepts and support students manipulation of variables.</td>
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<td>Limitations allow exploration of how systems work.</td>
</tr>
</tbody>
</table>

Applying Constructivism in Classroom

- Lessons with “hands-on” experimentation, problem solving, logical reasoning, and authentic learning.
- Teachers behave in an interactive manner mediating the environment for students where student questions are highly valued.

Selecting CALL Materials for Listening Skills

- Screening:
  - Establish rough academic and functional criteria.
  - Find potential sites by using meta sites or published materials.
  - Visit many sites and use their own rough criteria to bookmark a shortlist of sites for evaluation (Susser & Robb, 2004).

Extensive Resources Online

Podcast for Teaching Listening

- British Council: http://teachenglish.britishcouncil.org/elementary-podcasts/
- BBC: http://www.bbc.co.uk/podcasts/worldservice/germanlearning
- VOA Learning English: http://learningenglish.voanews.com/Podcast/0.html

Podcasting tools

- Audioboo – http://audioboo.fm/
- Voxopp – http://www.voxopp.com/
- VoiceThread – http://voicethread.com/
- Podomatic – http://www.podomatic.com/
- Audacity – http://audacity.sourceforge.net/

Why Yang & Chan (2008)?

- Based on a thorough literature review.
- Evaluated and refined through interviews with teachers and learners.
- Validated and finalized with expert validity surveys.
- Investigated, established, validated thoroughly on theoretical and empirical foundations.

Applying Constructivism in Classroom

- Teachers should seek the student’s point of view in order to understand student learning and plan for subsequent lessons.
- Assessment of student learning should be interwoven with teaching and occur through teacher observation of students at work and through presentations and portfolios.

- Other websites
  - Listen to lectures online → http://spear.uc也没有_onbudlecture_main.html
  - Free audiobooks → http://www.booksnobodfree.com
  - Songs worksheet → www.musicalsheets.com/music/music-index.html

Teaching LISTENING with technologies

- Used courtesy of Standards Learning (Thank you for sharing)