University of Alberta

ESL Teacher Perceptions and Attitudes toward Using Computer-Assisted Language Learning (CALL): Recommendations for Effective CALL Practice

by

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"We can rest assured that computers will never replace teachers, but ... 'teachers who use computers will replace teachers who don't'."

(Moeller, 1997, p. 12)

Abstract

The explosive growth of educational technology has brought to the forefront new and exciting language learning opportunities for educators and students. To be on the cutting edge of language instruction, teachers are now expected to develop new and innovative teaching practices that use computers to assist in the acquisition of second and foreign languages. With the momentum that the field is experiencing, it is an opportune time to evaluate how language teachers are integrating CALL and responding to the ever-changing landscape. This research project explored ESL teacher perceptions and attitudes towards CALL in one university-affiliated ESL program and how CALL was being integrated into that ESL curriculum. A twenty-one page CALL survey was distributed to a group of nineteen teachers in the ESL program. Follow-up interviews with three of the teachers were used to explore issues in greater depth. The results indicated that, generally, teachers see CALL as potentially valuable and are using a variety of computer applications in their classrooms; however, teachers also experience barriers that inhibit the effective and widespread use of CALL in this program. These barriers, as well suggestions for overcoming them, are discussed.

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INTRODUCTION

Computer Assisted Language Learning:

My Story

My journey into the world of ESL and CALL began in 1996 following the completion of a Bachelor of Education degree. After contemplating the dismal chances of landing a full time teaching position in the surrounding schools, I decided to look at the possibility of teaching EFL (English as a Foreign Language) overseas. Japan, Korea and China were the most popular choices for teaching EFL, but I knew some people who had recently returned from teaching in Taiwan and had a great three year experience there. I began to look at the possibilities and after many discussions with my wife we decided to give teaching in Taiwan a chance. We set a departure date, bought our plane tickets and prepared to enter the world of EFL.

On November 3rd, 1996, we landed in Taipei and our adventure officially began. Flashing neon lights, unrecognizable smells, street vendors selling strange food and crowded streets and sidewalks bombarded our senses as we attempted to drag our suitcases over broken sidewalks in search of a youth hostel to rest our jet-lagged bodies. After carefully following the directions in our guide book, we finally found the hostel which happened to be next to a familiar sight: a 7-Eleven convenience store! We were comforted to find something that we recognized from home. However, after stepping into the familiar store we quickly realized that this was not Canada. The smell of fermenting tea eggs greeted us at the door and overpowered our senses, and we reacted by making a quick escape back into the busy street. With our eyes still watering, we sat on a bench wondering what strange world we had voluntarily stepped into. Little did we

know or realize, the next three years were going to be full of these kinds of unique surprises.

We spent the next week in the hostel talking to other recent Taiwan arrivals, taking in the sights and getting a sense of the EFL job market in Taipei. However, after perusing the job postings in the national English newspaper we decided to head south to the smaller city of Taichung. Once there we rented an apartment and began to look for work. My wife quickly found a job with a private school that focused on teaching conversational English to adults and I was lucky enough to land a full time teaching position at a private junior/senior high school. We were set! We had an apartment, eventually bought some scooters for transportation, and had jobs to pay the bills. Now we had to learn how to teach the English language to our students.

The learning curve was about as steep as it gets. Many classroom failures and mistakes eventually gave way to some successes and by the end of the year we found that our students had actually learnt English. We were grateful that everything had worked out so well and decided to continue living and teaching in Taiwan for another two years.

The idea of pursuing a Masters degree in Education emerged in my second year in Taiwan. Dr. Olenka Bilash, from the University of Alberta, was invited to the junior/senior high school that I was working at to give a short workshop on second language acquisition theory and methodology. Her workshop opened the door to a whole new world of English language instruction that I had not been exposed to and was eager to learn more about. I was excited about exploring the ideas she presented in my rather unsophisticated EFL classroom teaching. Slowly, I incorporated some of Dr. Bilash's

teaching methodology, but I soon realized that I needed more intensive study and practice to develop and excel as an EFL instructor.

After three wonderful years of teaching in Taiwan and traveling around Asia, my wife and I returned home. I applied to the Masters of Education program at the U of A and began my graduate studies in September 2000. I found that my teaching experience in Taiwan allowed me to ground second language acquisition theory and methodology in practice. Some of the most valuable components of my graduate program resulted from reflecting on my teaching through the theoretical perspectives of Bloom (1956), Gardner (1983), Krashen (1982), O'Malley & Chamot (1990), Oxford (1990), Richards, (1990) Vygotsky (1986) and many others.

My specific interest in computer assisted language learning (CALL) arose from four separate events in my second year of graduate studies. The first event occurred in one of my graduate classes. The students were required to complete a detailed analysis of ESL textbooks using Bloom's taxonomy (1956), Gardner's seven learning styles (1983) and Bilash's B-SLIM language learning model (2001). The process was paramount in developing the ability to critically evaluate language learning resources (note: even though there is a difference between *language learning* and *language acquisition* these terms are used synonymously throughout this thesis). Conclusions brought to the forefront the pedagogical strengths and shortcomings of language learning materials. Soon after completing this assignment, I was introduced to several CALL programs. The lingering effect of the previously mentioned assignment led to reviews of these software programs with the same critical perspective and again, not to my surprise, I found that most of the software programs lacked a sound pedagogical foundation. For example,

they presented too much new information at one time, there was little in the way of scaffolding (Brunner, 1974), and there were too few exercises and activities to help the learner. This, in turn, led me into more research about CALL which further expounded upon the great potential of computers for language learning, but also illustrated the pronounced deficiencies of the CALL software I had reviewed.

Another event that sparked my interest in CALL originated from studying a year of Japanese at university. Part of the curriculum was a WebCT component. Briefly, WebCT is a web-based authorware program that provides a developer (instructor) with an interface through which he/she can post educational materials for students, develop online quizzes, provide access to course-specific discussion boards and e-mail, set up online assignments, track student grades and work with other useful educational tools. During the first couple weeks in the Japanese course I quickly realized that learning a new language requires a great deal of memorization and rote learning, especially as a beginner. To help students memorize Katakana and Hiragana (the basic phonetic Japanese alphabets), the instructor had developed some excellent computer-based activities. These web-based exercises, even though limited in quantity, showed how the computer could be successfully utilized to provide a valuable addition to language learning. However, as useful as the WebCT component was, I still could not help but notice how the activities and materials could be improved. This again led me into more CALL research.

During my second year of graduate studies my interest in CALL further evolved from my employment in the University's English as a Second Language Program. I was contracted to teach some classes in the ESL summer program and while there, I noticed

that teachers in the day program were using a CALL lab to teach ESL. I became interested in how the computer lab was being used in this program, so I began to ask the instructors what they were doing to help them teach. I reviewed the CALL software in the lab and had many discussions with teachers about the kinds of activities they were doing with their students. Not surprisingly, the full potential of the computer lab was not being exercised by the teachers. I decided to see if I could develop my own CALL lessons to use with my summer class. The experience was a real eye opener as I realized first-hand, the challenges involved in developing effective, pedagogically sound, motivating and relevant CALL lessons and activities. I also found out how challenging it is to teach in a computer lab environment.

Following the completion of the summer seminar program I was again hired to teach, but this time I was the instructor for two online course components in the English for Academic Purposes (EAP) program. The online component used WebCT as its method of delivery and consisted of weekly assignments that students would complete and submit online. The instructors would then send back the assignments with corrective feedback. Teaching these courses gave me further insight into the dynamic workings of CALL. As an online instructor I was able to observe the challenges students faced with the computer assignments, assess what kinds of assignments worked well online and which ones did not, see how students interacted through the discussion boards and e-mail, evaluate the limitations of this particular online component, and explore the potential of the computer in this context.

My CALL research, combined with my growing teaching experience (with and without computers), served as the prime motivation for pursuing my interests in this area.

I had seen what other teachers were doing with CALL and I had gained valuable teaching experience with computers; the research pointed me in the direction of what should and could be done. These experiences, the CALL literature I had read, and my teaching experience in Taiwan, gave me a unique and valuable platform for writing the following thesis. The CALL research illustrates the wonderful potential of using computers in language teaching and learning; however, reaping these benefits is proving to be a formidable challenge, here in this program as well as in others. My principle goal is to make valuable contributions to the CALL teaching practices in this English language program.

CHAPTER 1: INTRODUCTION TO THE RESEARCH QUESTIONS

Introduction to the Research Questions

The widespread use of computers in daily life is evidence of the power and potential of computers. Certain sectors of society have developed an increasing reliance on computers to carry out jobs, maintain and establish lines of communication, as well as to meet needs of leisure.

Computers have also found their way into education with varying degrees of success. Recent advancements in computer technology have increased the potential of what is now possible in education. One of the most influential developments has been the World Wide Web. Combined with broadband connections, teachers are now able to incorporate audio, video and a wide range of authentic learning materials.

Computers have also become a valuable component in some language programs. Teachers on the cutting edge of language education are discovering new and innovative ways to use computers to assist the acquisition of second languages. However, teachers are also experiencing obstacles that are preventing the effective and widespread use of computer-assisted language learning (CALL). The purpose of this research project is to determine how teachers are using computers in one particular English as a Second Language (ESL) university program. The following research questions were used to guide the study:

1) What are the perceived benefits of CALL?
2) How are teachers integrating and using CALL in this ESL program?
3) What are the perceived barriers to CALL development and integration as they relate to this specific program?

4) What do these ESL instructors perceive to be the advantages and disadvantages of CALL for their students?

5) What recommendations do the teachers have for ongoing support, development and implementation of CALL?

Answers to these questions will work towards establishing a clear picture of the current state of CALL within the program. Once this has been clarified, a plan of action can be developed to improve the state of CALL.

Definitions

There are a number of technical terms and acronyms used throughout this thesis that may not be familiar to the reader. Appendix A provides definitions and clarification of the following terms (see Table 1).

Table 1.

Terms Defined in Appendix A

Computer-Assisted Language Learning Terms	*Second Language Acquisition Terms*
1. Artificial intelligence	1. Audiolingual method
2. Asynchronous communication	2. Authentic material
3. Authoring tool	3. Autonomous learning
4. Broadband	4. Behaviourism
5. CAI	5. Communicative competence
6. CBE	6. Communicative language teaching
7. CmC	7. Concordance
8. Hypermedia	8. Constructive approach
9. Integrative CALL	9. EFL
10. Intelligent feedback	10. ESL
11. Mainframe computer	11. Interactionist approach
12. Multimedia	12. L2
13. Online learning	13. Meta-analysis
14. Network	14. SLA
15. Speech recognition	15. Target language
16. Synchronous communication	16. TESOL
17. Technocentric	
18. Technophilic	
19. Technophobic	

Limitations and Delimitations

There are a number of limitations to this study

- Results and conclusions from this study are limited to the specific program and teachers involved.
- Even though great care was taken to make the survey anonymous, my employment in the program as an administrator may have had an effect on teacher responses. Similarly, the interviews may have been affected in the same way. On the other hand, my relationship with the teachers may have resulted in the 100% survey return rate which allowed a more complete picture of CALL in the program.
- The survey and interviews may not have completely explored all of the important issues related to CALL in this program.
- Even though frequency statistics were extensively used in the analysis of the survey results, the research should not be considered "quantitative". These statistics were used to help provide an overview of the state of CALL in the program.
- The teachers in this study may not have been able to articulate all of their ideas about CALL in the survey or in the interviews.
- The more in-depth data obtained from the interviews represented only a small percentage of the teachers using CALL in this program. Results from the interviews should not be interpreted as relating to the whole group.

Assumptions

- CALL can make a valuable contribution to this ESL program
- Survey and interview data will generate objective and honest responses form the teachers.
- Teachers will be able to accurately articulate their perceptions of CALL as it relates to their language teaching and to this specific program.

Overview of the study

This chapter provided an overview of the study, defined important terms and acknowledged the study's limitations and assumptions.

Chapter 2 will present a review of five important areas in the CALL literature. The first section will discuss the concept of computers in education and language learning; section 2 will outline the history of CALL; section 3 will discuss the potential of CALL; section 4 will review the barriers to CALL and the last section will outline the effectiveness of CALL.

Chapter 3 will provide a description of the methodology of the study. The development of the CALL survey and the interview questions will be addressed, followed by a description of how these tools were administered. A description of the data analysis procedure will complete this chapter.

Chapter 4 will present the results of the data analysis. Frequency statistics and descriptive data will be combined to clarify the following five themes: How CALL is being used in the program; the potential of CALL in this program; the barriers to CALL in the program; the effectiveness of the computer lab environment; and what actions would lead to the improvements of CALL.

Chapter 5 will present the conclusions and recommendations from the data. Future research possibilities will conclude the study.

CHAPTER 2: LITERATURE REVIEW

We find ourselves immersed in a "technological revolution" (Moeller, 1997) - a revolution that has rapidly reshaped many aspects of our lives and, by all accounts, promises to continue in the future. Since its inception in the 1940s, the computer has been a major force behind these changes. The computer and its associated applications (software, the Internet, networks, servers) have altered the face of business, science, communication, warfare, entertainment, transportation, and education – all within a relatively short period of time. Today, most members of society in developed nations have access to computers and thus have open doors to explore and utilize its applications. The immense power of the computer is clearly evident by how much our society presently relies on its functions and capabilities.

With the widespread accessibility of computers, teachers and administrators face the question of what roles computers can play in education. Like other disciplines, education has been inundated with technological innovations and experienced varying degrees of success. The area of language learning is no exception.

Conceptualizing Computer in Education

There is no shortage of terms used to describe the roles of computers in education. Some of the more widely used terms found in the literature are: Computer-Assisted Learning (CAL), Computer-Assisted Instruction (CAI), Computer Managed Learning (CML), Computer-Mediated Instruction (CMI), Intelligent Computer-Assisted Learning (ICAL), Intelligent Tutoring System (ITS) and Computer-Based Instruction (CBI) (Hoven, 1997; Levy, 1997a). Researchers tend to favour one term over another based on the focus that a term implies. For example, the word "assisted" implies that the computer

is relegated to a helping mode in the learning process; whereas the word "managed" (CML) implies that the computer is responsible for directing the learning process for the student.

Conceptualizing Computers in Language Learning

At the 1983 TESOL conference in Toronto, Canada, the term "Computer-Assisted Language Learning (CALL)" was adopted to refer to the applications of computers in second language acquisition (Chapelle, 2001a). However, over the years many other terms have been proposed in an attempt to more accurately describe the work done in the field. Among the more widely accepted terms in the research literature are: Intelligent Computer-Assisted Language Learning (ICALL), Computer-Enhanced Language Learning (CELL), Computer-Assisted Language Instruction (CALI) and Technology-Enhanced Language Learning (TELL) (Levy, 1997a). Each term brings a new perspective to the concept of using computers in language learning, highlighting the different roles in which computers are placed. However, because of the general acceptance of the term CALL in many circles, I will use this term throughout the following thesis.

When defining CALL, there are two good places to begin: Levy's (1997a) definition of "the search for and study of applications of the computer in language teaching and learning" (p.1); and the joint policy statement from the three prominent CALL organizations of Computer Assisted Language Instruction Consortium (CALICO), the European Association for Computer-Assisted Language Learning (EUROCALL) and The International Association for Language Learning Technology (IALLT) (1999) which reads, "CALL is a relatively new and rapidly evolving field that

explores the role of information and communication technologies in language learning and teaching" (p.1). The broad scope of these definitions exposes the abundance of possibilities that computers bring to language learning. For example, under these definitions falls the use of language learning software, non-language learning software, the Internet, e-mail, chat rooms, games and authoring tools, as well as all the skill-specific activities associated with second language acquisition (listening, reading, writing, speaking, grammar, vocabulary, fluency, development of cultural awareness).

The field is also multidisciplinary, drawing upon applied research in second language acquisition, sociology, artificial intelligence, cultural studies, many branches of psychology, applied linguistics, cognitive science, natural language processing, second language pedagogy, cultural studies and, of course, the computer sciences (Levy 1997a; Joint Policy Statements of CALICO, EUROCALL and IALLT, 1999). The scope of this paper does not allow for a detailed discussion of how each of these fields influences CALL; however, for a detailed overview of how these fields and others impact CALL see Levy (1997a), Chapter 3: CALL in Context: an interdisciplinary perspective, p.47-75.

The definition of CALL has been, and will continue to be, a process of evolution and refinement. CALL practitioners and researchers are forced to re-conceptualize the classification of CALL as new technologies emerge. For example, early CALL was restricted by limited computer accessibility and hardware. The arrival of the personal computer (PC) in the 1970s provided access to a wide range of users, and the development of the Internet in the mid 1990s provided many more options for language learning. At present, multimedia is again forcing the re-conceptualizing of CALL. CALL today is vastly different from what it was a mere decade ago and when we look to

the future, the face of CALL will likely be drastically different from what we see currently. Technological advances and increasingly innovative software make the definition of CALL a moving target.

The definition of CALL is not only dependent upon current hardware and software; it is also being reshaped by how computers are being used to teach languages. The majority of CALL research and literature is "practical in nature and showcases software programs or suggests guidelines for implementation of software (Huack, McLain and Youngs, 1999, p. 270). In essence, the literature is adding to the definition of CALL – defining what CALL is and what it can be. Levy's (1997a) definition and the Joint Policy Statements of CALICO, EUROCALL and IALLT (1999) provide the field with a broad starting point from which researchers and language teachers and learners can begin. How CALL is defined from this point on depends upon the available technology as well as how students and teachers are using the computer in the language learning process. CALL is often a misunderstood term because it does not provide a reference point from which a common understanding is easily achieved. For this reason a detailed description of a CALL application within a specific context is needed before discussions can move forward. This may be the reason that much of the research focuses on practical applications of computers in language learning environments.

New technological innovations are illuminating many more possibilities for language teachers and learners. With the new fields of speech recognition and artificial intelligence (AI) poised to make the next major contributions in CALL (Bailin, 1988; Gamper & Knapp, 2002; Hincks, 2003; Tsiriga & Virvou, 2004), this trend shows no evidence of slowing down.

In the following section, I will present a brief history of CALL in order to provide some background to this new and expanding field. I will then identify some of the major concerns and problems facing CALL along with the potential advantages for implementing computers in language learning. Finally, I will highlight the more prominent issues regarding current research into effectiveness.

A Brief History of CALL

CALL had its beginnings in the 1950s and 1960s and has since gone through many transformations. The shifts in CALL reflect dominant educational theories and the available computer technology of the time. Warschauer and Healey (1998) have divided the history of CALL into three distinct phases: behaviouristic CALL, communicative CALL and integrative CALL. These three stages coincide with specific levels of technology and certain pedagogical theories (Warschauer & Healey, 1998).

Behaviouristic CALL

In the 50s and 60s behaviourism was the most influential theory guiding educational practice. With his book *Verbal Behavior* (1957), B.F. Skinner outlined the central elements of behaviourism as stimulus, response and reinforcement (Levy, 1997a). According to the theory, students learn by being exposed to repeated drill and practice sequences and are positively reinforced for successful responses. This theory had a profound effect on language teaching practice and on the development of early CALL (Levy, 1997a). The audiolingual approach, which was the guiding force behind the development and extensive use of the language lab in the 1960s, was the direct result of the behaviouristic approach to language teaching and learning (Levy, 1997a; Scinicariello, 1997; Warschauer, 1996 & 2004, Warschauer and Healy, 1998). The

development of CALL programs during this time echoed the behaviouristic approach with most of the activities being repetitive language drills, also known as drill-and-practice, (Lee, 2001; Levy, 1997a; Warschauer & Healey, 1998). The most predominant CALL programs during this time were CALL tutoring systems devised and implemented for mainframe computers. The Program Logic for Automated Teaching Operations (PLATO) project was among the first large scale computerized foreign language teaching systems (Lee, 2001, Levy, 1997a). PLATO featured grammar and vocabulary drills and translation tests (Lee, 2001). In its role, the computer was regarded as a "mechanical tutor which never grew tired or judgmental and allowed students to work at an individual pace" (Warschauer & Healey, 1998, p. 57). Educators began to conceptualize the computer's potential for classroom use "envisioning classrooms in which computers would serve as 'infinitely patient tutors, scrupulous examiners, and tireless schedulers of instruction'" (Kulik, Kulik & Cohen as cited by Dunkel, 1987). Cameron (1996) recognized the potential role by stating that the computer never gets tired and that it can provide a variety of responses to different language situations. Even though behaviourism and behaviouristic CALL fell from favour by the late 1970s, its contributing influence on the language learning process can still be seen today in the availability of a wide range of drill and practice programs (Higgins, 1993; Warschauer, 1996). Warschauer (1996) summarizes the ongoing benefits of behaviouristic CALL by pointing out that: 1) repeated exposure to the same data is advantageous or even vital to learning; 2) a computer is optimal for performing repeated drills because it cannot get bored with providing the same material and because it is able to give immediate non-judgmental

feedback; 3) a computer can present material on an individualized basis which allows students to continue at their own speed and frees up class time for other projects.

Communicative CALL

By the late 1970s behaviouristic approaches to CALL were being challenged for two reasons. First, behaviouristic approaches to language learning had been dismissed at both the theoretical and the pedagogical levels. Second, affordable and powerful personal computers (PCs) were opening doors to a wide range of educational opportunities with technology. In response to the criticism of the behaviourist approach not providing enough authentic communication, communicative language teaching (CLT), and subsequently communicative CALL, began to gain prominence in language learning and teaching. Richards and Rogers (2001) characterize CLT as a language teaching method that "a) make(s) communicative competence the goal of language teaching and b) develop(s) procedures for teaching of the four language skills that acknowledge the interdependence of language and communication" (pg. 66). In line with the principles of CLT and in recognition of the limitations of behaviouristic CALL, Underwood (1984) proposed a series of communicative CALL premises. Communicative CALL:

- focuses more on using forms rather than on the forms themselves;
- teaches grammar implicitly rather than explicitly;
- allows and encourages students to generate original utterances rather than just manipulate prefabricated language;
- does not judge and evaluate everything the students do nor reward them with congratulatory messages, lights, or bells;

- avoids telling students they are wrong and is flexible to a variety of student responses;
- uses the target language exclusively and creates an environment in which using the target language feels natural, both on and off the screen; and
- will never try to do anything that a book can do just as well.

(Underwood, 1984, p 52)

The communicative approach focused on making the language learning process more meaningful and authentic for students (Levy, 1997a; Richards & Rodgers, 2001; Warschauer, 2004). Stevens (1989 cited by Warschauer, 1996) maintains "that all CALL courseware and activities should build on intrinsic motivation and should foster interactivity – both learner-computer and learner-learner" (p.4). Communicative CALL concurred with cognitive theories which emphasized that learning was a resourceful process of discovery, expression and development (Lee, 2001).

Communicative CALL also opened the door to different roles of the computer in language learning. Warschauer (1996) proposes three models of computer use in communicative CALL: computer as tutor, computer as stimulus and computer as tool. The computer as tutor continued to be 'all knowing' like in the drill and practice programs of behaviourist CALL, except that the process of discovering the correct answer involved more student choice, control and interaction (Warschauer, 1996). The software programs include courseware for paced reading, text reconstruction, cloze tests, puzzles and language games which supply skill practice in a non-drill format (Fotos & Browne, 2004; Warschauer, 1996, Warschauer & Healey, 1998). These types of

programs permit students to work alone, or in groups to sort words and texts to find language and meaning patterns (Warschauer, 1996).

In the early 1990s, communicative CALL was being criticized because of the inability of current computer programs to "give learners essential feedback" (Fotos & Browne, 2004, p. 5). Based on a cognitive model of language learning, the objective of a CALL activity involving the computer as *stimulus* is to encourage student motivation, creativity, analytical skills, discussion, writing and/or critical thinking rather than have students just find the right answer or achieve a passive comprehension of meaning (Fotos & Browne, 2004). Warschauer (1996) mentions several software programs such as *Where in the World Is Carmen San Diego?* and *SimCity* which were not specifically designed for language learners but can be used for the above student purposes or, as Higgins (1993) states, the programs "provide an entertaining environment for students to learn culture and the target language through problem-solving and competition" (p.1). Simulation programs can stimulate discussion and discovery while reinforcing grammar points, as the programs provide real-life circumstances in which students can learn about the culture of a country and the standard for various situations (Higgins, 1993). Students can work in pairs or in groups in order to generate discussion.

When programs for the computer are used as a tool they do not necessarily provide any language-specific material at all but rather enable the learner to use or understand language and become active learners (Fotos & Browne, 2004; Warschauer, 1996). For example, word processors, spelling and grammar checkers, desk-top publishing programs and concordances do not provide specific language learning

activities. However, they can be used to promote an "understanding and manipulation of the target language" (Fotos & Browne, 2004, p. 6).

Warschauer (1996) suggests a possible overlapping of these three models demonstrating that the differentiation between the three roles is not definite. For example, "A skill practice program can be used as a conversational stimulus, as can a paragraph written by a student on a word processor" (Warschauer 1996, p. 5). Students working in pairs or groups could compare and discuss answers on a number of drill and practice programs, thus incorporating a communicative approach. The focus of communicative CALL is then not only on the computer application, but also on how the application is used (Jones, 1986; Levy, 1997a; Moeller, 1997; Warschauer, 1996; Warschauer & Healey, 1998). A CALL activity that traditionally fits into one of the models (i.e. Communicative CALL) can, with alternate teacher instructions, fall into another model (i.e. Behaviouristic CALL). For example, the same drill and practice activity that would traditionally fall under the behaviouristic approach, when used in a different way could be a classified as a communicative CALL activity.

Integrative CALL

The evolution of CALL continued in the late 1980s and early 1990s when "critics pointed out that the computer was being used in an ad hoc and disconnected fashion" and thus its contribution was made to the marginal elements, rather than to the central elements of the language teaching process (Warschauer, 1996). These assessments of CALL coincided with a re-evaluation of communicative language teaching theory and practice. Educational methodology was again being questioned and began to move towards a Vygotskyan socio-cultural model of language learning in which interaction

within an authentic context was regarded as essential for creating a meaningful learning experience (Fotos & Browne, 2004; Lee, 2001). Educators were searching for methods to teach in a more integrative way, such as task-based, project-based and content-based approaches in authentic environments (Warschauer & Healey, 1998). Thus integrative CALL emerged as a prospective way "to integrate various skills (e.g. listening, speaking, reading, and writing) and also integrate technology more fully into the language learning process" (Warschauer & Healey, 1998, p.5). Warschauer and Healey (1998) assert that students will learn to use many kinds of technological tools as a continuous process of language learning, rather than going to the computer lab once a week for isolated behaviouristic or communicative exercises.

"If the mainframe was the technology of behaviouristic CALL, and the PC the technology of communicative CALL, the multimedia networked computer is the technology of integrative CALL" (Warschauer & Healey, 1998, p. 5). Multimedia combines a wide range of communication elements, such as text, sound, graphics, pictures, photographs, animation and moving video and is powerful because informational, communicative and publishing tools are easily accessible via one source, the computer (Brett, 1997). Multimedia technology today is typified by the CD-ROM (Warschauer, 1996). According to Higgins (1993), compact disk technology has many functions in foreign language education such as information retrieval, interactive audio and interactive multimedia programs. A CD can store large amounts of information on one disk with fast access to the information. Digitized sound is another new dimension which allows for digitized speech on disk (Higgins, 1993). Students can hear the pronunciation of a phrase, a word, or even a syllable or sound and then record their own

voice following an example. These recordings allow students to compare their own voices to that of the original, and repeatedly record their own voice until they feel their pronunciation has improved (Higgins, 1993). Higgins (1993) also mentions CD-I (compact disk-interactive) which is an advanced technology that incorporates "digitized sound, compressed video, animation and possibly text to create a multimedia platform for interactive programs" (p.3). CD-I is an example of hypermedia which Warschauer (1996) defines as multimedia resources all linked together that enables learners to direct their own path by simply pointing and clicking a mouse. Warschauer (1996) maintains that hypermedia makes multimedia even more powerful and has several advantages for language learning. These advantages are: a more genuine learning environment is created because listening is combined with seeing; skills are easily combined because the variety of media make it natural to mix reading, writing, speaking and listening into a single activity; students have more control over their own learning while learning at their own pace; and a principal focus on content is facilitated without forgoing a secondary focus on language form or learning strategies (Warschauer, 1996).

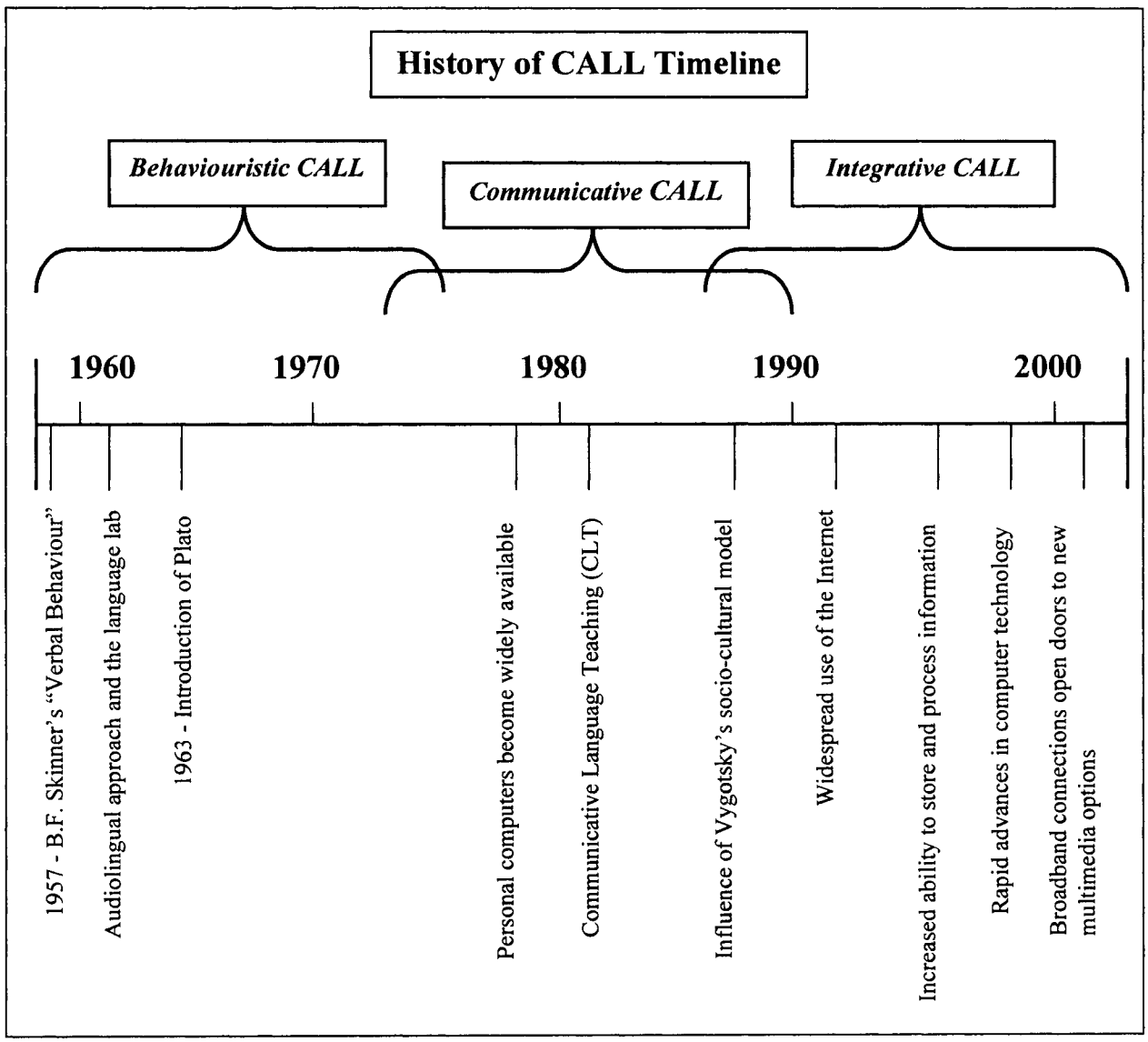
Electronic communication and the Internet also contribute to integrative CALL. As Warschauer (1996) reveals, multimedia too seldom integrates meaningful and genuine communication into all aspects of the language learning curriculum. The Internet and electronic communication however help to make that possible. Warschauer (1996) asserts that computer-mediated communication (CmC) is most likely the single computer application to date with the greatest influence on language teaching. "For the first time, language learners can communicate directly, inexpensively, and conveniently with other learners or speakers of the target language 24 hours a day, from school, work, or home"

(Warschauer, 1996, p. 7). The World Wide Web supplies millions of files that students can search through and within minutes find and access authentic materials (e.g. newspaper and magazine articles, radio broadcasts, music, short videos, movie reviews, book excerpts) suitable to their own interests (Warschauer, 1996).

As can be appreciated through this brief history of CALL, the computer can provide an assorted number of approaches in abetting language learning and acquisition. "It can be a tutor which offers language drills or skill practice; a stimulus for discussion and interaction; or a tool for writing and research. With the advent of the Internet, it can also be a medium of global communication and a source of limitless authentic materials" (Warschauer, 1996, p.8). It is important to note that the three stages of CALL history do not necessarily follow a rigid, linear timeline (See Figure 1).

Figure 1.

The History of CALL Timeline



Rather, the best of all three stages have been preserved and improved upon as technology continues to advance. Certain stages and methodologies lend themselves to particular age or language levels. For example, we cannot assume young L2 beginners possess the necessary skills and abilities to search the Web in order to write elaborate essays or lengthy reports. Although all three stages began at different periods of time,

there appears to be no definite end to any of the identified stages or paradigms. "Current uses of computers in the language classroom correspond to all three of the paradigms..." (Warschauer & Healey, 1998, p. 59). In conclusion, all three stages will continue to mature and interweave as research and technology develop.

Potential Benefits of CALL

Much of the excitement surrounding CALL has come from the potential that computers can theoretically bring to language learning and teaching. Bringing the potential to bear fruit in the form of pedagogically sound CALL programs and activities has been the driving force behind much of the CALL research and development. The research literature strongly supports the premise that computer technology has the potential to play a major role in foreign language learning and instruction (Diamond, 1997; Dunkel, 1987; Garrett, 1991; Gillespie & McKee, 1999; Levy 1997a; Pennington, 1991; Willetts, 1993). However, even though CALL is rapidly opening the door to new capabilities, the implementation of pedagogically sound CALL applications that maximize learning for the L2 student is proving to be a formidable challenge. Consequently, computers remain underutilized in today's language learning environments. The following section will outline the most common potential benefits of CALL as discussed in the literature.

Individualized Instruction

Students bring to the learning environment different learning strategies and styles, different levels of motivation, and different language competencies. As Pennington (1991) points out, "all users are not alike, and an application that is appropriate for one type of user may be grossly inappropriate for a different type" (p.5). One of the greatest

potentials of a well-designed CALL program is its ability to individualize instruction (Bickel & Truscello, 1996; Chapelle, 1990; Jamieson & Chapelle, 1988). Student-centred, customized software that allows individuals to decide how to proceed is consistent with the idea that people learn best through their own initiative and self-motivation while fulfilling their own purposes (Pennington, 1991). "CALL, at last, provides language teachers with the capability for individualizing instruction – a need that has been recognized for decades" (Jamieson & Chapelle, 1988, p. 160). Chapelle (1990) believes that CALL has the potential for individualizing instruction more than any other resource, and Lee (2001) states that CALL provides more opportunities for individualized learning of targeted language items. For example, a CALL program can be designed to direct a student to different language levels or a specific language focus depending on his/her computer responses. If students make recurring language errors while engaged in a CALL activity, the computer software can be programmed to direct the learner to explanations and activities to address their individual weaknesses. It is possible for students to be challenged by different sets of questions according to their proficiency levels (Lee, 2001). In addition, Lee (2000) states that shy or reserved students can benefit from individualized learning, while Jamieson and Chapelle (1988) add that "CALL designed specifically for learners with special problems may be an effective way of individualizing instruction on good strategies" (p. 155). Brett (1997) lends further support to the claim that language learners can utilize the flexibility of CALL by focusing on language areas in need of improvement while bypassing areas where language competence has been achieved. The ability to focus on the individualized needs, interests, strengths and weaknesses, motivation, and learning styles

of the L2 student gives CALL the potential of being a pedagogically valuable medium in L2 learning. A well designed CALL program should have a tutorial, context-sensitive help and a management system that will both guide the learner and be responsive to the particular needs and the level of the learner (Levy, 1997a, p.199). However, "we must deepen our understanding of learning strategies and learning styles so that we can maximize the potential of computer assisted individualized instruction" (Bickel & Truscello, 1996, pg. 19).

Exposure to more authentic materials and communicative opportunities

"Authenticity refers to the degree of correspondence between an L2 learning task and tasks that the learner is likely to encounter outside the classroom" (Chapelle, 2001a, p.56). In line with current theoretical and pedagogical views in second language acquisition, there is a growing trend to make language activities more authentic and relevant to real-life experiences (Debski & Gruba, 1999; Singhal, 1997). The potential of CALL software programs and the Internet to provide samples of meaningful, authentic and realistic communication is regarded as especially beneficial to language learners. When the target language being learnt is in a foreign environment (e.g. learning English in China), CALL programs may be the only source of authentic speech patterns available to students. Audio and video clips accessed through a CALL program allow students to listen and watch native speakers in realistic, meaningful, natural and culturally appropriate situations (Chapelle, 2001a; Debski & Gruba, 1999; Higgins, 1993; Lee, 2001; Schwartz, 1995). As Lee (2001) states, software programs can depict scenes based on contextualized situations that contain verbal and non-verbal cultural nuances. An example of such a program is ELLIS in which a group of American university students

engage in a series of discussions relevant to campus life. For the many students around the world planning to attend school in an English speaking country this program helps them prepare for that experience by providing insight into the features of the target language culture (Lee, 2001). Schwartz (1995) also outlines various video disc and CD-Rom technologies that are designed to provide realistic, natural and culturally appropriate activities. He claims that such CALL programs will enhance cultural understanding and permit students to reach higher levels of proficiency. Willetts (1993) adds that speaking skills can be developed by effectively using dialogues from an interactive audio program that allows students to create and practise dialogues with other students.

Whereas CALL software can be a valuable provider of authentic materials, the Internet, when used as a language learning resource, is far superior in its ability to provide authentic materials and contexts. As Levy (1997a) writes, "the Internet is an extraordinarily dynamic entity that is evolving continually,..." (p.95). In fact, with over one billion websites, the World Wide Web has become an immense source of authentic materials. The use of text, audio and visual materials provide an unlimited range of authentic information to the language learner and instructor. However, with so many websites and so much information available on the Internet, finding materials within the students' zone of proximal development (Vygotsky, 1978) can be a formidable challenge for both teachers and students (Yang, 2001).

One of the most prevalent uses of the Internet is for computer-mediated communication (CmC). Language instructors are increasingly utilizing e-mail, bulletin boards, chat boards, discussion boards and computer conferencing systems as ways to engage learners in authentic communication. With these tools the circle of potential

communication is no longer limited to the instructor and students in the immediate classroom, but is extended to the computer-armed global community (Kern & Warschauer, 2000; Warschauer, 1996). Of these, e-mail has been the most widely used Internet application in second language learning; of the many types of activities using e-mail, pen pal projects have been the most widespread (Levy, 1997a).

Self-paced instruction

A CALL program can be designed to have students work at their own pace, providing the learner with more autonomy. The important decisions of what to study, when to study, how to study and how long to study can be passed to the student depending upon the learning situation (Brett, 1997). Learners who need more time to grasp the target language information are permitted to do so, while those students who progress at a faster pace are free to explore new information or move ahead (Jamieson & Chapelle, 1988). High achievers can realize their full potential without preventing their peers from working at their own speed (Lee, 2000). Siskin (1999) concurs that slower learners can use the computer for remediation by going at a more comfortable pace, while students who are ahead of the class can use CALL to accelerate learning and for enrichment. As CALL software programs are introduced into the classroom, students have more freedom to choose what, how much, and how fast they want to learn (Lee, 2001). "Good autonomous learners are thought to be among the better language learners and the development of autonomy in the learning process should benefit learners" (Brett, 1997, p.5).

The ability of CALL to provide self-paced instruction, however, may not be beneficial for all students. It is a worthy goal to have students become more responsible,

active learners, but students who are used to traditional classroom teaching where the environment is very structured and the teacher maintains the authority, may be unable to handle these kinds of responsibilities (Jamieson & Chapelle, 1988). It can be argued that certain kinds of students become accustomed to passively accepting authority and not taking responsibility for their own learning (Jamieson & Chapelle, 1988). Students who are not used to taking control of their own language learning or who have not developed the appropriate metacognitive strategies (Oxford, 1990), may have difficulties deciding how best to direct their own learning.

> These students, who take no responsibility for their own learning, regularly frustrate ESL teachers who know that learners need to take an active part. Because of the importance of learner initiative in L2 acquisition, it is reasonable to want ESL students to be active participants in setting and carrying out objectives (Jamieson & Chapelle, 1988, p. 154).

Whether it is in the CALL lab or the traditional classroom, the question concerning what teaching strategies to use with students still remains. It is interesting to note that the most often requested CALL programs are still the traditional drill-and-practice lessons (Jamieson & Chapelle, 1988). Jamieson and Chapelle (1988) note that the strict program control and one-on-one interaction with the computer probably make the students feel at ease, but comfort should not be equated to positive effects. Programs that gradually advocate more student-controlled strategies may be the solution to develop student autonomy. It is also suggested that teachers need to be involved in decisions to move students from a dependant learning environment to a more independent one (Jamieson & Chapelle, 1988).

CALL Feedback

A CALL program has the potential to supply students with immediate feedback following the completion of a task. Students working with a well-designed CALL program do not have to wait for their teacher to mark their homework or tests to find out if they are on the right track, thus providing immediate direction to the language learning process (Siskin, 1999). A CALL program can instantly correct student responses, display results, and provide additional information for questions answered incorrectly (Davis & Lyman-Hager, 1997). Brett (1997) maintains that the built-in feedback makes CALL suitable for autonomous learning. Pennington (1991) claims that the immediacy of response in CALL is an attractive quality for the success of educational applications of computers. Warschauer and Healey (1998) also point out that error-checking programs can provide real help to students in the feedback they receive by leading them to further practice or moving them to the next stage of language development.

Even though providing immediate feedback is a valuable potential of CALL programs, it is equally important to consider the types of feedback given to students. A study by Robinson, Underwood, Rivers, Hernandez, Rudisell and Ensenat (1985) compared the effectiveness of different kinds of feedback. Students who had to identify the nature of their mistakes, as opposed to simply being given a "wrong - try again" message, showed evidence of greater learning gains. Another study by Nagata (1993) compared "intelligent feedback" and "non-intelligent" feedback. Again, results indicated that when students were given information as to why their answers were incorrect (intelligent feedback), in contrast to simply being given an error message (non-intelligent feedback), students performed significantly better on retention tests (Nagata, 1993).

When a CALL question requires a simple yes/no or correct/incorrect response the application can easily be programmed to provide this kind of feedback (Hubbard, 1988; Jordan, 1988). However, when there is more than one possible answer it can be difficult to anticipate all the correct possibilities (Jordan, 1988). For example, if students are required to produce a written response in the form of a complete sentence, it is likely that the correct answer could be written in a number of different sentence structures. The computer program must therefore be programmed to recognize all the possibilities, which can be an overwhelming and perhaps impossible task. Unfortunately, there is little research concerning the best types of CALL feedback and consequently there are few clear conclusions to guide CALL developers (Chapelle, 2001b).

According to Murray and Barnes (1998), "feedback should be provided as to how the learner has progressed, with pointers given as to whether they should try again, or move on, setting specific targets for the learner if appropriate" (p. 256). This feature is all too rare in current CALL programs (Murray & Barnes, 1998). Hubbard (1988) offers a list of five guidelines for CALL evaluation criteria. A well designed CALL program:

1) gives meaningful rather than mechanical practice, contextualized in a coherent discourse larger than a single sentence;
2) provides hints of various types to lead students to correct answers;
3) accepts appropriate alternative correct answers within a given context;
4) offers the option of explanations for why correct answers are correct;
5) anticipates incorrect answers and offers explanations for why they are incorrect.

(Hubbard, 1988, p.63)

The capability of a CALL program to offer intelligent feedback is a pedagogically valuable component that computers can bring to language learning situations. It is equally important that students are guided by the CALL feedback to "notice" their errors and are then provided with help to discover the correct answer (Chapelle, 1998). A CALL program that offers this feature will promote autonomous learning and motivation by giving direction to the language acquisition process (Lee, 2001; Murray & Barnes, 1998). As important as intelligent feedback is in promoting autonomy, students must also possess the learning strategies and the motivation to direct their own learning (Robinson, 1991).

It is also important to recognize the limitations of current and even potential CALL feedback. It is highly unlikely that computer programs will ever be able to offer the same degree of flexible and individualized feedback that a qualified language instructor can provide. This is because CALL feedback is, by nature, always pre-stored, predetermined and pre-structured based on anticipated student responses (Bickes and Scott, 1989). "Consequently, the possibilities for the computer to customize its replies to the student's input are very limited when compared with the teacher's performance" (Bickes & Scott, 1989, p. 25). However, it can also be stated that a teacher's feedback is limited by the number of students in a typical classroom and by a lack of time to individually address all language errors.

Lower Anxiety Levels

The research literature shows that affective variables are strongly correlated to the success of second language acquisition (Berg, 1993; Cheng, Horwitz & Schallert, 1999; Horwitz, Horwitz & Cope, 1986; Ely, 1988; Krashen, 1982; Oxford, 1990; Phillips, 1992;

Samimy & Tabuse, 1992; Samimy, 1994; Schinke-Llano & Vicars, 1993; Shumin, 1997; Vogely, 1998; Young, 1986; Young, 1990; Young, 1991). Krashen (1982) proposed the Affective Filter hypothesis which expounds on "how affective factors relate to the second language acquisition process" (Krashen, 1982, p. 30). His hypothesis holds that anxiety, motivation, and self-confidence play an integral part in L2 learning. Briefly stated:

1) performers with high motivation generally do better in second language acquisition;
2) performers with self confidence and a good self-image tend to do better in second language acquisition and;
3) low anxiety appears to be conducive to second language learning, whether measured as personal or classroom anxiety.

(Krashen, 1982, p. 31)

Research has revealed that CALL programs can have beneficial effects on the affective variables students experience when learning another language. For example, several studies have shown that CALL can reduce language-learning anxiety (Chapelle, 2001a; Levy, 1997a; Schwartz, 1995; Siskin, 1999). Computers have the capacity to replay segments as many times as needed; this allows students to review material as often as they wish which in turn has an anxiety-reducing effect (Schwartz, 1995). "The computer is a tireless workhorse unlike many of us teachers and software of all descriptions can be run endlessly" (Brett, 1997, p.5). As Siskin (1999) reminds us, "Repetition plays an important role in any theory of language learning" (p. 1). Students using a well designed CALL program that allows for repeated oral practice, for example, may be able to gain confidence with respect to speaking and listening. In turn, this may assist students to

overcome classroom language-learning anxiety which is prevalent in some L2 learners who are asked for oral production in a classroom setting. The computer gives students an element of privacy where errors can be made without a public loss of face in front of teachers or peers (Brett, 1997). The computer provides a safe environment and does not lose patience, get angry or play favourites (Siskin, 1999). Learners are free to explore areas that they may not have understood before but are too embarrassed to admit, and this can lead to an alleviation of pressure. "Skills and language work can be repeated endlessly until the person who matters - the learner - is satisfied with [his/her] own performance or degree of understanding" (Brett, 1997, p.4). Diamond's (1997) study of the CALL courseware *EXITO* found that many students felt that the privacy of the computer helped them to build confidence. "Since the computer is not time sensitive, students are free to practice, practice and practice some more, until they feel ready to perform for a live instructor" (Diamond, 1997, p. 12). A CALL program, therefore, has the potential to provide students with more practice using the target language, thus developing more confidence and lowering anxiety.

Student Motivation and Positive Perceptions of CALL

According to Schwartz (1995), "If students feel that CALL materials and activities are useful and helpful, they are more likely to continue to use them and spend more time using the language" (p. 533). Several studies have found that students generally have a positive attitude toward computer technology in the language classroom and such technology has a positive impact on language learning achievement (Ayres, 2002; Chen, 1996; Kulik & Kulik, 1987; Schwartz, 1995; Siskin, 1999; Yang, 2001). For example, a study conducted by Yang (2001) investigated students' attitudes and

perceptions toward computer-mediated language learning tools and found that most students had a positive attitude and were empowered by their learning experience. The learners found the materials and interactive learning experiences to be intrinsically motivating and more worthwhile and meaningful than traditional forms of instruction involving textbooks (Yang, 2001). In concurrence, a meta-analysis examining studies of student attitudes towards computer-based education (CBE) by Kulik and Kulik, (1987) found nine studies revealing positive attitudes towards CBE, one study resulting in a neutral attitude, and only three studies showing negative attitudes towards CBE. It is important to note, however, that it is not just CBE itself that is being evaluated by students. It is the quality of the CBE in these cases that is important when drawing conclusions about the students' perceptions and attitudes. The studies that revealed positive attitudes, more than likely, had students working with well-designed computer activities. The conclusions that showed unfavourable student attitudes towards CBE may have been the result of poorly designed activities, and not necessarily CBE in general (Kulik and Kulik, 1987).

One language skill where there is strong evidence of CALL resulting in positive student attitudes and motivation is in writing (Dunkel, 1991; Neu & Scarcella, 1991; Phinney, 1989, 1991, 1996). Word processing on a computer often produces better writing because there is the perception that the task is useful and modern, thereby motivating students to engage more fully in the writing process (Dunkel, 1991). According to Neu and Scarcella (1991), compared to handwriting or using a typewriter, word processing is motivating for language students because it allows the student to write

and revise more freely, resulting in the learner taking more risks and involving her/himself more fully in the writing and editing process.

The variety of activities that computers supply can also increase student motivation (Lee, 2000). Jamieson and Chapelle (1988) suggest that students who do not like to study in class may be amused by the variety of learning activities the computer offers: "In this case, activities might be considered effective if they encourage students to practice the target language when otherwise they would not study" (Jamieson & Chapelle, 1988, p. 157). CALL increases the opportunities for recycling items in a variety of ways by using visual, audio, musical, speaking, individual or cooperative exercises, which not only provide attractive alternatives but also accommodate various learning styles (Robinson, 1991). Brett (1997) proposes that "the attraction of moving, interactive, full colour input may be more of a motivating proposition than the language laboratory. Video may add interest and increase comprehension; on-line tasks may provide motivational goals for attention" (p.6).

Another source of student motivation in CALL may also be derived from associating the computer with "fun and games" (Lee, 2000). Warschauer and Healey (1998) label this role the "fun factor" which uses the computer for competition and/or collaboration toward a goal – to motivate language learning. Games can be designed to provide an avenue for collaborative work, where the language interaction that takes place between students while working in pairs or small groups is as important as the language presented on the computer screen (Warschauer & Healey, 1998).

However, it is important to keep in mind that computers, by themselves, should not be considered to be motivating or able to develop positive attitudes. The value of

CALL comes from how the computer is used to facilitate learning. Computers are simply the tool that developers and language instructors manipulate to encourage student learning. The research points out that motivation and positive attitudes associated with computerized language learning activities and programs are solely dependant on a well-designed and pedagogically sound structure (Levy, 1997a; Warschauer & Healey, 1998).

It may be the case that CALL, in whatever form, is limited in its ability to sustain positive attitudes and provide high levels of motivation. In a study by Robinson (1991) investigating student attitudes of a CALL program, it was found that "even students who were most enthusiastic about CALL at the beginning of the study looked forward to returning to the classroom by the end of the study. Students saw the computer as impersonal, inflexible and mechanical" (Robinson, 1991). Verano's (1987) research on student attitudes towards CALL found similar results. By the end of the study it was concluded that students removed from a classroom setting to work exclusively with a CALL program began to feel isolated from the traditional classroom environment and missed the more traditional setting. Both studies highlight the "importance of integrating individual CALL work with the total program of language instruction, including the classroom, rather than configuring it as an independent supplementary activity" (Robinson, 1991, p.160)

Experiential Learning and Interaction

Computers present information in a non-linear way which assists learners in developing thinking skills and becoming "the creators not just the receivers of knowledge" (Lee, 2000, p. 2). Siskin (1999) explains that words are linked together in a book in a linear fashion while text on a computer can be linked to explanatory text, to

sound, to images and to video (non-linear). This power can enhance the learner's understanding of the target language by allowing the learner to create his/her own meaning and organization through the choices made available by a CALL program. The computer opens many lines of communication through e-mail, chat rooms, or newsgroups and EFL students can interact with people they have never met (Lee, 2000). Students have the opportunity to practise communication on a global level (Lee, 2000).

Conclusion

The previously mentioned areas of CALL potential constitute the most widely recognized in the literature thus far. It is a safe assumption that computers have many capabilities to enhance language learning (Willets, 1993). However, the potential value of CALL remains speculative until we actually observe learners taking advantage of the programs and activities (Chapelle, Jamieson & Park, 1996; Jamieson & Chapelle, 1988). In order to develop a deeper understanding of CALL, its potential and how best to realize the full capabilities of computers in language learning, much more research is needed (Chapelle, 2001a; Levy 1997a; Yang, 2001;). Realizing CALL potential will require the joint effort of CALL developers, language instructors and researchers. The next section will outline some of the reasons that CALL's potential benefits remain unfulfilled. The barriers preventing CALL from reaching its full potential need to be addressed if computers are to become a mainstay in the second language acquisition classroom.

Barriers to CALL

While there is great potential for CALL to enhance language learning, there are also economic, educational, and technical barriers that inhibit the successful integration of computers into L2 instruction. Some of these barriers include the high costs associated

with computer technology, lack of quality CALL courseware, skepticism concerning the effectiveness of computer-assisted instruction, the need to adapt to the changing roles of teachers and computers, and inadequate professional development for teachers using CALL.

Financial Barriers

The high initial capital investment required for CALL is often an insurmountable barrier for language learning programs. Expenses to be considered include the purchase and maintenance of hardware and software, setup costs of a CALL environment (computer labs), teacher training and the upgrading of computer systems and software. Even though the price of computer hardware and software has dropped significantly over the last twenty years, the required financial investment to set up and maintain a CALL lab is still out of reach for many smaller language programs and educational institutions (Chen, 1996; Dunkel, 1987). For example, Ryan (2003) reports that at one prominent Japanese university, the budget for setting up a sixty-station CALL lab environment and providing five years of maintenance between 1992 and 1997 was $1.9 million U.S. dollars Nozawa (1994) presents similar dollar amounts for setting up a CALL lab for another Japanese university language program. At the institution where research for this thesis was conducted the cost of setting up the CALL environment in 1998 was $419,070 Canadian dollars, with another twenty seven thousand dollars spent on just one CALL software program. In April of 2005 the CALL lab is due for a hardware and software upgrade which will cost an additional $91,435 Canadian dollars. Clearly, financial expenditures of this scale are beyond the means of many language programs.

Another element that contributes to the cost barrier is low usage. As Lee (2000) points out, most teachers have very limited access to computer labs for language instruction and therefore, "either the number of learners or the amount of time learners apply the technology must be increased substantially to approach the concept of cost-effectiveness" (Lee, 2000, p.5). To compound this problem is the influence of perception or reputation: if CALL has not been firmly established as an effective learning resource, it may be considered too risky an investment. As Dunkel states, "the issue of effectiveness is an important one, for unless student performance and skills improve, some might perceive that the millions of dollars invested in microcomputer hardware and software for CAI/CALL have been wasted" (Dunkel, 1991, p. 5).

Lack of Quality Courseware

CALL research strongly suggests that there is a lack of pedagogically sound CALL software available for language instruction (Dunkel, 1987 & 1991; Jordan, 1988; Lee 2000 & 2001; Schwartz, 1995).

> The laments that little good computer-based courseware is available, and that much of the material that is available is of very poor quality have proven monumental stumbling blocks for widespread use of computers in education in general, and in foreign language instruction in particular (Dunkel, 1987, p. 252).

Lee (2000) agrees that one of the most significant barriers when integrating computers into language instruction is the lack of high quality software. This is supported by Jordan (1988) who states that most CALL software is poorly developed, while Dunkel (1991) adds that much of the CALL software available is of "amateurishly" produced quality. Schwartz's (1995) review of CALL software concludes that most CALL

programs are unsophisticated and lack sound pedagogical foundations. Lee (2001) agrees by stating, "how content is presented speaks of the pedagogical approach underlying a software program" (Lee, 2001, p. 5); and the many CALL programs that are not successful can often be attributed to designs that are not developed along established educational principles (Lee, 2001).

CALL software is not always grounded in pedagogical theory because the software companies developing many of the programs often do not consult those involved in the educational process – teachers, curriculum developers, administrators and students. On the other hand, as Cameron (1996) points out, language teachers are sometimes attracted to CALL with little knowledge of computer science and consequently their activities may be limited by their lack of computer skills. Hunter (1996) agrees that current software is limited and often disappointing because "most items are either slick programmer productions which miss much of the wisdom that educators have to offer, or are educator produced and lack the stimulating interface that a programmer could provide" (p. 1). Pennington (1991) and Levy (1997a) suggest a team approach is needed where CALL researchers, front line practitioners, curriculum designers, computer programmers and computer engineers join together to combine their perspectives to create pedagogically sound CALL software programs.

Skepticism Concerning the Effectiveness of CALL

Many in the education profession expect that computers will be just another in a series of highly touted technological tools that will neither revolutionize learning nor live up to initial promises (Dunkel, 1987). According to Dunkel (1991), Schwartz (1995) and Singhal (1997), the seed of this doubt lies in the fact that technology did not meet the

expectations of educators. Teachers have seen radios, televisions, film projectors and cassette recorders enter the classroom and then leave again without noticing the wondrous gains expected (Dunkel, 1991). Of these past technological disappointments, the language lab has left behind the most significant negative effect on language learning. Paralleling the popularity of the audiolingual method and behaviouristic theory of the 1950s and 1960s, the language lab came into prominent use for foreign language instruction. Language labs allow students to listen to recorded conversations through headphones while the teacher listens and monitors students' interactions via a central control panel (Chen, 1996). The advent of the language lab brought great enthusiasm as educators and researchers believed that students would strive to new levels of second and foreign language proficiency in a shorter period of time using this new technology (Schwartz, 1995). The educational principle behind the language lab was that students would learn the language quickly by modeling and reinforcing the verbal behaviour presented to them (Singhal, 1997). The drill and practice patterns of the behaviouristic phase were a part of this technology. However, as Singhal (1997) argues, it soon became apparent that the language activities carried out in the language lab were "tedious and boring for learners, students-teacher interaction was minimal and individualized instruction was irrelevant" (p.2). This system seemed to have little grasp of pedagogical applications and the labs became glorified, expensive tape players that served to separate the students from the teacher and encourage daydreaming amongst less motivated students (Chen, 1996). In studies evaluating why the language lab was such a dismal failure it was found that the technology was not to be blamed (Dunkel, 1991; Pederson, 1987; Schwartz, 1985). Instead, the failure was due to two factors: 1) language teachers

were not trained in how to properly use the lab, and 2) materials and activities were not pedagogically sound (Schwartz, 1995). Dunkel reiterates this point by quoting Stern (cited in Pederson, 1987) who suggests that "the introduction of the medium without prior or even concurrent research being carried out in systematic fashion to determine optimal utilization of the technology for language learning, or to validate effective design of the audiotape software" (p. 6). Pederson (1987) states, "the language lab of the late 1950s and 1960s is viewed by many as an unfortunate venture that resulted in a loss of credibility for language education and a growing suspicion among teachers about the value of mediated language teaching in general (p.101). The skepticism generated from failures in education technology, such as the language lab, has led to skepticism about CALL. Teachers are wary of the value of CALL because past extravagant technological claims have not led to the predicted language learning gains. If language teachers have experienced, first hand, the frustrations and failures of the language lab, it might be "unrealistic for teachers to swallow another technological pill" (Chen, 1996, p.2).

Schwartz (1995) agrees that the language lab fiasco resembles what is happening today in the area of CALL. The two main comparisons he makes are: that "many studies focus on what students can do with the computer rather than what students actually do", and that "materials are again being developed without research into their pedagogical efficacy, and results are often disappointing" (p. 527). Dunkel (1991) likewise draws parallels between the language lab and CALL in that early elaborate claims are being followed by a lack of quality research. This has hindered L2 teachers' desires to apply such technology to language learning, and as such "early unsubstantiated hyperbole about the worth of computers for second/foreign language learning have engendered skepticism

about the value of both computer-assisted instruction (CAI) and computer-assisted language learning (CALL)" (p.6). Many skeptics have focused on the research comparing CALL with traditional methods of instruction where non-significant differences are found (Dunkel, 1987). This skepticism has caused reluctance among many educators to see the value of using computers in teaching foreign languages (Schwartz, 1995). In order for CALL to survive, Dunkel (1987) surmises that regulated and valid research efforts need to be advanced and proper research designs formed and carried out.

The Changing Role of Teachers and Computers

We have seen how some teachers are critical of the value of the computer as a teaching tool, but even if they see the value there are other barriers to overcome. Administrators often fail to recognize that CALL is a worthy or feasible use of technology, and this leads to a lack of teacher training in computer use (Dunkel, 1991). As Lee (2001) explains, teachers who are ill-prepared both technically and mentally may leave students with an adverse impression of CALL. Another problem that faces the further progress of CALL is the difficulty of moving teachers toward innovative methods of instruction (Pennington, 1991). Teachers often find it challenging to change the organization of their instruction to a radically different approach from what they learned during their own educational preparation (Pennington, 1991). Teachers are apprehensive of CAI/CALL and this apprehension "may be grounded in the ingrained 'resistance to change' so endemic in the present-day educational system" (Dunkel, 1987, p. 254). Part of the resistance to change lies in the fact that teachers often experience difficulty setting aside traditional roles of being the "benevolent monarch" (Dunkel, 1987). Many feel the

need to 'perform' or have some amount of control over the learning situation (Dunkel, 1987). Some teachers are also afraid that computers will actually replace them (Tanguay, 1997). Lee (2000) also mentions that the use of new technology can make teachers feel threatened and feel that they have less job security. As well, Lee (2000) implies that teachers tend not to use technology that requires a lot of extra preparation time. As technology becomes more pervasive in educational settings, it will become more important for teachers to adapt to the changes that computers bring and work towards successful integration of technology into their classrooms.

CALL and Teacher Training

A major barrier to CALL, and one which has strong relevance to this study, is the lack of professional development for teachers who have access to computers for language instruction. The majority of CALL research focuses on either L2 students or CALL applications, with very little research or consideration being given to the perspectives of the language teacher (Egbert, Paulus & Nakamichi, 2002; Levy 1997b). In general, language instructors' lack of CALL knowledge and training opportunities is proving to be a fundamental barrier to the successful implementation, integration and development of CALL.

In an age in which there is considerable pressure to use technology in education from external factors such as governments, institutions, school boards and administrations, the needs of teachers are being grossly overlooked. McKenzie (2001) describes the situation by stating, "We are often putting the cart before the horse when it comes to technology and education" (p.2). The bulk of funding going to CALL is predominantly being spent on hardware and software, with little or no money left over for

educating instructors on how computers can be used to enhance language learning and teaching. As mentioned previously, Ryan (2003) reported the financial commitment required to setup and maintain (for five years) two leading CALL labs at the Tokyo Metropolitan Institute of Technology was $1.9 million U.S. dollars Eighty percent of the money went towards equipping the CALL environment with hardware and the required network configurations. Most of the remaining twenty percent was dedicated to the purchase of software. As an afterthought, teacher training was provided; however it simply consisted of a one-week introduction to the computer lab and was restricted to only the full time teachers on staff (Ryan, 2003). Because the training was inadequate, most teachers used the lab very infrequently, and when they did, only the very basic computer functions were utilized (Ryan, 2003).

In instances when teacher training is provided, the majority of the instruction is inadequate to meet the needs of the teachers. As stated by Egbert, Paulus & Nakamichi (2002), "much of the research shows that teacher-education technology courses and programs have a limited impact on how teachers think and implement technology-supported teaching" (p.108). A study by Grau (1996) found that a semester long teacher education course focusing on technology in the classroom had little effect on the integration of computers in the classroom. According to McKenzie (2001), much of the teacher training so far has not been "generative", meaning that classroom instruction has not changed as a result of technology training. The literature highlights several reasons for the deficiencies in professional development.

Conclusions from Galloway's (1999) study stress the need for research to address questions about what computer-experienced teachers need to learn, how they use

computers and how they learn to use and adapt computer technology to fit their curricula. For the most part, teacher education does not seem to be meeting the needs of the teacher because applications are not being put into the context of curricula. With respect to CALL, teacher training usually consists of simply showing teachers how to use the technology. For example, teachers are taken through the steps of how to use Microsoft PowerPoint or a word processor, how to find relevant and interesting websites, or how to access and navigate through language software programs. This is obviously important for teachers to learn, but what is equally important, and missing in many CALL professional development programs, is how these applications can be used to help students acquire the language and help teachers teach the language. In other words, teachers need to be taught how to successfully integrate technology into the curriculum (Debski & Gruba, 1999; Diamond, 1997; Galloway, 1999; Johnson, 1991; Lee, 2000; Warkentin, 1993;). Not surprisingly then, this has been a common criticism of teacher training programs among educators (Galloway, 1999). Levy's (1997a) study goes further to conclude that there needs to be a fit between teachers' philosophies of language acquisition and the capabilities of computers to enhance language learning. Teacher training too often shows teachers how to use the computer application outside of the classroom environment and does not take into consideration the teachers' educational beliefs – in other words, what teachers are learning through CALL training may not be useful because it has little transferability to their classroom environments, educational beliefs and/or curricula.

Another reason CALL professional development has proven ineffective is that, according to Galloway (1999), "There is virtually no mention of a more general

education or development of a conceptual understanding of computers which might enable a teacher to adapt to change and emerging technologies" (p. 2). Along with technical development, CALL teacher training should work towards developing a firm grounding in CALL theory and language learning pedagogy (Egbert, Paulus & Nakamichi, 2002; Lee, 2001; Levy, 1997a). As Levy (1997b) suggests, it is impossible for teachers to learn every piece of CALL computer technology available. "However, if teachers understand the underlying theories and perspectives of technology integration, they can continue to learn and develop their materials according to their future needs" (Egbert, Paulus & Nakamichi, 2002, p.113).

Teachers are more likely to alter their practices when they are presented with evidence of positive outcomes attributable to computer use. According to McKenzie (2001), "the challenge of professional development is to inspire and prepare classroom teachers to launch these curriculum rich activities with tools that make sense" (p.3). Even when teachers believe that technology has an "empowering potential", teachers often do not know how to make this happen (Debski, 2000). As Egbert, Paulus & Nakamichi (2002) states, "...for CALL coursework to have an impact, it should focus on the needs of the individual teachers and their contexts" (p.110). It may also be that teacher training may not be focused on what teachers need to know (Abdal-Haqq, 1995). The rapid influx of computer innovations requires that teachers keep abreast of the changes and keep an open mind to new and better applications (Dunkel, 1987). When teachers are unfamiliar with many of the new computer programs and corresponding capabilities, the literature shows that low level applications predominate (Abdal-Haqq, 1996; Galloway, 1999; Levy, 1997a; Ryan, 2003). These results suggest that teachers are

using computers to fit their current practice, rather than transforming their practice through the use of technology (Egbert, Paulus & Nakamichi, 2002). Teachers need opportunities to practice and see student improvements that can be attributed to CALL.

There also needs to be a link between teacher training coursework and the specific environments that instructors will be teaching in. Wentworth (1996) found in her study that many teacher education students, who developed computer activities during training sessions, were not able to integrate them into their teaching because the computer environments they found themselves teaching in did not have the proper facilities, hardware and/or software. The study reinforced the point that training is best done on site in the environment in which instruction will be taking place. Grau (1996) concluded through his study that to make considerable changes in the practice of teachers, a minimum of three years of teacher training is required. The one-shot or short term teacher training workshop will not lead to significant changes in teachers' practices. However, the research does show that brief exposure to CALL is beneficial because it may lead to the development of positive attitudes and encourage teachers to consider the possibilities of computers in the classroom (Hargrave & Hsu, 2000; Kern, 1995).

The literature reveals other important factors for technology integration into educational settings. For example, influential teacher-related factors include: pressure to use computers and opportunities to learn new technical skills (Debski, 2000); teachers' confidence with computers and the degree of application user-friendliness (Lam, 2000); previous successful teaching experiences with computers (Fisher, 1999); and the level of computer use in the school and the home environment (Yildrim, 2000).

Several authors have proposed guidelines for successful teacher training programs. According to Egbert, Paulus & Nakamichi (2002), CALL teacher training should take into consideration:

1) how teachers learn technology
2) the interaction between coursework and the classroom
3) factors affecting technology use and
4) professional development in technology and learning use

(Egbert, Paulus & Nakamichi, 2002)

Abdal-Haqq (1996) adds that effective teacher training should provide opportunities for collaboration with peers, focus on technical and learning requirements of the intended student population, incorporate a constructivist approach, recognize teachers as adult learners, provide follow-up and support and make professional development accessible and inclusive.

Lam (2000) conducted a study to evaluate why teachers have been "generally slow to adopt technology and make productive use of it" (p.3). Contrary to what some have suggested, teachers are often wrongly labelled as "technophobes". Through interviews with ten L2 teachers it was found that teachers do not necessarily possess a fear of technology. Rather, second language teachers shy away from technology because they question its effectiveness, have limited access to technology on a regular basis, do not have sufficient professional development opportunities on its use, lack confidence, and do not have the time to invest in technology related development (Lam, 2000).

The research goes further to suggest that educational administrations are often overzealous in their drive to purchase the latest technology (Lam, 2000; McKenzie, 2001;

Ryan, 2003). As Lam (2000) states, "...institutions are perhaps overly technophilic in their rush to obtain the latest innovations without considering the needs of teachers and students" (p.398). The result has been rooms full of computers with very few knowing what to do with them. When teachers do find themselves teaching in the labs, unsophisticated lessons and activities predominate. The most common CALL applications used are the word processor and the Internet, while higher level activities using spreadsheets, multimedia and desktop publishing are generally neglected (Abdal-Haqq, 1996; Galloway, 1999; Levy 1997a).

The rapid change of computer technology makes it necessary for teachers to learn how to adapt and change. If teachers are comfortable with one application, at some point the application will be outdated and the teacher will have to adapt the knowledge of how to use computers to another application. It may be the case that better applications come along, but teachers who do not have a strong pedagogical foundation may not know how to integrate new applications. If teachers are to successfully integrate new CALL programs and activities, they should be familiar with the theories and language acquisition principles of CALL.

As Egbert, Paulus & Nakamichi (2002) so aptly states, "...teachers cannot implement what they do not know about" (p.110). Professional development then would seem fundamental to the successful integration of computers into language learning curricula. Although teachers should take some responsibility for educating themselves, it is essential that educational administrations recognize the importance of providing ongoing professional development opportunities for their instructors. Institutions are rarely criticized for purchasing and providing the technology and it seems that the blame

for pedagogical inefficiencies usually falls on the end users – namely, the teachers and the students (Lam, 2000). Japan evidently has learnt from past failures at the Tokyo Metropolitan Institute of Technology and is making appropriations. In 2003, the prefecture of Miyazaki budgeted three million dollars for computer hardware and software and half a million dollars for teacher training (Ryan, 2003). Assuming that the CALL programs developed in Miyazaki incorporated ongoing teacher training, provided long term technical support, and equipped instructors with the technical and pedagogical knowledge required to successfully integrate computers into their curricula, this is a step in the right direction.

CALL Effectiveness

Past Research

The proliferation of computers and computer technology in the 1980s gave rise to a multitude of research on computer-assisted instruction (CAI). CAI meta-analytic studies by Kulik and Kulik (1987), Pederson (1987), Roblyer (1988) and others reviewed the findings of CAI studies in an attempt to identify concrete results and conclusions regarding the effectiveness of CAI. This body of research produced several consistent trends:

- Learning time decreased with CAI
- Students had positive attitudes towards CAI
- CAI was effective in the area of sciences and language learning and was valid regardless of the age of the learner, the kind of computer or the type of achievement test used

- Various types of CAI were effective for different learners – tutorial courseware was better for secondary level students; drill and practice software was better for younger learners
- CAI was considered more effective as a supplement
- Slow learners and underachievers seemed to make greater gains in learning as a result of using CAI than did higher ability learners.

(Dunkel, 1991)

The early studies on the effectiveness of CALL during the same period often compared CALL instruction to traditional classroom instruction with the goal of determining which environment was superior. While studies such as that of Roblyer (1988) found little evidence of CALL's effectiveness, other studies confirmed significant positive effects. For example, Pederson's (1987) review of CALL studies revealed three discernable trends:

- Meaningful CALL practice is both possible and preferable.
- The design of the CALL program can encourage the development of language learning skills and results in more learning.
- Learning difference in CALL use can be traced and identified easily and accurately by keeping track of their interactive learning strategies. Learner differences can affect learner strategies, learning gains and attitude in CALL.

(Pederson, 1987, p.125-126)

Dunkel (1991), however, questions these conclusions, stating that "many of the studies reviewed were done with small samples, targeted few language learning skills and were conducted with poor research design" (p.17). More recent research is moving away

from the CALL vs. non-CALL comparisons and is becoming more descriptive and narrative in nature, with the goals of 1) establishing the value of specific CALL programs for specific groups of students, 2) determining student and teacher attitudes toward CALL, and 3) developing new theoretical understandings of language learning and how computer instruction affects Second Language Acquisition (SLA) (Dunkel, 1991). More recent studies now describe how specific CALL programs are used by teachers and students to enhance the language learning process without comparisons to other types of instruction. Because this research trend has produced such a wide variety of studies that evaluate many different teacher and student roles and types of CALL activities, the results have led to few concrete conclusions (Basena & Jamieson, 1996)

The Concept of CALL Effectiveness

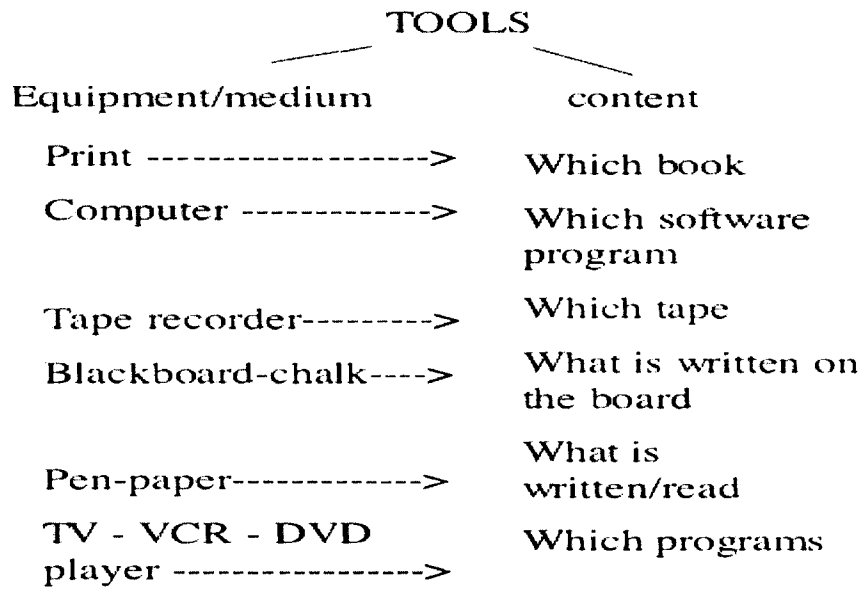
A discussion about the effectiveness of CALL should be premised on the fact that a computer is simply a tool that teachers and students use for language learning. From this position its value should be examined in the same way that comparable learning tools are assessed. For example, how useful are blackboards, overhead projectors, pens and paper, cassette players, video tape recorders, DVD players, televisions and textbooks? There is no doubt that teachers would agree that each of these tools has proven effective for educational purposes, but also that they are sometimes ineffective in certain situations. The qualities determining effectiveness do not reside in the tools themselves, but in both the 'content' that goes with them as well as how teachers and students use them. See Figure 2. For example, if teachers were asked whether textbooks are effective in helping to teach languages, they would have to ask further questions about:

1. which textbook is being evaluated,

2. which students will be using the textbook,
3. what language skills will be taught, and
4. whether the textbook would support the learning objectives outlined in the language curriculum

Figure 2

Relationship between Educational Tools and Content



Clarification of these questions is paramount in determining if a textbook, or any other educational tool, is effective or not. Educators seem to realize the importance of these questions in determining the effectiveness of familiar educational tools; however the same evaluation criteria are often not applied to computers. When deciding whether to invest in CALL or not, teachers and administrators are still asking the question, "Is CALL effective?". CALL programs, like textbooks, need to be evaluated with

consideration of the specific capabilities of the computer program and the situational parameters in which it will be used.

Simply asking whether CALL is effective or not reflects a technocentric perspective which, according to Papert (1980), mitigates the importance of people, classroom culture and the contents of the educational software. Because CALL development is often driven by technology, CALL is at the influence of technological determinism where the introduction of new technology automatically brings about changes (Warschauer, 2004). Whether or not these changes make a valuable addition to language learning is not the primary consideration because new technology is often automatically given the label as better and more useful than its predecessors. CALL research and practice needs to be less technocentric and more focused on language pedagogy within a technological environment. It would seem that when educators allow technology to drive language instruction there is a danger that:

1. language learning will be forced to fit the technology,
2. language learning principles will be overshadowed by the capabilities of the technology , and/or
3. language learning will be incomplete because it will be restricted by the limitations of the technology.

In some studies, researchers try to attribute learning gains to the medium itself rather than to the way the medium is operated (Dunkel, 1991). Dunkel (1991) urges CALL researchers to be less technocentric, that is, to not fixate on the "medium" (the computer) alone but to consider the "message" (CALL lesson) and the "recipient" (L2 learner). Papert (1980) also cautions that CALL research "must take care not to fall into the trap of

fixating on the medium alone" (p.23), and that it must take into consideration many other learner variables. Technology is limited, as teachers are, in the ability to teach languages. If each is limited in different areas, a reasonable proposition would be to utilize the strengths of what classroom instruction can offer and what technology can offer. If individual strengths are utilized the result will be a much richer language learning experience for students.

A movement away from the assumption that computers are agents that act directly on learning can be found in the literature. In recognizing the complexity of CALL's effectiveness, Clark & Solomon (1986) state that "we have moved from asking which medium was a better teacher to a concern with which attributes of media might combine with learner traits under different kinds of results" (p.473). Even though CALL research done in the 1980s recognized that a movement away from a technocentric approach was needed, many studies still maintained the same approach to CALL research.

It can be argued that CALL offers many more possibilities than other educational tools and therefore it is even more important when determining its effectiveness to evaluate the situational complexities of a specific CALL program or activity. To compound this endeavour is the fact that technological advancement and CALL development are in a constant state of change. As Warschauer and Healey (1998) stated, the research into CALL's effectiveness is always aiming at a moving target. Research done with a text-based DOS interface or prior to the widespread use of the World Wide Web may have little relevance to what teachers and students are doing with CALL today (Warschauer & Healey, 1998). The more recent capabilities of computers to store large amounts of information and the ability to access audio and video through high-speed

Internet connections are presently changing the face of CALL. This dynamic nature is showing little evidence of slowing down as artificial intelligence (AI) and speech recognition software are poised to make the next CALL breakthroughs (Gamper & Hincks, 2003; Knapp, 2002; Tsiriga & Virvou, 2004).

Pedagogy and CALL

Numerous authors have made the argument that the majority of CALL programs lack the pedagogical foundation required to make a valuable contribution to language learning (Jamieson & Chapelle, 1988; Lee, 2001; Levy, 1997a; Peterson, 2000; Phinney, 1996; Schwartz, 1995). As mentioned previously, one reason for this is because often those designing the CALL programs do not have the theoretical or practical knowledge to incorporate educational principles. Another factor that interferes with pedagogically sound CALL design is that SLA is still, in some respects, not completely understood (Chapelle, 1997). According to Liddell (1994), "the greatest obstacle to the assessment of CALL's efficacy is that we still know rather little about SLA" (p.164). Despite these implications, if CALL programs are to be pedagogically sound, a decision has to be made as to which SLA theory or set of principles is going to guide CALL design and use. As Chapelle (1998) stated, "When addressing applied questions such as design and evaluation of multimedia CALL, it is necessary to select from the many approaches that are relevant" (p.22). Chapelle (1997) suggests that the CALL literature shows a need for empirical research methods for investigating the critical questions about how CALL can be used to improve instructed SLA (Chapelle, 1997, p. 21). Chapelle (1997) maintains that discourse analysis is the mainstay for documenting the processes occurring in an L2 classroom. The goal for researchers then is to recognize conditions under which ideal

input and interactions take place, known as the "interactionist" approach to SLA (Chapelle, 1997). According to Chapelle (1997), in order to apply research on instructed SLA to CALL, two critical questions must be addressed. The first question is, "What kind of language does the learner engage in during a CALL activity?" (p.21). Answering this question will lead to a description of the language produced which, in turn will clarify the role that the CALL activity should play relative to future instruction. The second question "How good is the language experience in CALL for L2 learning?", is evaluative (Chapelle, 1997, p.21). CALL researchers can look to hypotheses of interactionist SLA research for evaluative guidelines to this question.

SLA researchers work under the premise that L2 acquisition is achieved through learners' interaction in the target language because interaction provides the means for learners to:

- comprehend message meaning, which is believed to be necessary for learners to acquire the L2 forms that encode the message;
- produce modified output, which requires their development of specifics of morphology and syntax; and
- attend to L2 form, which helps to develop their linguistic systems (Krashen, 1982; Larsen-Freeman & Long, 1991; Nobuyoshi & Ellis, 1993; Pica, Holliday, Lewis & Morgenthaler, 1989; Swain, 1985; Swain & Lapkin, 1995) (as cited by Chapelle, 1997, p.22).

Under these premises, the observable features of language learning that are optimal for acquisition becomes salient. SLA classroom research asserts that the language of classroom participants is foremost in the evaluation of the quality of learning. "Generally

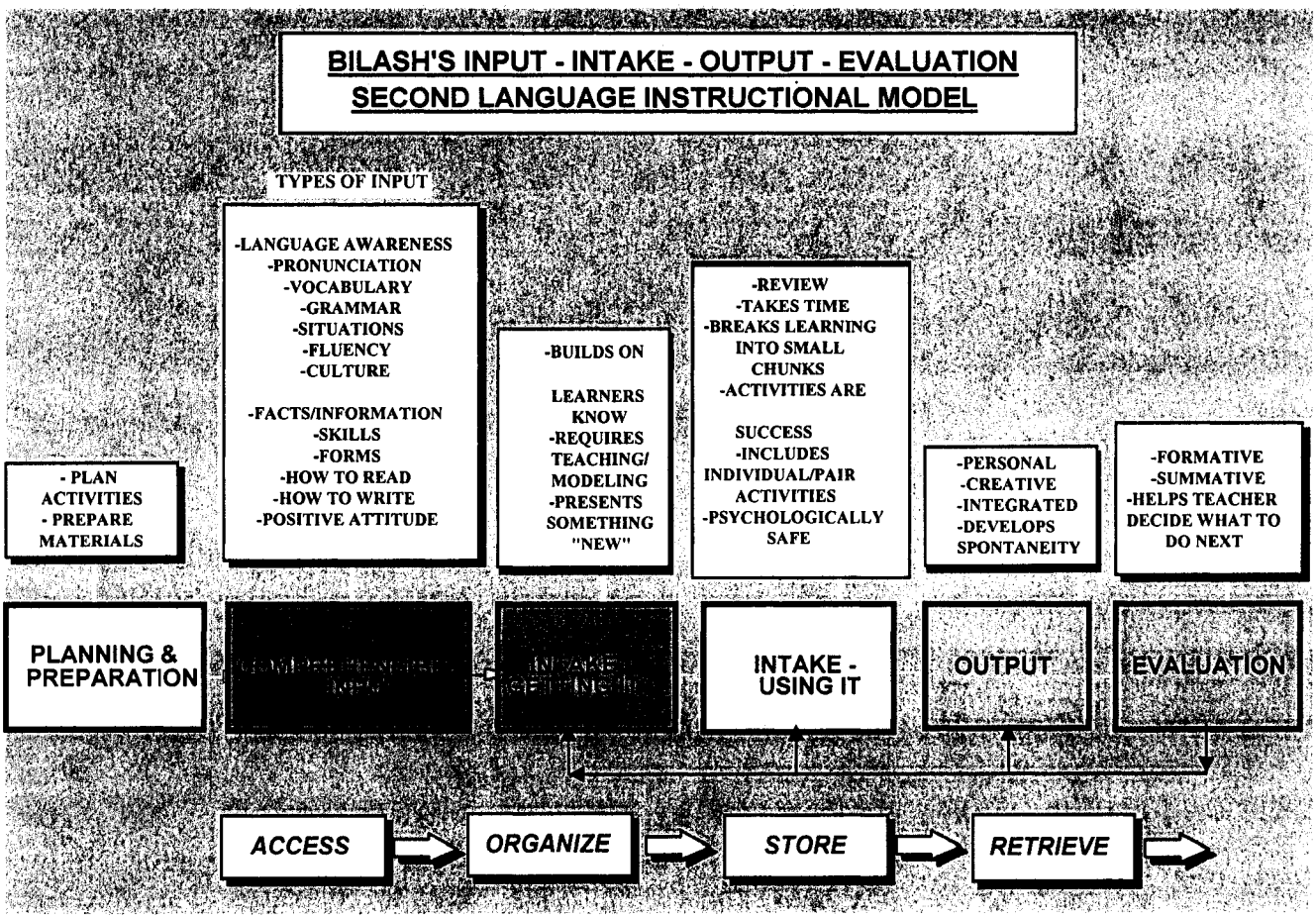
speaking, the pedagogical goal of CALL activities is for learners to improve their ability in the target language by participating in linguistic interactions" (Chapelle, 1997, p. 23).

Chapelle (1997) explains that with regard to CALL, few studies have documented the nature of linguistic exchanges or made systematic hypotheses about the value of the language of a CALL activity, and consequently proposes that CALL be viewed through classroom researchers who study the discourse created through the linguistic and non-linguistic actions of the participants. CALL can be examined from this perspective using descriptive and evaluative approaches (Chapelle, 1997). Researchers are now using these approaches more so than the laboratory-like experimental studies where condition A is compared to condition B (Dunkel, 1991). Chapelle (1997) recommends that other research methods such as experimental, correlational, introspective or ethnographic methods be used but she also is confident that "With SLA research as a basis for investigation of CALL, the paradigm search of the next decade can be a quest for methods that complement our fundamental understanding of the language experience learners engage in through CALL activities" (p. 28).

An example of a practical SLA model that has the potential to guide the development and implementation of CALL has been proposed by Bilash (2001). A simplified explanation of her model is illustrated (see Figure 3) and explained below:

Figure 3

Bilash's SLA Instructional Model



Briefly stated, the five stages of the recursive model are:

1. Planning and Preparation: During the "planning and preparation" phase, activities are first planned and then the required materials are prepared.

2. Comprehensible Input: In the "comprehensible input" stage, new information is presented to the learner in an understandable arrangement (an amount of content that can be easily understood and remembered at a language level that is slightly above that of the learners (vocabulary and phrase use, grammar and speed of presentation) and with

adequate supports (visual, auditory, kinaesthetic). There are several types of input that can be made available to the learners (refer to Figure 3 for second language input types).

3. Intake: The third stage is divided into two types of intake: "intake-getting it" and "intake-using it." In the "intake-getting it" stage, students are presented with tasks and exercises to familiarize themselves with the new information. The goal of this stage is to work towards an understanding of the new material and to be able to encounter it frequently enough in different ways so as to comfortably remember it. Students may have the "ah ha" experience during this phase, where an understanding of the information is achieved. In the "intake-using it" stage, students practice using or applying the new information in a variety of contexts and exercises. The goal of this stage is to become competent using the new information. During the "intake" stage, learning is broken into smaller parts, activities are structured for success, and there should be pair and individual activities. Students should be given 3-5 different activities in each intake stage to develop their language competence. It is also imperative that enough time is allotted to the intake stage.

4. Output: The *output* stage provides an opportunity for students to use the information in a new context and *prove* their language competence. The output activity should develop spontaneity and involve personal and creative use of the material as it is integrated with many aspects of language.

5. Assessment and Evaluation: Assessment takes place during all of the stages while evaluation (for grades) occurs at the end of a series of learning loops. During both students are given formative and/or summative feedback about their language performance with the new material. The feedback is also used by the teacher to structure

subsequent activities. The students will then use the feedback to refine their competence with the new information.

The model works in a cyclical and recursive manner as opposed to a linear progression through the stages. Following assessment or evaluation, the teacher may find it necessary to give students additional intake-getting it/using it activities or another output exercise to further develop their language competence. In these situations, additional planning and preparation will be required. Application of this model has the potential to be beneficial to both the language instructor and the CALL developer.

Applying the Bilash Second Language Instructional Model (BSLIM) to CALL

Language instructors can use the Bilash (2001) model as a guideline to implement CALL into language teaching. Teachers can decide where a particular CALL activity would best fit into the language learning progression. If teachers have access to authorware programs, where the teacher is able to key in information to be learnt, teachers can develop activities that, for example, provide relevant input for students, reinforce new materials through intake activities, or provide a variety of output activities. CALL programs and instructors can also supply formative and summative feedback throughout the process when necessary. When a learning progression carefully combines CALL and other types of resources, students are much more likely to have a positive language-learning experience. When a CALL program does not fulfill all stages of a SLA model, it is then up to the instructor to integrate activities into the appropriate stage of the language learning process. For example, if a CALL program does a poor job of making the input comprehensible, the instructor must be able to supplement the language

learning experience (in the classroom or in the computer lab) with other activities that will compensate for the CALL program's deficiencies.

The Bilash (2001) model also has the potential to be helpful in the design phase (or Bilash's *planning phase*) of CALL programs. Commercially produced CALL programs are often criticized for not being pedagogically sound. A review of three CALL programs by this author found that all three could be characterised as having a limited number of "intake" activities, too much input presented at one time, and few output activities. Even though the review looked at only three CALL programs, these results are consistent with the CALL research that concludes that many computer programs do not provide an adequate learning progression. The Bilash (2001) model can be used by CALL developers to ensure that a sound learning progression is represented in computerized language learning programs. This would reduce the amount of supplemental activities that instructors would have to implement in order to make the program valuable. If the CALL program was to be used as the sole provider of language instruction (i.e. a stand alone program) the learner would be more likely to have a positive experience if a carefully planned learning progression is present. By using the Bilash (2001) model as a guideline, a CALL developer, for example, could ensure that the following pedagogical issues are addressed:

1) input is comprehensible and presented in manageable amounts
2) there are 3-5 intake-getting it and an additional 3-5 intake-using it activities
3) students are provided with output activities
4) formative and summative evaluations are given
5) scaffolding is present

6) learning strategies are taught and put into practice

This list represents only a sample of educational considerations that should go into a CALL program. If CALL developers are cognizant of the characteristics of a good language learner, they can better design programs to fit the educational needs of the learner.

Chapelle (1998) supports many of Bilash's (2001) SLA views in her seven hypotheses relevant for developing multimedia CALL. Chapelle's (1998) seven hypotheses follow with the corresponding Bilash (2001) stage in brackets:

1. The linguistic characteristics of target language input need to be made salient. (Bilash's - Input stage)
2. Learners should receive help in comprehending semantic and syntactic aspects of linguistic input. (Bilash's - Intake stage)
3. Learners need to have opportunities to produce target language output. (Bilash's – Using it and Output stage)
4. Learners need to notice errors in their own output. (Bilash's – Assessment and Evaluation stage)
5. Learners need to correct their linguistic output. (Bilash's - Additional Intake activities)
6. Learners need to engage in target language interactions whose structure can be modified for negotiation of meaning. (Bilash's – Using it and Output stage)
7. Learners should engage in L2 tasks designed to maximise opportunities for good interaction. (Bilash's - Intake stage)

(Chapelle, 1998, p.24-26)

If CALL is to make valuable additions to the language learning process, pedagogical models and principles, such as the ones proposed by Bilash (2001) and Chapelle (1998), need to guide the design and implementation of CALL programs and activities.

The Future of Effective CALL

Determining CALL's effectiveness is important for the future success of CALL because "unless student performance and skills improve some might perceive that the millions of dollars invested in microcomputer hardware and software for CAI/CALL have been wasted" (Dunkel, 1991, p.5). Unfortunately, CALL's efficacy is dependant upon many factors, making simple conclusions impossible. According to Sisken (1999), when discussing the effectiveness of CALL the following dialogue is typical:

> Challenge: "Prove that CALL is effective."
>
> Answer: "Prove that a blackboard and chalk are effective."
>
> Retort: "Yes, but computers cost a lot more money."
>
> Answer: "Well yes, but they improve the quality of instruction."
>
> Retort: "Prove it!"
>
> (Sisken, 1999, p.2)

What this dialogue alludes to is the desire for simple answers without recognizing the complexity of evaluating the effectiveness of computers in education. As the research indicates, proving that CALL is effective requires the consideration of many factors. If skepticism towards CALL is to be overcome, research needs to produce some concrete results and conclusions regarding how computers can be and are used to enhance the

language learning process. The impact of computers on language learning remains largely an unknown quantity (Dunkel, 1991, p.7). Future research needs to work towards answering questions such as:

1. Which kinds of CALL lessons augment development of a particular language skill?
2. Which kinds of computer environments augment L2 use and learning?
3. Do students perceive CALL to be beneficial to the improvement of language skills?
4. Does small-group work at a computer terminal generate conversational interactions among group participants, and if so, what is the quality and what are the constituents of the discourse generated?
5. Do certain features in the design of CALL courseware affect the quantity and quality of student learning?
6. Do subject characteristics interact with desire to use CALL and lead to success in acquiring/learning L2 as a result of CALL activity?
7. Can computerized-adaptive testing be used effectively and efficiently to assess the proficiency of L2 reading and listening comprehension?
8. Do students' attitudes toward writing and the written product improve as a result of learning and using word processing in the L2?
9. What types of CALL programs should be incorporated into the L2 curriculum?

10. What aspects of second language competence are CALL activities intended to develop and how can effective measures be devised to assess developed competencies?
11. What strategies are used by learners during CALL activities and are these strategies related to individual learning style differences?

(Dunkel, 1991; Chapelle, 1998)

If irrefutable conclusions regarding the efficacy of CALL are not established, teachers and administrators will be reluctant to invest in the idea that computers can be a valuable educational tool for language learning.

CHAPTER 3: METHODOLOGY

Descriptive studies "describe a given state of affairs as fully and carefully as possible" (Fraenkel & Wallen, 1996, p. 13) and are "...concerned primarily with determining 'what is'" with respect to a certain situation (Gall, Gall & Borg, 2003, p.290). Descriptive research allows researchers to "...generate an accurate description of an educational phenomenon as it exists..." and provides a "...firm basis for explaining or changing it" (Gall, Gall & Borg, 2003, p.290). This study was especially timely and potentially valuable because not much was known about the subjects' perceptions, attitudes and practices with CALL in this ESL program. If educational changes were going to be implemented in the future, it was imperative to first clarify the current state of CALL so that appropriate strategies could be developed to address the barriers and increase the effectiveness of CALL. In line with the common goals of many descriptive research studies, conclusions from this thesis will potentially shape educational policy and lead to initiatives to improve the existing conditions within this particular program.

In 1997 the English language program at the university where this study was conducted took the initiative to integrate a computer-assisted language learning (CALL) component into its curriculum. Included in their teaching duties instructors are presently expected to develop computer activities and teach one class of two hours per week in a multimedia computer lab. The research questions guiding this study are as follows:

1. What do these ESL instructors perceive to be useful CALL activities?
2. How do these ESL instructors use CALL? (What educational roles do CALL activities play? What kinds of CALL activities are implemented?)
3. What obstacles do these ESL instructors encounter in implementing CALL?

4. What do these ESL instructors perceive to be the advantages and disadvantages of CALL for their students?
5. What recommendations do these ESL instructors have for on-going support and implementation of CALL?

Methodology

Survey research frequently uses questionnaires/surveys and interviews to collect data related to subjects' attitudes, opinions, feelings and/or perceptions (Gall, Gall & Borg, 2003; Fraenkel & Wallen, 1996). Because this study was aimed at determining teachers' attitudes and perceptions with respect to CALL within a specific program, it was decided that a CALL survey and follow-up interviews would be the best method of data collection.

I chose to use a survey because not much is known about this general population and its attitudes toward CALL. The survey was easy to administer, instructors completed it at their convenience and I was able to collect a substantial amount of data over a relatively short period of time. Responses from the survey also provided a useful guide for the follow-up interview questions.

The second source of data collection involved one-hour semi-structured interviews. Because it is difficult for a survey to "probe deeply into respondents' beliefs, attitudes and inner experiences", I decided to conduct interviews in an attempt to "obtain more [detailed] information and clarify vague statements" (Gall, Gall & Borg, 2003, p.222). The major advantage of interviews is their adaptability: "A skilled interviewer can probe for more information, clarify vague statements and issues, and build rapport with the interviewees" (Gall, Gall, Borg, 2003, p.222). The interview questions were

based on the instructors' responses to the CALL survey and allowed the researcher to explore issues at a deeper level, thus providing a better understanding of the instructors' attitudes and perceptions towards CALL. To ensure the "accuracy and palatability" (Stake, 1995, p.95) of the data, a summary of the interviews was given to the instructors for verification. Participants were able to review and reflect on the accuracy of the data and the plausibility of the interpretations.

Sampling and Participants

This particular group of instructors was selected for this study because the researcher had convenient access to the group ("Convenience Sampling" – Fraenkel & Wallen, 1996) and because conclusions and recommendations from the study would hopefully lead to improvements in the implementation of CALL in this specific program. However, using this type of sampling results in low population validity. In other words, "the extent to which the results...can be generalized from the sample that participated... [in this study] to a larger group of individuals..." is limited (Fraenkel & Wallen, 1996, p.99). Replication of the study with other groups of similar subjects would be needed to validate the results.

All nineteen ESL instructors in this English language program were invited to participate in this study. The instructors teaching in this program are required to teach four hours per day/ five days a week. Teachers are also paid for 17.5 hours per week to plan and prepare for their classroom instruction. This English language program is divided into seven different levels of ESL instruction and each semester lasts for seven weeks. All teachers working in the program have specialized training in TESOL (Teacher of English to Speakers of Other Languages), and/or a Degree in Education with

a focus on TESOL or SLA (Second Language Acquisition), and/or a Masters Degree in TESOL or SLA. As a part of their weekly teaching responsibilities, each is required to spend two hours of class time per week in a multimedia centre working with CALL.

Development of the CALL Survey (Questionnaire)

The development process began by reviewing survey construction guidelines from the educational research literature (see Bell, 1999; Fraenkel & Wallen, 1996; Gall, Gall, & Borg, 2003; and Gorard, 2001). Gall, Gall & Borg (2003) provided the most complete review with a list of twenty-one general guidelines for designing a questionnaire. When constructing the survey for this study, these guidelines were adhered to as closely as possible. (For a complete list of the guidelines see Gall, Gall, & Borg, 2003, p.226)

As a starting point in the development of the CALL survey content, I examined a survey developed by Michael Levy (1997a). This provided some initial direction in the development of question items that I thought would produce valuable data with respect to the research questions. However, as the survey construction process moved along, I found that many of the items contained in Levy's (1997a) survey were not relevant to the specific group with which I would be working. Levy (1997a) focused on "key CALL practitioners" who taught adult ESL, EFL or Modern language classes at post secondary institutions or private language schools in twenty-three different countries (Levy, 1997a, p.119). The research in this study, however, was aimed at ESL instructors who taught adult students in one specific program at one university. In the end, the CALL survey used in this study was very different from Levy's (1997a) instrument.

Whereas Levy's (1997a) respondents were actively involved in CALL development and CALL practice, indicating a special interest in the field, it was assumed that subjects in this study may not have had the same amount of enthusiasm for CALL. Consequently, the survey had to first establish the instructors' comfort levels with computers and CALL, their levels of interest in CALL and their experience with computers and CALL. It had to be assumed that some of the instructors would not have an interest in the development or use of CALL and that their experience would be limited.

After reviewing the different question types common in educational questionnaires, it was decided that open-ended, closed-ended and Likert scale questions would yield the most relevant data for this research.

Likert scale questions are generally "used to ask the extent of agreement with an attitudinal item" (Gall, Gall & Borg, 2003, p.214). The "semantic differential technique", which asks respondents "to rate an attitudinal object on a series of bipolar adjectives", was used to determine the level or strength of responses in regards to "how important", "how interested", "how comfortable" and "how familiar" teachers felt about various CALL issues and concerns (Gall, Gall & Borg, 2003, p.214). To measure teachers' perceptions of "importance", "interest" and "comfort levels", a ten point Likert scale was employed. A ten point Likert scale was used because it provided the instructors with a wider range to more precisely reflect their feelings, perceptions and attitudes. A five point Likert scale was used to measure "familiarity levels" with respect to specific computer software programs. It was determined that teachers did not need as much of a range to reflect rate their familiarity levels with computer software. CALL Survey items

1, 3, 6, 7, 10, 24, 25, 26, 28, 41 and 42 used Likert scales. See a copy of the CALL survey in Appendix B.

Open-ended questions were used to collect data that required a more detailed written response, even though they require more time to respond to, which may result in lower response rates (Fraenkel & Wallen, 1996). CALL Survey items 9, 10, 11a, 19, 22, 23, 27, 33, 38, 39a and 43 were open-ended. (See Appendix B).It was determined that responses to these questions could not be captured in a Likert scale or a through closed-ended responses. These questions required a more detailed personal response from the teachers. For example, descriptions of CALL activities and lessons (Question 9) required a response that was unique to each individual teacher. As well, Questions 22, 23, 27 and 39a asked respondents to expand on previous closed-ended responses. Question 43 gave teachers an opportunity to make general comments about the integration of CALL in the program, while Question 44 provided an open forum for teachers to make additional comments. See Appendix B.

Closed-ended questions pose a question and then supply anticipated responses which are selected by the respondent. These types of questions are used to measure opinions, attitudes and/or knowledge and are easy to score and analyze (Fraenkel & Wallen, 1996). Because it can be difficult to anticipate all of the possible responses, it was important to include a choice of "other" so that respondents could add information that was not represented in the given answers. Items 2, 4, 5, 8, 11-18, 20, 21c, 21d, 22, 23, 27, 29-32, 34-37, 39 and 40 were closed-ended questions. See a copy of the CALL Survey in Appendix B. The predetermined responses were taken from Levy's (1997a) study, from the CALL research literature and from anticipated responses specific to this

group's educational situation and CALL environment. For example, Section V of the survey asked teachers to respond to questions about the CALL environment available to these teachers. Similarly, Question 21 was directed at the specific CALL and non-CALL software programs installed on the computers in Room 3-06. Predetermined answers were important for two reasons. First, because the researcher had the prior knowledge that some instructors were new to CALL or had not developed a clear understanding of the prominent issues in CALL research and practice, it was determined that providing suggestions would help teachers conceptualize the major theories, accepted ideas and perceptions. Second, it was deemed important that teachers could complete the survey in a relatively short period of time while still providing useful and relevant data. Too many open-ended questions, it was speculated, would require too much time for teachers to complete and possibly lead to less desire to participate or complete the instrument. Furthermore, pre-determined answers for the teachers to select significantly reduced the amount of time needed to complete the survey. (See Appendix B)

The design of the CALL survey underwent many revisions from start to finish. The first draft of the survey was reviewed by Dr. Olenka Bilash and the Centre for Research in Applied Measurement and Evaluation (CRAME); both of whom suggested modifications regarding question wording, analysis possibilities, consideration of ethical issues and survey content. A second version of the survey was developed and then pilot tested by three individuals (an ESL teacher working in another program, a former EFL teacher and a head instructor of an ESL program). Pilot testing is important because it can "reveal ambiguous, poorly worded questions, questions that are not understood, questions that have unclear choices, and can also indicate whether the instructions to the

respondents are clear" (Fraenkel & Wallen, 1996, p.377). Consequently, I asked these three individuals to:

- provide feedback about their overall impressions of the survey.
- make suggestions about additional questions they thought would be important,
- make suggestions about the removal of any existing questions
- highlight questions and directions that may be confusing or misleading and
- provide an estimation of completion time.

Feedback from the pilot testers resulted in further changes to the wording of several questions and closed-ended choices. It was also determined that the CALL survey would take between one hour and one hour and fifteen minutes to complete.

The final version of the CALL Survey contained forty-four questions over twenty-one pages and was divided into the following seven sections:

1. Computer Assisted Language Learning (CALL) Background
2. Development of CALL Activities and Lessons
3. Using CALL in the Intensive Day Program
4. The Potential Benefits and Obstacles Associated With CALL
5. The program's Multimedia Centre
6. Administrative Support and CALL Infrastructure
7. Extra Space for survey Questions

The first page of the survey was the title page and included a question asking teachers to provide a brief explanation if they decided not to participate in the study. The second page thanked teachers for participating in the study and reiterated the information on the Research Information Sheet. After providing three important definitions related to CALL,

the questions began on page three. Because the survey required over an hour to complete, I thought that some 'comic relief' (cartoons) would be appreciated by the teachers. I obtained special permission from Mark Parisi to include three of his cartoons based on computer humour (see Appendix C). In order to give the CALL Survey a more professional appearance, I printed the cover and last page on high quality paper and coiled each survey. The CALL Survey can be found in Appendix B.

Development of the Interview Questions and Procedure

The second phase of the data collection came from three semi-structured interviews. All the interviewees chose to identify their CALL Survey so interview questions were developed to probe further into CALL issues and areas of interest identified in the survey responses. The interviews were semi-structured, which allowed the subjects the flexibility to discuss issues they perceived to be most important to the context of the specific CALL environment. Consequently, the interviews produced detailed, in-depth and rich data. One of the limitations of the data, however, is that conclusions drawn from the interviews represent only sixteen percent of the teachers involved in this study and therefore may not correspond to the perceptions and attitudes of the group as a whole. The interview protocol can be found in Appendix D.

Conducting the Interviews

Three teachers volunteered to participate in the interviews and all chose to identify their surveys. Using the research questions and the survey responses as a guideline, I developed specific interview questions for each participant. The three participants were presented with the questions prior to the interviews so that they would be familiar with the issues I would be exploring. I wanted to give participants a chance to

reflect on their ideas, attitudes and practices and how they might articulate them in the interview.

The interviews were conducted in a private office approximately two weeks after the surveys had been completed and submitted. At the beginning of the interviews I asked for permission to tape record the sessions, which all three subjects agreed to. The decision to tape record, as opposed to just take notes, was important for several reasons. According to Gall, Gall & Borg (2003), recording an interview allows the researcher to capture a complete verbal record of the interviewees' responses, which provides an avenue for a more complete analysis, speeds up the interview process, and allows the interviewer to focus on asking the questions. I attempted to get through all the interview questions, but found in all three cases that the teachers sometimes wanted to discuss issues I had not anticipated. For example, two of the interviewees wanted to express their opinions about how the CALL component was forced upon the teachers without their input. I found that these directions often produced valuable and rich data with respect to the research questions. Consequently, I encouraged the participants to expand on issues of personal interest. Because of time constraints, each interview lasted for approximately one hour; however, the interviews could have taken much longer if time had permitted.

Distribution of the CALL Survey and Asking for Interview Volunteers

On April 10th, 2003, I addressed the nineteen instructors at one of their staff meetings. I explained the goals of the study orally, gave them the Research Information Letter (see Appendix E) and answered questions about the study. Following this meeting, I placed a consent form (See appendix F) and a copy of the CALL Survey in each teacher's mailbox in the staff room. The instructors who chose to participate in the

study placed the consent form and the completed survey in an envelope in my mailbox. In this way, anonymity was maintained. Each survey also had a "Request for Interview" form (see Appendix G). If the teachers were willing to participate in a one-hour interview, they filled out this form. The "Request for Interview" form contained a section asking the instructors to identify their surveys. If they chose to identify their survey, they put this form inside their completed survey and placed them in an envelope in a designated mailbox. If the instructors wanted to participate in an interview but did not want to identify their survey, they put the unsigned "Request for Interview" form in a separate envelope and their CALL survey in another envelope. After receiving the survey in their mailboxes, the instructors were given eight days to complete and return them to a designated mailbox.

Data Analysis/Interpretation

The CALL Survey

The Likert scale and the closed-ended questions were analyzed with the help of the statistical analysis software program SPSS (Statistical Package for the Social Sciences). Frequency calculations (i.e. how many teachers selected each answer) were used to produce central tendency statistics that were used to present an overall picture of the teachers' attitudes, beliefs and perceptions of CALL in this program. Charts and graphs provide visual representations of the frequency data throughout the results chapter.

Responses to each open-ended question were compiled into a table and then analyzed for common themes. Written summaries were compiled to reflect, as closely as possible, a group consensus.

Interviews

The analysis of the interview data began by first listening to the recorded interviews and summarizing the responses to each question. The interview summaries (member checks) were then given to the three participants for review to ensure that their ideas and answers were accurately represented. The interviewees were instructed to make changes, add comments and verify the information. In keeping with the ethical procedures the signed copies of these forms will remain in a locked cabinet for five years.

The next stage of analysis consisted of categorizing the major issues identified in the interviews. The following nine categories emerged from this process:

1. The initial state of CALL
2. CALL professional development
3. The current state of CALL
4. Future possibilities of CALL
5. How CALL is used in this program
6. Limited time to develop CALL
7. Suggested changes to CALL in this program
8. The value of CALL in this program
9. What administration should do to encourage CALL

I then looked for common themes mentioned by all three participants in order to develop an overall picture about their perceptions of CALL.

The survey data and the interview data were then triangulated in an attempt to "compare, contrast and verify" the data results. According to Gall, Gall & Borg (2003), "triangulation is using multiple data collection methods, data sources, analysts, or

theories to corroborate a study's findings and helps to eliminate biases that might result from relying exclusively on any one data-collection method, source, analyst or theory" (p.464). The results chapter, where applicable, combines both survey and interview data. The survey produced a large quantity of data in a relatively short period of time, whereas the interviews produced much more in-depth responses to the questions. The data sources complemented each other to produce a clearer picture of CALL at this institution.

The CALL Environment

The impetus for the development of a CALL lab was initiated in 1997 by the English Language Program (ELP) Director. With the help of a grant and money from the English Language Program, a computer lab dedicated to CALL was built and became operational in 1998. The computer lab was designed and built by the university's CNS (Computer and Network Services); however, the then newly appointed English Language Program and Technology Coordinator provided ongoing input regarding the design of the lab. The computer lab currently houses twenty-four student computer stations and one teacher computer station.

Student Computers

Hardware: The computers in the CALL lab are all Pentium III, 500MHz with 512MB of RAM. Each of the student computers has a 3.5 Floppy drive, a Zip drive, a DVD/CD drive, 20GB of hard drive space, separate jacks for headphones and a microphone, a 17-inch flat screen monitor, high speed Internet access, and access to a dedicated ESL server.

Software: The Operating System on the computers is Windows 98. Other software programs installed on the computers include the Microsoft Office XP 2002 package

(which includes Microsoft Word, Excel, Access, FrontPage and PowerPoint), Encarta 98 Encyclopaedia, and a mix of thirteen ESL programs including TOEFL preparation software, a dictionary, pronunciation and grammar programs, and eclectic ESL programs.

The Teacher Station

The teacher's station is situated at the front of the lab. The computer is equipped with the same hardware and software as found on the student computers. One additional software program on the teacher's computer is Synchroneyes, which allows the instructor to monitor and control the student computers remotely from the teacher station. The teacher station also has access to a computer projection system, a VCR and a sound system that feeds into speakers in the ceiling. There is also a whiteboard for teachers to use and a pay-per-copy laser printer that both students and teachers can access.

Reliability

Creswell (2002) defines reliability as "means that individual scores from an instrument should be nearly the same or stable on repeated administrations of the instrument and that they should be free from sources of measurement error and consistent" (p. 649). For the purposes of reliability the same guiding questions were used for the three interviews with participants. The questions were prepared with the intention of obtaining focused information while guiding the discussion. The data was gathered through audio-taped semi-structured interviews. Transcribed summaries of the interviews were written and participants had the opportunity to verify that the data was consistent with what they had shared during the interviews or to modify any inconsistencies in the data (member checks).

Validity

Creswell (2002) defines validity as means that researchers use to "draw meaningful and justifiable inferences from scores about a sample or population." (p. 651). This study employed a survey and semi-structured interviews, as well as multiple sources of research literature to ensure that the data was triangulated.

Limitations and Delimitations

There are a number of limitations and delimitations to this study which will be discussed in detail in the final chapter.

Ethical Considerations

This study conformed to the educational institution's prescribed ethical standards. Participants were informed orally and in writing of the details of the study and signed a consent letter attesting to that fact and providing permission to use the gathered data. They were informed of the option to opt out of the study without prejudice. Confidentiality and anonymity were maintained throughout the study and the participants were asked not to reveal the names of any students or teachers they worked with. Interview participants were provided with copies of transcribed summaries of their interviews (member checks) to verify the gathered data and allow them to make any modifications necessary. Participants were also informed that they could request that the data or parts of the data gathered be omitted or deleted from the final project.

CHAPTER 4: RESULTS

The CALL Survey data and the CALL Interview data were organized to address the five research questions guiding this study. Survey responses from Questions #4, #13, #26, #28, #29, #30, #32, #39, and #40 did not elicit results that could be used to address the five research questions and thus were not used in this study. As well, in some cases the categories created from the interview data were often used to address several of the research questions. The following table shows how that data was organized (see Table 2).

Table 2

Organization of Data

Research Questions (RQ)	Survey Questions	Interview Themes
Research Question #1 – What this group of teachers perceives to be useful CALL activities.	18, 22, 23, 25	• The value of CALL in this program • How CALL is used in this program
How do these ESL instructors use CALL? (What educational roles do CALL activities play? What kinds of CALL activities are implemented?)	1, 2, 3, 6, 7, 9, 12, 14, 15, 16, 18, 20, 21(A), 21(B), 21(C), 21(D), 27, 33	• The Initial state of CALL • The Current state of CALL • How CALL is used in this program
Research Question #3 – What obstacles do the teachers encounter when implementing CALL?	5, 8, 10, 11, 11(a), 36, 37	• Limited time to develop CALL • CALL professional development • Changes to CALL in this program • The current state of CALL
Research Question #4 – What do these ESL instructors perceive to be the advantages and disadvantages of CALL for their students?	17, 19, 31, 34, 35	• The current state of CALL • How CALL is used in this program • The value of CALL in this program
Research Question #5: What recommendations do these teachers have for on-going support and implementation of CALL?	11(a), 24, 41, 42, 43, 38	• CALL professional development • Future possibilities of CALL • Changes to CALL in this program • What administration should do

There were two challenges with organizing the research data from this study. First, the research questions overlapped in some areas, and second, there were several instances where the data could have been used to support more than one research question (RQ). For example, many of the obstacles and barriers to CALL experienced by these teachers (RQ#3) naturally led to recommendations for improving CALL in this program (RQ#5). Research Question #1 was also closely tied to Research Question #2. Many perceptions of the usefulness of CALL are naturally reflected in how these teachers use CALL in this program. The overlap of data wove a complex picture of the teachers' perceptions and uses of CALL. However, so that the results would not be repeated, for the purpose of this study the data was usually dedicated to one research question. In a few instances, however, the same data strongly supported more than one research question and was presented as such.

There were also cases where the data did not lend itself to the support of any of the five research questions. In these cases the data was disregarded. For example, Survey Question #3, which asked teachers what pieces of technology they presently use, did not lend support to the research questions and was thus not presented. Some of the Interview data were also disregarded for the same reason. Some of the data did not directly address the research questions but were deemed important and added as a preliminary introduction. For example, there were several questions that established these teachers' backgrounds and feelings towards CALL. These data fit nicely as a precursor to RQ #2 – How they use CALL. The following section will present the CALL Survey and interview data under the appropriate research question. For

readability the names of the interviewees have been given the pseudonyms of Melissa, Sheila, and Ingrid. The male interview participant has been given a female pseudonym because there are only three males in this ESL program and identifying this person's gender may jeopardize his anonymity and the confidentiality of his statements.

Research Question #1 – What this group of teachers perceive to be useful CALL activities

The research literature has revealed that many teachers are reluctant to invest time in CALL because they are not convinced of its value in the language learning process (Sisken, 1999). Consequently, before addressing the research question "What do these ESL teachers perceive to be useful CALL activities?" it was important to first determine if these teachers actually perceive CALL to be a useful addition to this program. Survey Question #22 asked teachers if CALL *has the potential* to be a valuable addition to ESL teaching and learning. Fifty-eight percent of the teachers responded *Yes* to this question; 42% responded *Maybe*; and none of the teachers answered *No* or were *Undecided.* These results show a relatively positive perception of CALL among this group of teachers. What is equally important is the fact that none of the teachers believe that CALL cannot be a valuable addition to this program (selecting the *No* response to this question). This finding is encouraging for the future of CALL development and implementation because the results suggest that teachers are open to the idea of CALL enhancing language learning.

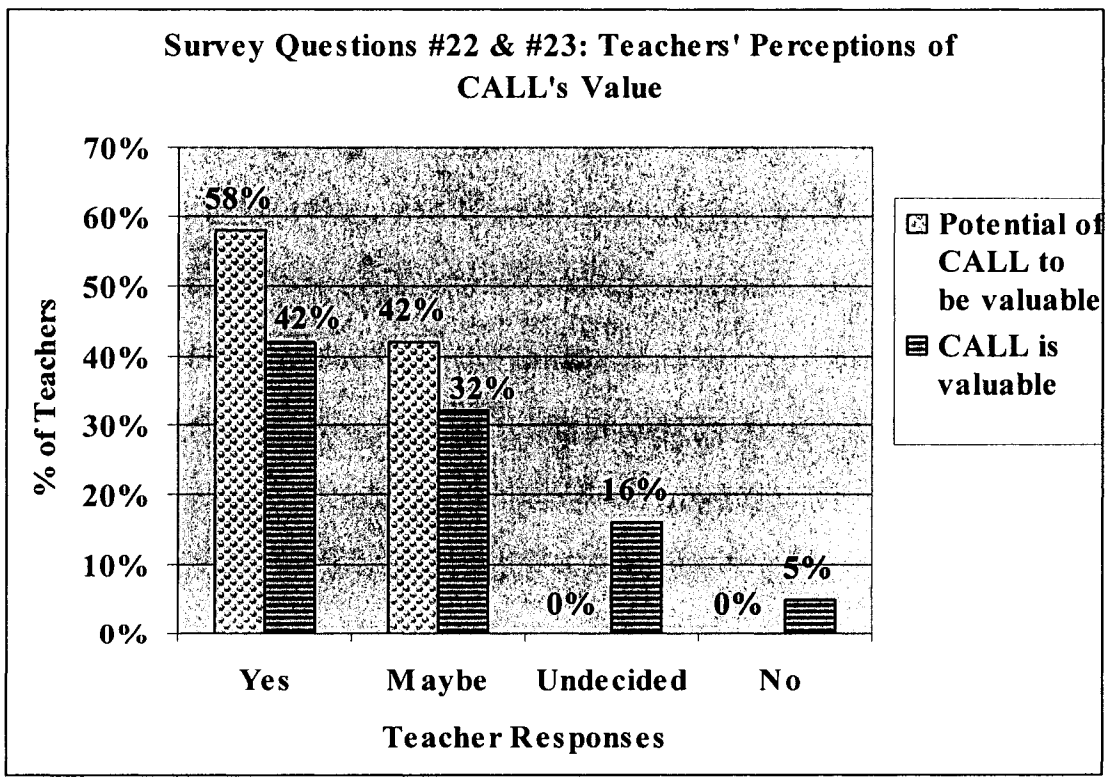
Survey Question #23 took the previous question one step further by asking teachers if they think CALL *is* a valuable addition to their own ESL classes. Forty-two

percent of the teachers answered *Yes*; 32% responded *Maybe*; 16% were *Undecided*; and one teacher responded *No*.

Whereas more teachers believe CALL has the potential to be valuable, fewer teachers actually see the value in current CALL practices in this program. Ninety percent of the teachers believe CALL can or could be valuable (answered *Yes* or *Maybe* to Question #22), but only 74% actually see CALL as a valuable component to the program (answered *Yes* or *Maybe* to Question #23). In other words, according to these teachers the potential of CALL is not being fully utilized. Figure 4 shows a comparison of the data from Survey Questions #22 and #23.

Figure 4

Teachers' Perceptions of CALL's Value



In an attempt to determine why the teachers perceive the value of CALL as they do, the group was asked to provide written justification through open-ended responses for their answers to Survey Questions #22 and #23. The teachers who believe CALL has the potential to be a valuable addition to this program (a *Yes* response to Survey Question #22) offered reasons such as:

- Gives "more accessibility to resources"
- "Using computers provides motivation for students"
- "Computers provide a variety of activities" and
- "CALL provides individualized instruction"

These points fall in line with the CALL literature. Chapelle (2001a), Debski & Gruba (1999) and Singhal (1997) concur that CALL can provide more access to resources and authentic learning materials. Ayres (2002), Chen (1996), Kulik & Kulik (1987), Schwartz (1995), Siskin (1999) and Yang (2001) have concluded through their research that positive CALL experiences lead to greater student motivation. The potential of CALL to provide a variety of activities is supported in research by Jamieson and Chapelle (1988) and Lee (2000). Lastly, Bickel & Truscello (1996), Chapelle, (1990) and others are proponents of CALL's ability to individualize instruction.

Teachers not completely convinced of CALL's value (i.e. the instructors that answered *Maybe* to Survey Question #22) gave the following types of reasons:

- "Activities that we presently use in the lab could be easily done in the classroom"
- "I'm not convinced students learn languages or machine manipulation" when using CALL
- "Teachers lack the skill and confidence to make it a valuable addition", and

- "The CALL programs are not user friendly"

None of the teachers selected *Undecided* or *No* to Survey Question #22.

Teachers who believe CALL is a valuable addition to their own ESL lessons (i.e. answered *Yes* to Survey Question #23) explained their responses with comments such as:

- "Students are motivated to use computers"
- "Computers provide a variety of activities"
- "CALL provides authentic materials"
- "Computers provide a link to the outside world"
- Computers are an "independent and flexible learning tool" and
- "Computers offer a different way to present materials".

The majority of teachers believe that CALL can be or is a valuable addition to this program; the ones that are undecided are still open to the possible potential of using computers for language learning. Only one teacher stated that CALL is not a valuable addition to this program; however, this individual also responded to Survey Question #23 with "We need more ideas and ways to maximize the potential" (i.e. this teacher believes that CALL can be useful with changes). The teachers' perceptions of CALL's value are encouraging for the continued development and use of computers for language acquisition.

Positive teacher perceptions of CALL were also highlighted in the three interviews. Melissa expressed the most optimistic outlook for CALL with comments such as "Computers allow me to be more successful as a teacher" and "I love using computers and want to help the other teachers make it more valuable". This teacher believes that CALL grammar activities "help students realize where their weak spots are

which can be addressed in class." She also finds the Internet useful for research and authentic listening practice. Sheila mentioned that she finds the authentic materials on the Internet extremely helpful for her students – "Students are given the opportunity to explore their interests in English." These comments concur with Clark and Solomon's (1986) research findings that teachers are now more concerned with which attributes of CALL will meet learning objectives and outcomes.. However, Ingrid does not believe the CALL component in this program is valuable. According to this teacher, "Right now CALL is not useful, but the potential is there. Potentially, there are a lot of good things that can be done, but it is not being done." When asked what teachers are doing in their CALL classes, this individual stated,

> Some teachers will go into the computer lab and tell their students that they have two hours of personal time to work on whatever they want to. And nothing else is done. There are no plans, no activities, no structure, no teaching (Ingrid).

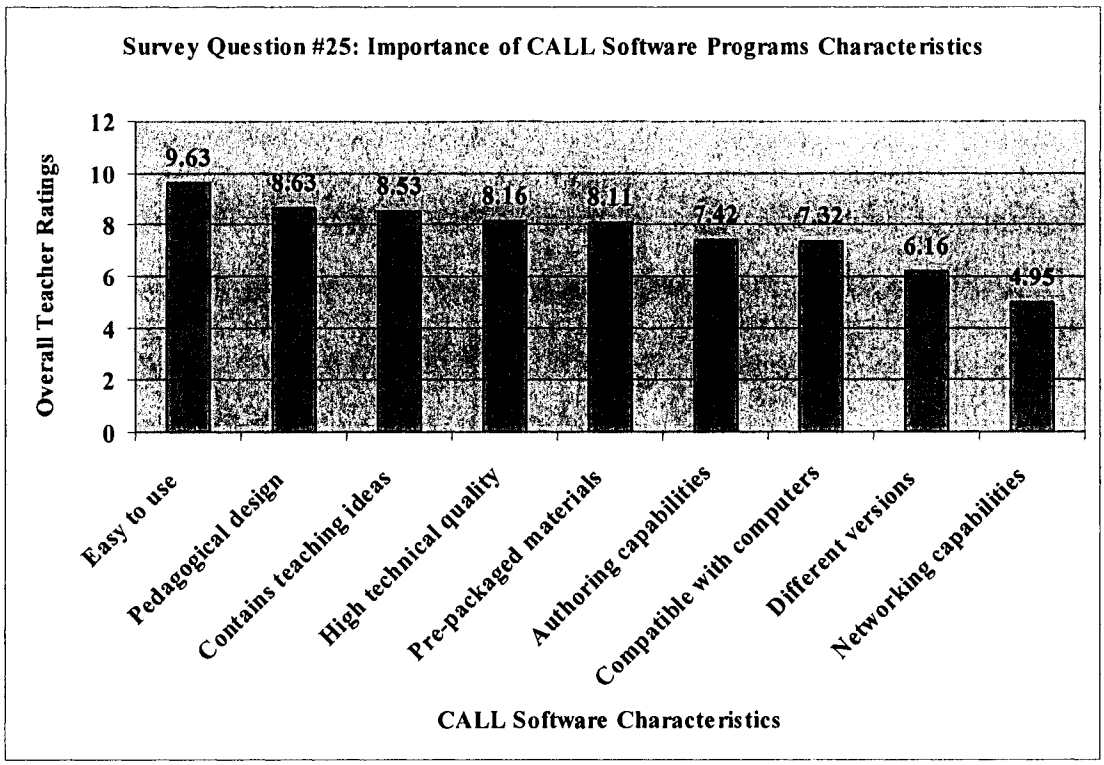
If this is the case, CALL has a long way to go until it becomes a valuable component of this program. However, it is likely that this comment is reflective of either a few teachers or a few isolated instances and should not be considered as the norm. The vast majority of data from this study paints a much brighter picture.

Survey Question #25 shed light on what these teachers believe to be characteristics of useful CALL software. The designated CALL lab available for teachers and students in this ESL program has thirteen CALL software programs. Survey Question #25 asked teachers to rate (on a 10-point Likert scale) what factors they consider significantly contribute to the success of a CALL software program. Teachers

indicated that the most important software characteristic is that it is easy to use for teachers and students (9.63/10). The second most important factor, according to this group of instructors, is that the software should be designed according to pedagogical principles (8.16/10). Teachers also indicated that CALL software should contain clear and readable documentation with teaching ideas (8.53/10); be of high technical quality (8.16/10); and contain relevant pre-packaged CALL activities and lessons (8.11/10). Figure 5 shows a complete representation of the data for Survey Question #25.

Figure 5:

Importance of CALL Software Program Characteristics



Two instructors added to this list with the responses: "the software needs to be sophisticated – if it isn't students will be turned off" and software should provide "a variety of activities" so it doesn't get repetitious.

Throughout the survey, teachers provided data regarding which CALL applications they use most often, which language skills they most often focus on in their CALL lessons, and what kinds of CALL activities they most often develop and implement. Teachers were not asked if what they are doing represents what they think is most useful for their students. It is likely that there is a connection between their choice of CALL activities and what they perceive to be most useful; however, other factors may be influencing their choice of CALL applications and activities and thus the conclusion that what teachers are doing constitutes what they think is most useful cannot be made. Research Question #2, "How do these ESL instructors use CALL?", outlines in detail the computer activities these teachers are using in this program.

Teachers may be using certain CALL activities and applications because they are conveniently available or easily implemented. For example, the extensive use of the Internet and CALL software may initially be regarded as an indication of what teachers perceive to be the most useful CALL applications. However, the decision to use these CALL resources may be made because they offer conveniently packaged lessons and a wealth of materials which lend themselves to many CALL lesson possibilities. If this is the case, the motivation to use these applications may be driven by convenience rather than usefulness. However, since teachers were not asked to comment on the reasons they choose certain CALL activities, these conclusions cannot be supported.

Another example of how CALL is used in this program was shown through Survey Question #18. The data revealed that listening, grammar and reading activities are the language skills most often developed with CALL. These language skills may in fact be perceived by the teachers as the most appropriate to develop through CALL

activities, however, again teachers may be focusing on these skills because CALL easily lends itself to language development in these areas. It is also possible that teachers do not have the knowledge, expertise or the time to create CALL activities that focus on the development of other language skills such as speaking and pronunciation. Answers to this research question require further research. The survey data made it possible to speculate, but not to make firm conclusions, regarding what these teachers perceive to be useful CALL activities.

Research Question #2: How do these ESL instructors use CALL? (What educational roles do CALL activities play? What kinds of CALL activities are implemented?)

A main focus of this research was to determine how teachers in this program are using computers to teach English as a Second Language. The CALL survey and the interviews produced a substantial amount of data in this area. The following section will review this data beginning with the state of CALL when it was first implemented in the research site in 1998. Subsequent data analyses will focus on the state of CALL at the time of this study; the role that computers are fulfilling in this language program; the teachers' comfort and interest level with respect to CALL; how CALL is being used in this program with respect to CALL software, non-specific CALL software and the Internet; and how teachers are structuring their CALL lessons.

Initial State of CALL

The director of the English Language Program was responsible for establishing the CALL lab and in 1998 it was ready to be utilized by the teachers for English language instruction. During the initial phases of the CALL lab development and implementation, there was, as shown by the data from three interviews, a wide range of teacher reactions

towards the CALL component. When asked how the teachers felt when the CALL lab first came into existence many of the initial feelings were somewhat negative. For example, some of the words used to describe the initial feelings were: "uncertainty", "insecure", "fear", "discomfort", "confusion", "nervous", "dread", "reluctant" and "incompetent". The interviews only revealed two positive feelings: "excitement" and "looking forward to". The reasons given for the overwhelming negative feelings felt by the teachers stemmed from not knowing how computers could be used to teach ESL, not having the necessary computer skills, not having the necessary in-depth knowledge about the CALL software programs on the computers, not being given any computer training, and not being provided with preparation time or training in how to effectively integrate CALL into the curriculum.

Ingrid attributed the development of negative feelings to the way the CALL component was implemented by the director at the time: "the teachers were not involved in the development and design of the computer lab" and "the teachers were not asked for any input". The CALL component "was forced upon the teachers" with very little input coming from the teachers. According to this individual, the teachers felt that they did not have an investment in the project and thus felt a limited commitment to CALL.

The Current State of CALL

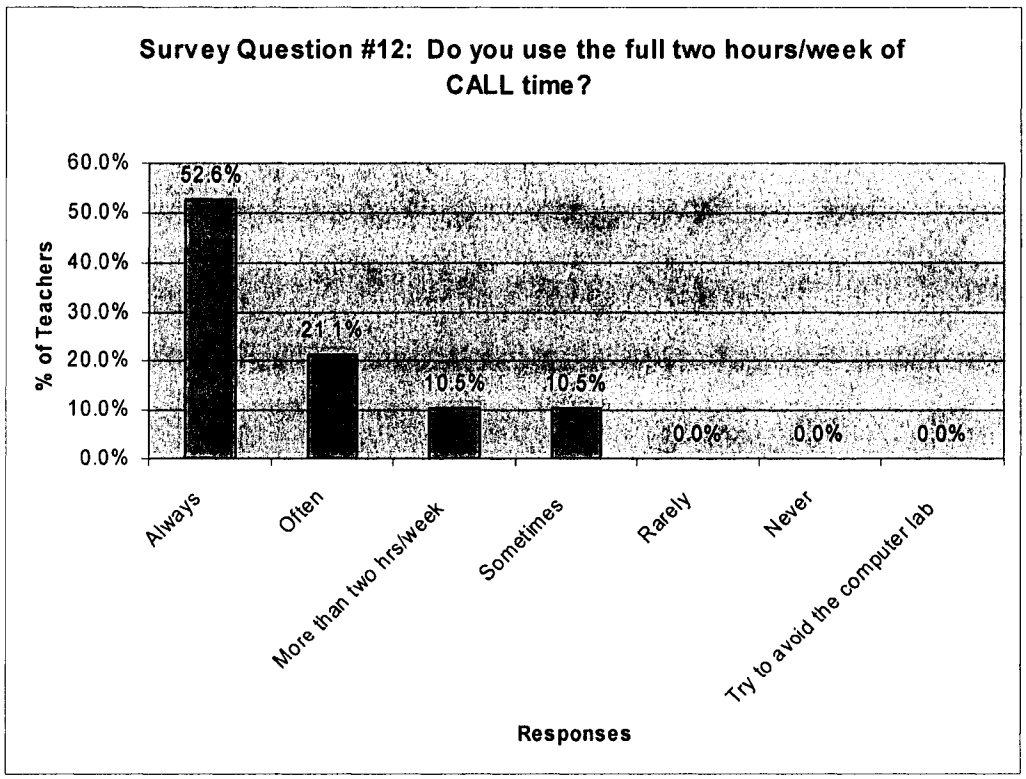
Data from both the CALL Survey and the three interviews present a picture of the current state of CALL in this ESL program.

At the time of this study, the CALL component in this program had been in place for five years. However, data from the survey revealed that teachers had been using CALL to teach ESL anywhere from three to twelve years, some for many years before

this initiative was implemented. On average the teachers had been using CALL for 5.05 years. Since its inception, the teachers in this program have been required to spend two hours per week (10% of their total ESL instructional time) in the CALL lab. Even though they operate on an independent basis with respect to the amount of time spent in the CALL lab, most teachers, according to Survey Question #12, are spending the required two hours per week in the lab. See Figure 6. Two teachers indicated that they "usually use more than the two hours" in the lab; 10 teachers "always" spend two hours per week in the lab; and 4 teachers "often" use the two hours in the CALL lab. Thus, it can be concluded that teachers are in fact using the time allotted for CALL instruction.

Figure 6

Time Spent in the CALL Lab



One teacher provided a written response to this question, stating:

These days I give them 1 short assignment, then a list of suggested activities to do as they please. As long as they work in English I feel this system works best for me. I prefer lessons where they are required to find stuff out then use this material in class – i.e. to increase oral interaction; I use 1.5 hrs – only 2 hours if my lab is before break.

It would appear that this teacher does not plan her/his CALL classes according to time. He/she has a planned set of assignments on which the students work until they are finished. The interpretation from this answer is that this is more important than filling the two hour time slot.

The Roles Computers are Fulfilling in this ESL Program

Survey Questions #15 and #16 asked the teachers what roles they see the computer taking in language learning and what roles computers are fulfilling in their ESL classes. As a group, teachers in this program mainly perceive the roles of computers in language learning as:

a) *a complement to the classroom* (90% of the teachers),

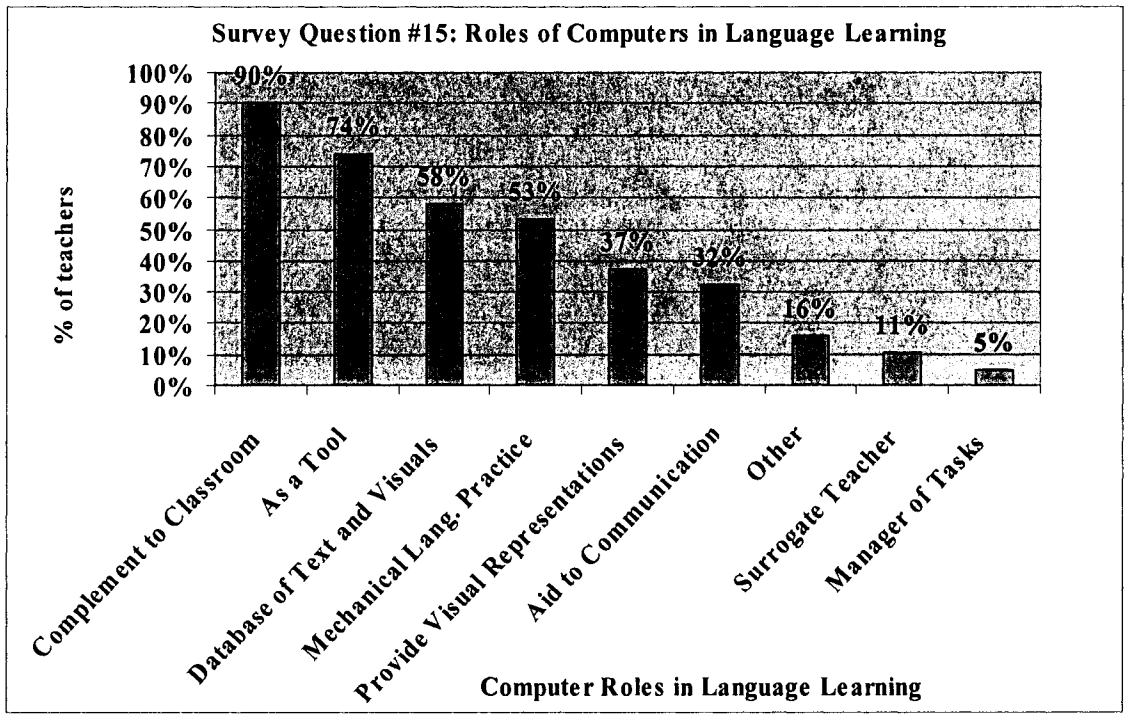
b) *a tool* (74% of the teachers),

c) *a database of text and visuals* (58% of the teachers), and

d) *a means for mechanical language practice* (53% of the teachers).

Figure 7

Roles of Computers in Language Learning

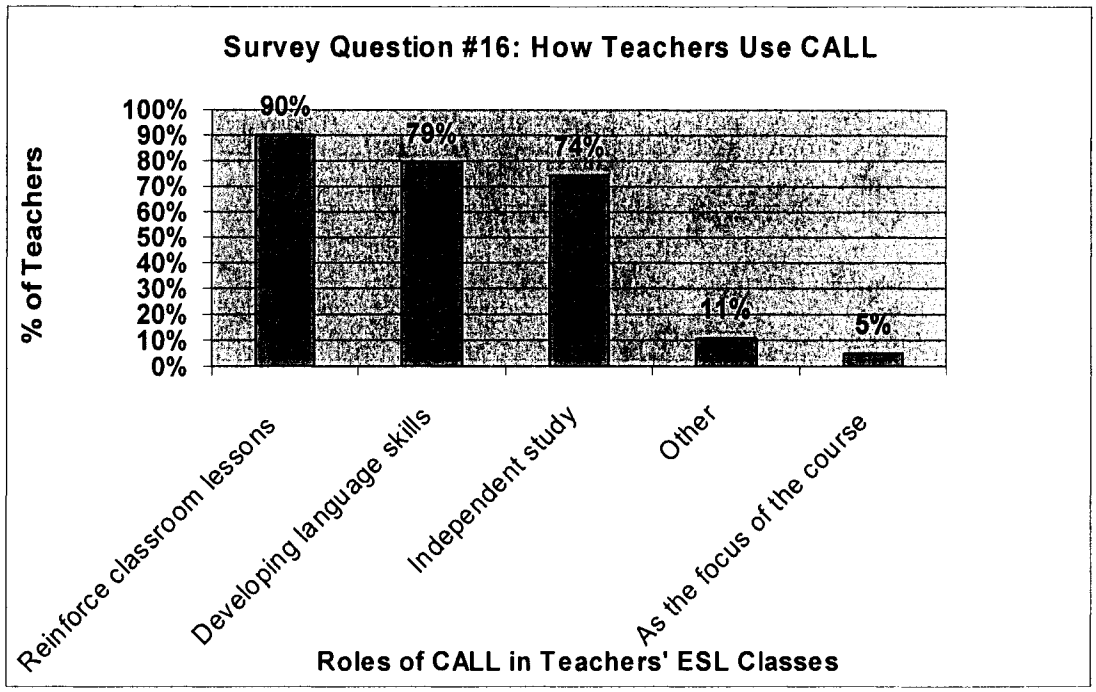


Categories were not mutually exclusive (see Figure 7). The three teachers that chose to add to this list through the *Other* response all wrote that CALL provides opportunities for independent and individualized learning. This is a well documented potential in the CALL literature (see Bickel & Truscello, 1996; Chapelle, 1990; Jamieson & Chapelle, 1988).

When asked specifically what roles computers take in their own CALL lessons, 90% of the teachers indicated that they use CALL to reinforce classroom lessons; 79% use CALL to develop particular language skills; and 74% use CALL for independent study. See Figure 8.

Figure 8

How Teachers Use CALL



The two "Other" responses reinforced a motivational aspect of CALL for students, the computer's role in allowing students to do a variety of on-line research and the ability to expose students to a wide range of vocabulary and authentic native speech.

The perceived roles of computers in this ESL program are also reflected in the factors teachers consider when planning to use CALL (Survey Question #20). Again, although the majority of teachers (74%) plan CALL lessons to reinforce classroom instruction, they also consider the "potential of the computer" (32%) in their planning. However, 21% of the teachers do not use a "particular framework" when planning to use CALL, which suggests that they may be planning only to meet the 2-hour CALL requirement. The overwhelming majority of teachers indicated that they consider how CALL activities will reinforce their classroom lessons. The other choices available were

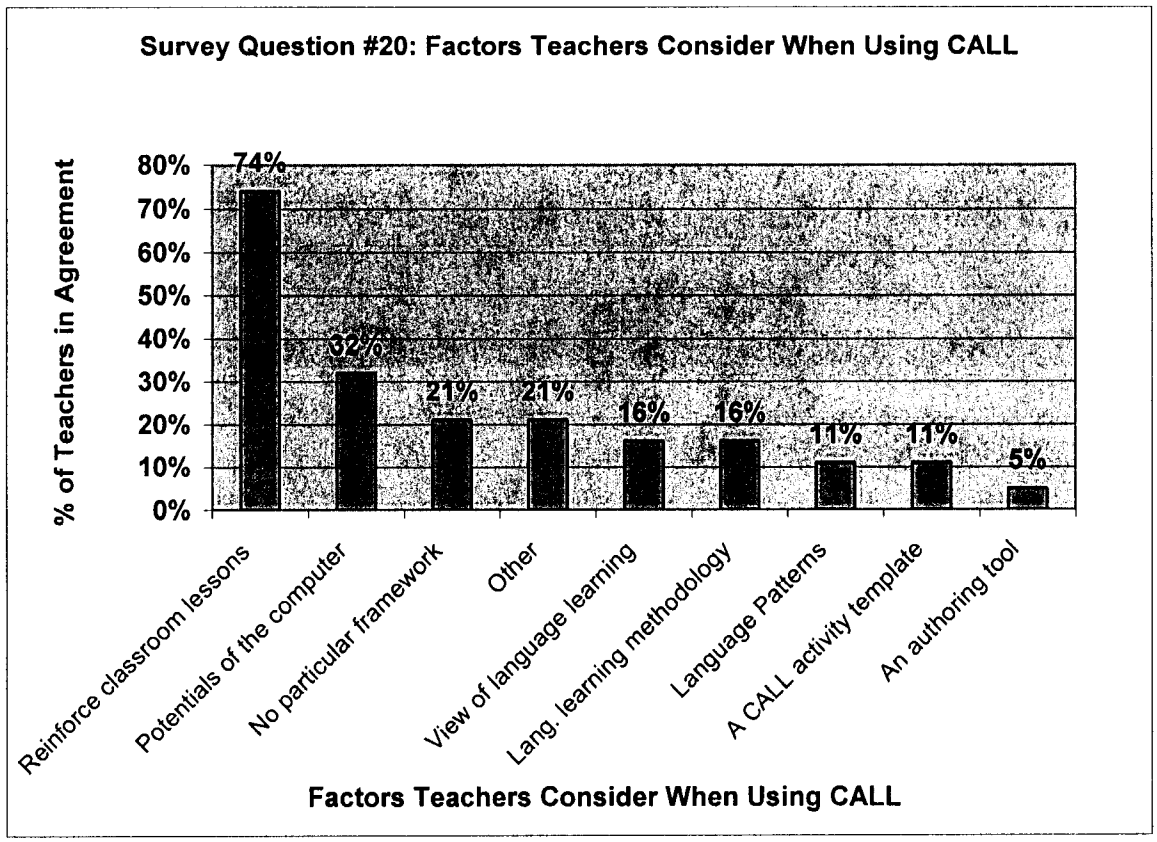
not chosen by many of the teachers. This may have been because some of the other choices require a more in-depth commitment to and knowledge of CALL. For example, in order for teachers to consider how CALL fits into their view of language learning and TESL (Teaching English as a Second Language) methodology or how the development of specific language patterns are suited for CALL instruction they may need to be more informed about CALL traditions. Reinforcement of classroom lessons seemed to be a convenient and logical choice because it easily fits into the teachers' perceptions of potential and effective uses. Four teachers offered the following additional responses:

1) "I ask other teachers to supplement class projects";
2) "skill levels (vocabulary, listening, computer literacy) of the students";
3) "Potential to introduce a new concept (on an individual basis) ex. Those who need more info can spend a longer time"; and
4) Student interest

The complete list of factors and the teachers' responses are shown in Figure 9.

Figure 9

Factors Teachers Consider When Using CALL



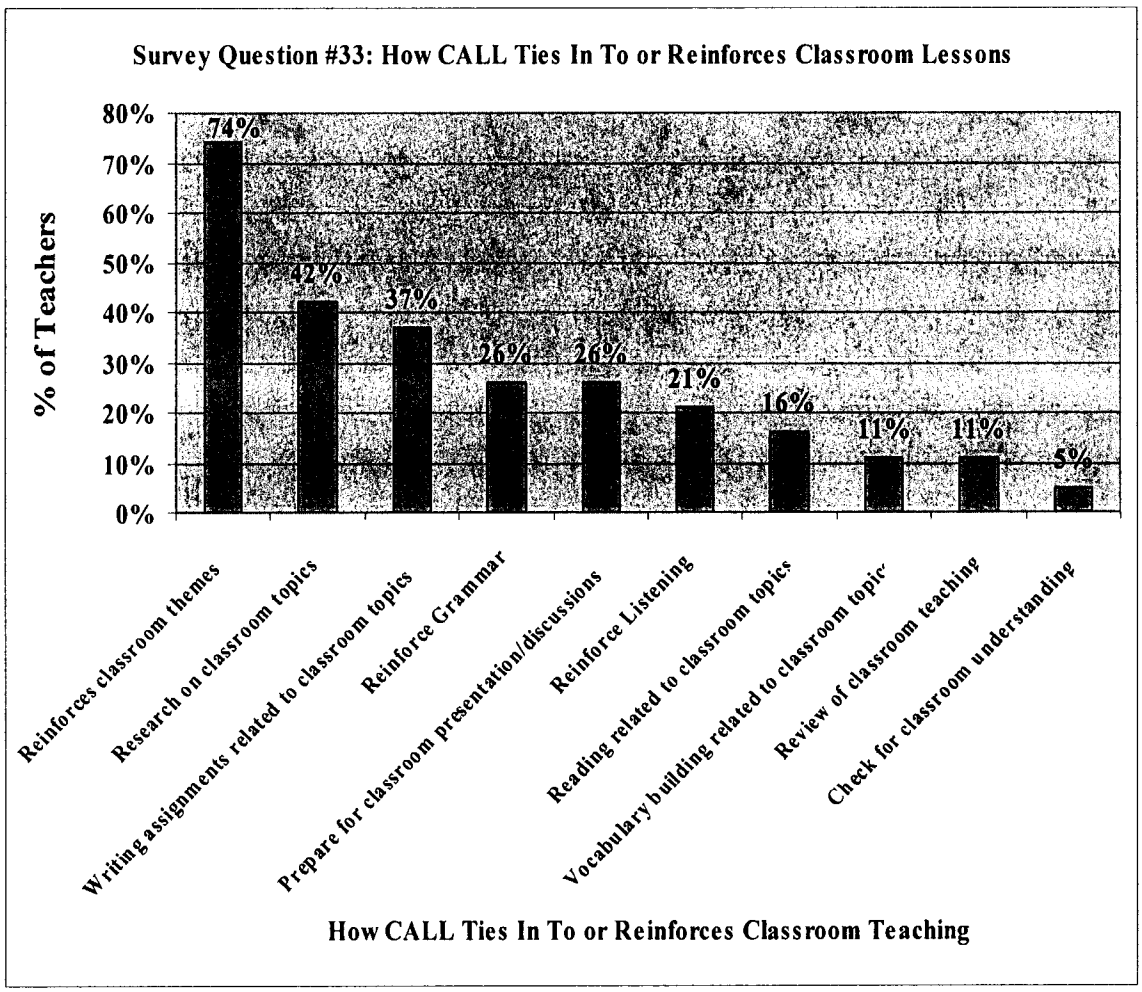
Data from Survey Question #33 also correlates with the finding that the majority of teachers consider how CALL fits into their classroom lessons. This question made the assumption that teachers do indeed tie their CALL activities and lessons to their classroom teaching by asking how the two are connected. The assumption was validated by: a) all nineteen teachers providing a written response to this open-ended question, and b) none of the teachers stating that CALL does not tie in to their classroom teaching. The data shows that the majority of teachers use their CALL lessons to reinforce themes addressed in the classroom. For example, Survey Participant #16 wrote:

> In the classroom I usually follow a thematic approach by doing reading, writing, speaking and listening activities that relate to a certain topic (such as family, pop culture, etc). Activities that I develop for use in the computer class also follow this same pattern.

In total fourteen out of the nineteen teachers mentioned a thematic connection between CALL and their classroom instruction. Seven teachers specifically mentioned a writing connection; eight teachers mentioned that students research topics related to classroom work (which may be connected to theme); five teachers use CALL lessons to prepare for presentation and discussions; five teachers reinforce grammar concepts taught in class; four teachers make a connection between classroom and CALL lessons through listening activities (may be connected to theme); three teachers use computer readings to tie into classroom topics (may be connected to theme); two teachers mentioned a vocabulary development connection to classroom work; two teachers use their CALL lessons to review classroom learning; and one teacher uses CALL classes to check for classroom understanding through the use of computerized tests and quizzes. Figure 10 provides a visual representation of the preceding data.

Figure 10

How CALL Reinforces Classroom Lessons



When teachers were asked if they thought the introduction of computers has modified the teacher's role in language teaching and learning (Survey Question #27), 42% of the teachers said *Yes*, 42% said *No*, one teacher was undecided and two teachers did not respond to this question. Teachers were also asked to explain their answers through an open-ended response. Teachers who believe computers have modified the teacher's role explained their answers by stating:

a) teachers now have to learn a new skill set related to the use of computer hardware and software;

b) computers offer a new medium of instruction which teachers now have to learn (stated by 2 teachers)

c) computers allow students to work more independently (stated by 3 teachers) and

d) "It [the computer] has enabled me to do more, more efficiently and to tailor programs to meet individual student needs which is more difficult to do in a traditional classroom setting" (Survey Participant #15).

Teachers that responded with *No* justified their answers by arguing:

a) "It [the computer] is a tool to augment what we do in the classroom" (Survey Participant #13). A similar statement was offered by four other teachers. These teachers do not perceive that the use of the computer for language teaching and learning requires a change in the language teacher's role;

b) "In my own experience, I have seen no change at all in what I do as a teacher. Using computers is just another part of the course, neither more nor less significant" (Survey Participant #16). A similar statement was made by one other teacher; and

c) One teacher stated "I am not using the computer enough to modify the teacher's role" (Survey Participant #19).

The one teacher who was "Undecided" stated that he/she was not proficient enough with CALL to determine if the use of computers has modified his/her role as a teacher.

When Melissa was asked what role computers fulfill in her classes, she responded:

> I ask myself what is the best way I can maximize the computer time so that I can supplement everything that I am doing this week. I use the computers to help to introduce and review topics and also for independent study.

This teacher is trying to integrate CALL into the curriculum as much as possible and because of this is more likely to realize the benefits of CALL activities and lessons.

Teachers' Comfort and Interest Levels with CALL

Both the survey and interview data reveal that the teachers in this program are now more comfortable using computers for language teaching than they were five years ago when the CALL lab was introduced. Teachers were asked on the survey to rate (on a 10 point Likert scale with 1 being "not comfortable at all" and 10 being "very comfortable") how comfortable they feel using computers in general. The teachers' average rating was *6.89/10*, indicating a relatively high level of comfort, as Table 3 reveals.

Table 3:

Teachers' Comfort Level When Using Computers

Survey Question #1: How comfortable do you feel using computers?			
Likert Scale Rating /10	**Frequency of Teachers**	**Percentage of Teachers**	**Cumulative Percent**
3	1 teacher	5.3%	5.3%
4	3 teachers	15.8%	21.1%
5	2 teachers	10.5%	31.6%
6	1 teacher	5.3%	36.8%
7	3 teachers	15.8%	52.6%
8	4 teachers	21.1%	73.7%
9	3 teachers	15.8%	89.5%
10	2 teachers	10.5%	100%
Total	19 teachers	100%	
Average Likert Scale Rating = 6.89/10			

Similarly, teachers were asked in Survey Question #6 to rate how comfortable they were teaching ESL classes in the CALL lab. Again, the results indicated that teachers, as a group, are fairly comfortable teaching in this environment (average teacher rating of *6.9/10* on a 10-point Likert Scale). See Table 4.

Table 4:

Teachers' Comfort Level Teaching in the CALL Lab

Survey Question #6: How comfortable are you teaching ESL classes in the Multimedia Centre?			
Likert Scale Rating /10	**Frequency of Teachers**	**Percentage of Teachers**	**Cumulative Percent**
4	3 teachers	15.8%	15.8%
5	3 teachers	15.8%	31.6%
6	2 teachers	10.5%	42.1%
7	4 teachers	21.1%	63.2%
8	1 teacher	5.3%	68.4%
9	4 teachers	21.1%	89.5%
10	2 teachers	10.5%	100%
Total	19 teachers	100%	
Average Likert Scale Rating = 6.9/10			

To support the data in the above chart, all three interviewees mentioned that teachers are now more comfortable with computers and teaching in the CALL lab than they were five years ago. Melissa stated, "The teachers are more comfortable with using the computer for language learning"; Sheila mentioned that "a lot of the fear is gone" with using computers and "As it stands now, teachers, including me have become comfortable with what they have to do"; and Ingrid stated, "[teachers] are more comfortable now because they have been working with the computers for five years now". However Ingrid also mentioned that teachers "wouldn't miss it (the CALL component) if it was taken away"; an indication of the perceived value that CALL has in this ESL program. In other words, one's comfort level with computers is not necessarily an indication of perceived value or effectiveness of CALL. Interestingly, Melissa added "For the teachers that are not comfortable with the computers, the main goal is to just fill up the two hours per week." In many top-down decisions and when unfamiliar with new content, many teachers beginning to teach a new subject feel the same way. For example, Jerald (2002) found that teachers who are teaching out of field or in areas about which they have no or minimal background knowledge or preparation often express similar sentiments:

> ...teachers hate to be assigned out of field: The practice makes lesson preparation much more time-consuming and classroom instruction more frustrating. Like other professionals, most teachers desire to do the best job possible, a desire that's tragically thwarted when they are assigned to teach classes in subjects they do not know well. (p.3)

Even though there have been some positive changes to the perception and acceptance of CALL, there are a few instructors who still hold some negative opinions towards it.

Teachers were also asked to rate (on a 10 point Likert scale with 1 being "not interested" and 10 being "very interested") how interested they were in CALL. As Table 5 shows, the average interest rating was *6.3/10,* an indication of a moderate level of interest in CALL.

Table 5:

Teachers' Interest in CALL

Survey Question #3: How would you rate your interest in CALL?			
Likert Scale Rating /10	**Frequency of Teachers**	**Percentage of Teachers**	**Cumulative Percent**
3	**2 teachers**	**10.5%**	**10.5%**
4	**1 teacher**	**5.3%**	**15.8%**
5	**4 teachers**	**21.1%**	**36.8%**
6	**5 teachers**	**26.3%**	**63.2%**
7	**1 teacher**	**5.3%**	**68.4%**
8	**3 teachers**	**15.8%**	**84.2%**
9	**2 teachers**	**10.5%**	**94.7%**
10	**1 teacher**	**5.3%**	**100%**
Total	**19**	**100%**	
Average Likert Scale Rating = 6.3/10			

The level of interest may be related to how CALL was introduced in 1998. Ingrid made several comments about the teachers not having had any input into how the CALL component was implemented which created resentment and negative feelings.

How CALL is Currently Being Used in this Program

Data from both the CALL Survey and the interviews reveals what CALL resources are being used and how they are being integrated into ESL classes. This section

will be used to present a clearer picture of how CALL is currently being implemented in this program.

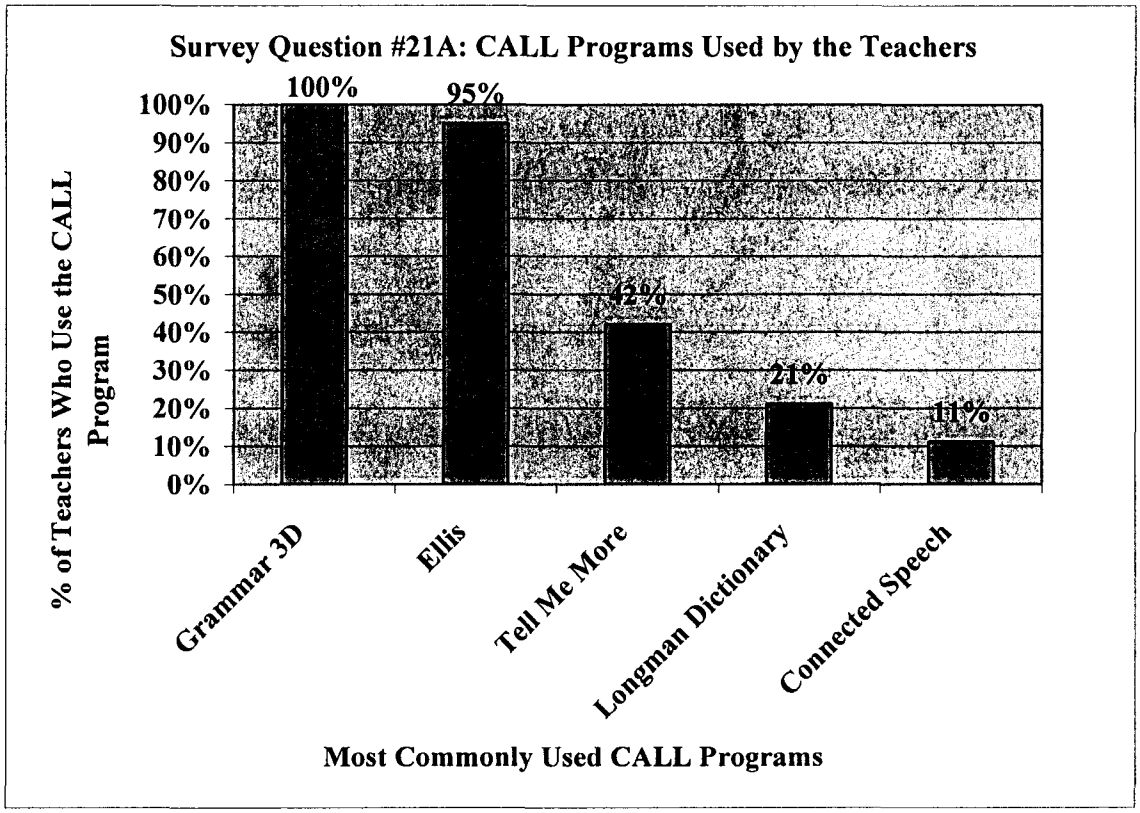
CALL software programs:

There are a total of twelve CALL specific software programs available to teachers and students in the CALL lab. Seven of the twelve CALL programs provide multi-level ESL instruction in reading, writing, listening and, in a limited fashion, speaking: *Grammar 3D, Ellis, Tell Me More, Connected Speech, Tense Busters, Clarity, Esri.* Four of the software programs are TOEFL (Test of English as a Foreign Language) specific: *Delta Systems - TOEFL, TOEFL Power Prep, Longman Preparation Course – TOEFL, American Language Academy – TOEFL Mastery.* One program is a computer dictionary: *Longman Dictionary of Contemporary English.* Survey Question #7(II) asked teachers to rate their familiarity (on a 5 point Likert scale where 1 being *not familiar at all* and 5 being *very familiar*) with these CALL programs. As a group, these teachers are, *very familiar* with only two of the twelve CALL software programs: *Grammar 3D*: *4.47/5* and Ellis: *3.95/5*); *familiar* with one other program: *Tell Me More*: *2.79/5* and not very familiar with the remaining nine software programs (*2.11/5* and below). Because there is no specific focus on teaching TOEFL in this ESL research site, a lack of familiarity with the TOEFL specific software is understandable. Survey Question #21A asked teachers which CALL software programs they use for their ESL classes. The data from this question corresponds to the teachers' CALL software familiarity: 100% of the teachers use *Grammar 3D*; 95% use *Ellis*; 42% use *Tell Me More*; 21% use the *Longman Dictionary* and 11% use *Connected Speech.* The remaining CALL software programs

(*Clarity*, *Esri*, *Tense Busters* and the four TOEFL specific CALL programs) are rarely used (5% of the teachers and lower). See Figure 11.

Figure 11:

CALL Programs Used by the Teachers



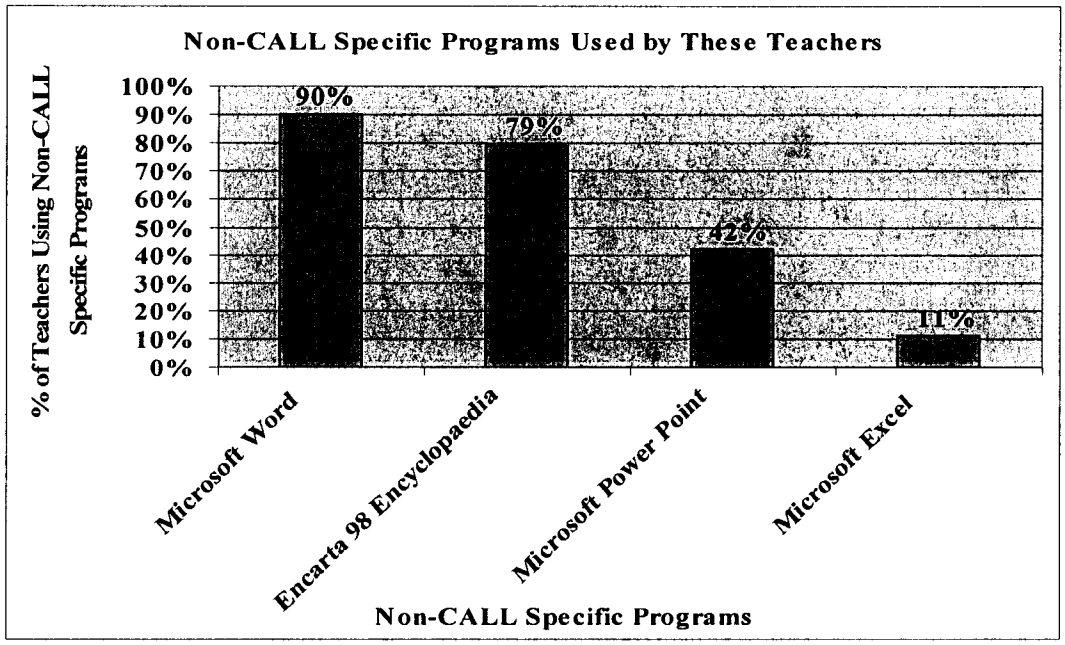
The interviews also shed some light on the use of CALL software in this program. According to Melissa, "teachers are integrating ...software programs ... into the language curriculum"; however, they are "sticking to the.... programs that they use and know". Sheila stated that she "uses them [CALL programs] as one of the things that students can use" assuming that other CALL applications such as the Internet and non-CALL specific software are also used.

Non-CALL specific software programs

Teachers also have access to six non-CALL specific software programs in the CALL lab: *Microsoft Word, Encarta 98 Encyclopedia, Microsoft Power Point, Excel, Microsoft FrontPage 2000 and Microsoft Access.* When teachers were asked to rate how familiar they were with these programs (on a Likert scale of 5 with 1 being *Not Familiar at All* and 5 being *Very Familiar*), it was found that, on average, teachers were very familiar with *Microsoft Word (4.37/5)*; less familiar with *Encarta 98 Encyclopedia (3.53/5)*; and even less familiar with the remaining non-CALL specific programs *(2.79/5* and below). Survey Question #21(B) also asked the teachers which non- CALL specific software programs they use in their CALL lessons. Again, the results support the previous findings. *Microsoft Word* is used by 90% of the teachers; *Encarta 98 Encyclopedia* is used by 79% of the teachers; and 42% of the teachers use *Microsoft Power Point.* See Figure 12. The remaining programs are not extensively used by these teachers.

Figure 12:

Non-CALL Specific Programs Used by the Teachers



The Internet

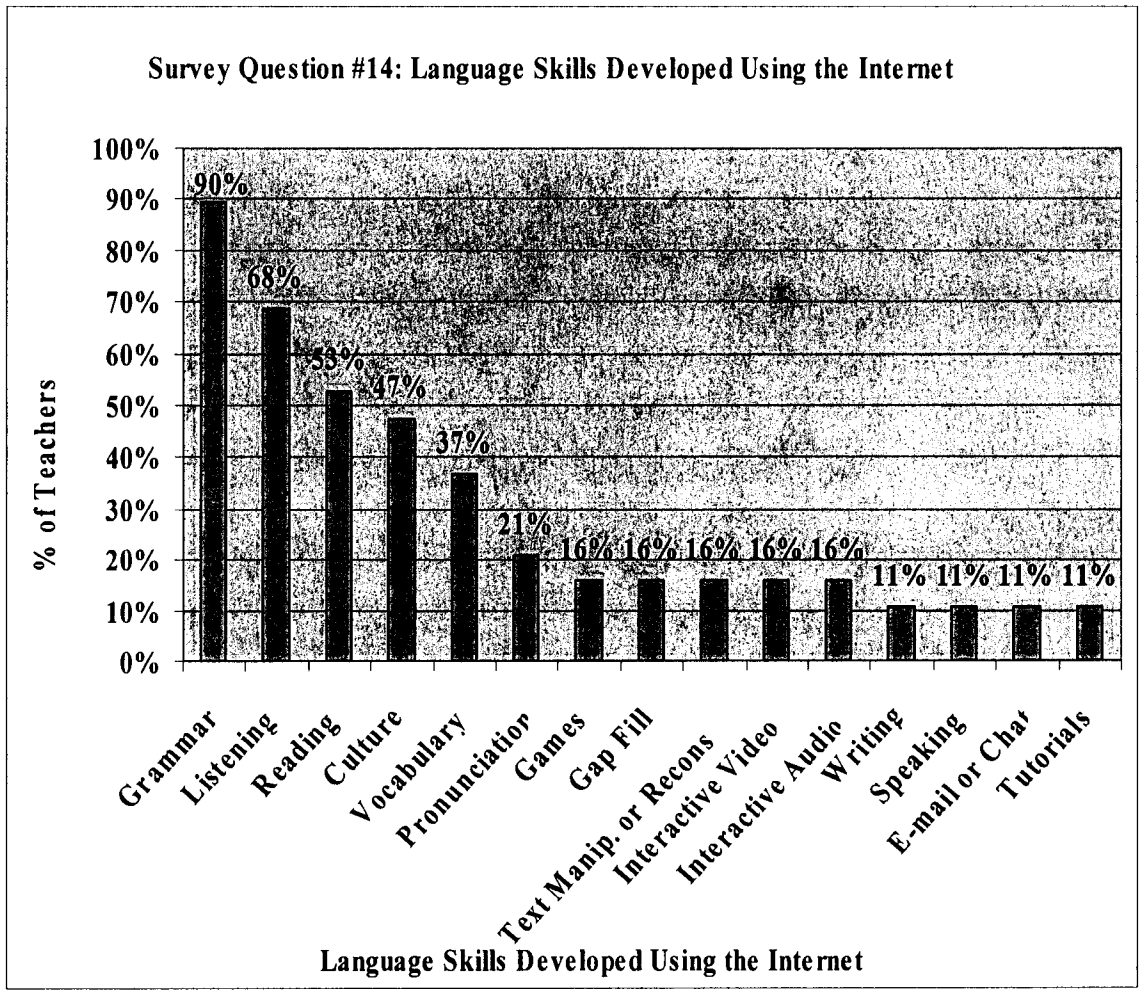
Data from both the CALL Survey and the CALL interviews reveals that the Internet is by far the most widely utilized CALL resource in this ESL program. Ninety-five percent of the teachers use the Internet when developing CALL lessons. In comparison, only forty-two percent of the teachers use commercial CALL software programs to develop CALL lessons. When teachers were asked to briefly describe some of the CALL activities and lessons they have produced (Survey Question #9), twelve out of the fifteen teachers who responded outlined a CALL activity using the Internet. When teachers were asked to name websites they frequently used for teaching ESL (CALL Survey Question #21C and #21D), twenty-seven ESL specific websites and twenty-one non-ESL specific websites were listed. The number of different websites listed highlights the wide range of Internet resources used by these teachers. The most

frequently cited ESL websites were: www.eslcafe.com (by nine teachers); www.esl-lab.com (by nine teachers); and www.eslflow.com (by five teachers). Many of the non-ESL specific websites used are news related websites or educational websites. The most frequently mentioned websites are from the *Canadian Broadcasting Corporation* (mentioned by thirteen teachers), the *British Broadcasting Corporation* (eight teachers), the *Public Broadcasting Service* (two teachers), *Discovery* (four teachers) and *National Geographic* (two teachers). For a complete list of the websites listed see Appendix H.

Finally, Survey Question #14 asked teachers to identify specific software or computer applications, such as the Internet, that they use to help students develop certain language skills. The results showed that the Internet was used to develop language skills such as grammar (90% of the teachers); listening (68% of the teachers); reading (53% of the teachers); cultural understanding (47% of the teachers) and vocabulary building (37% of the teachers). The remaining language skills were used by 21% of the teachers or less. Clearly, as Figure 13 shows, the Internet is playing a major role in the CALL component of this program.

Figure 13:

Language Skills Developed Using the Internet



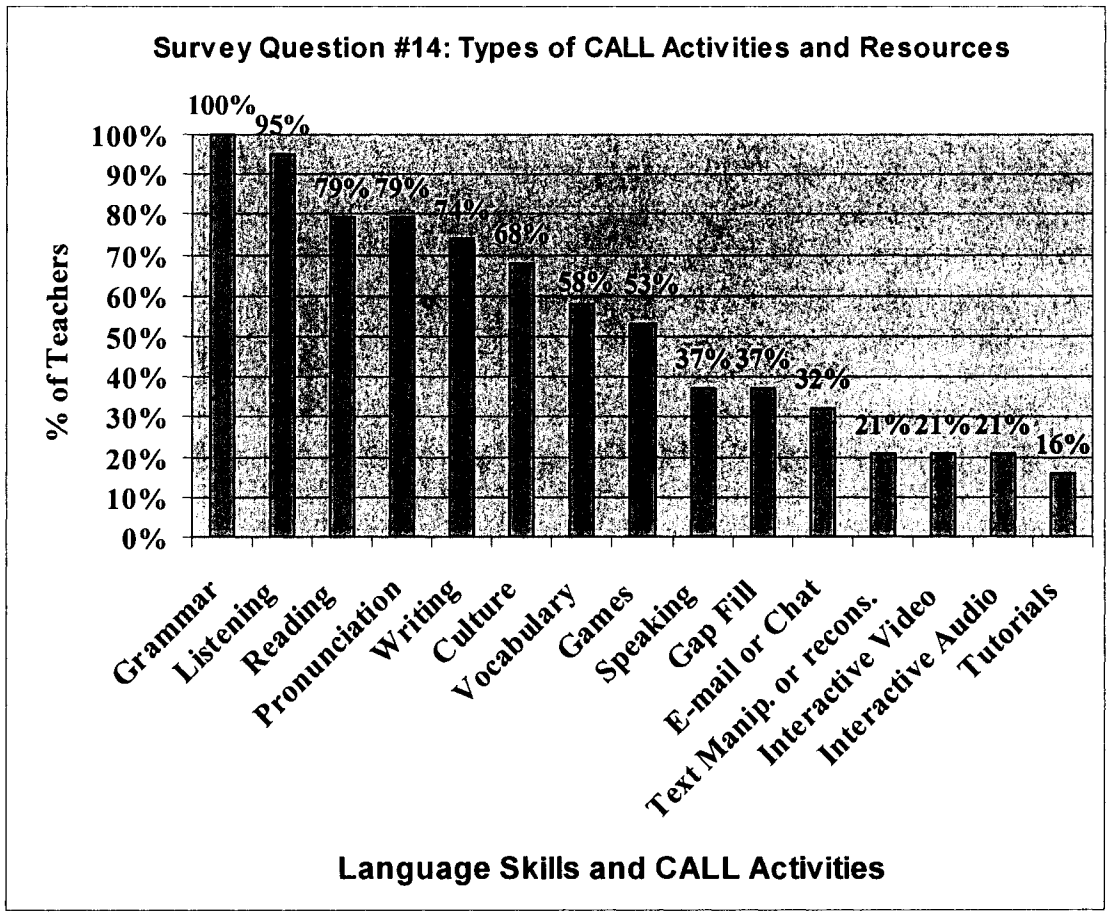
The interview data also supports the extensive use of the Internet in this program, especially in helping students develop research skills. Comments such as "There are many more resources from the Internet being used, especially for research" (Interview #1), and "Computers and the Internet allow students to do much more research" (Interview #2) illustrate the frequent use of the Internet.

What teachers are doing in their CALL lessons

Through the survey and the interviews teachers provided information about the kinds of CALL activities they have developed and are implementing in their ESL classes. Survey Question #14 asked teachers to identify the language skills developed or reinforced by CALL activities and then to name the specific software or computer application used. In descending order, all of the teachers (100%) have taught grammar with CALL; 95% have used CALL listening activities; 79% have incorporated CALL reading and pronunciation activities; 74% have used CALL writing activities; 68% have developed cultural understanding; 58% have used CALL for vocabulary building and 53% have used games as part of their CALL classes. The other activities were mentioned by less than half of the teachers. Even though speaking is one of the core language skills, CALL speaking activities were used by only 37% of the teachers. The complete list of language skills taught with CALL can be seen in Figure 14.

Figure 14:

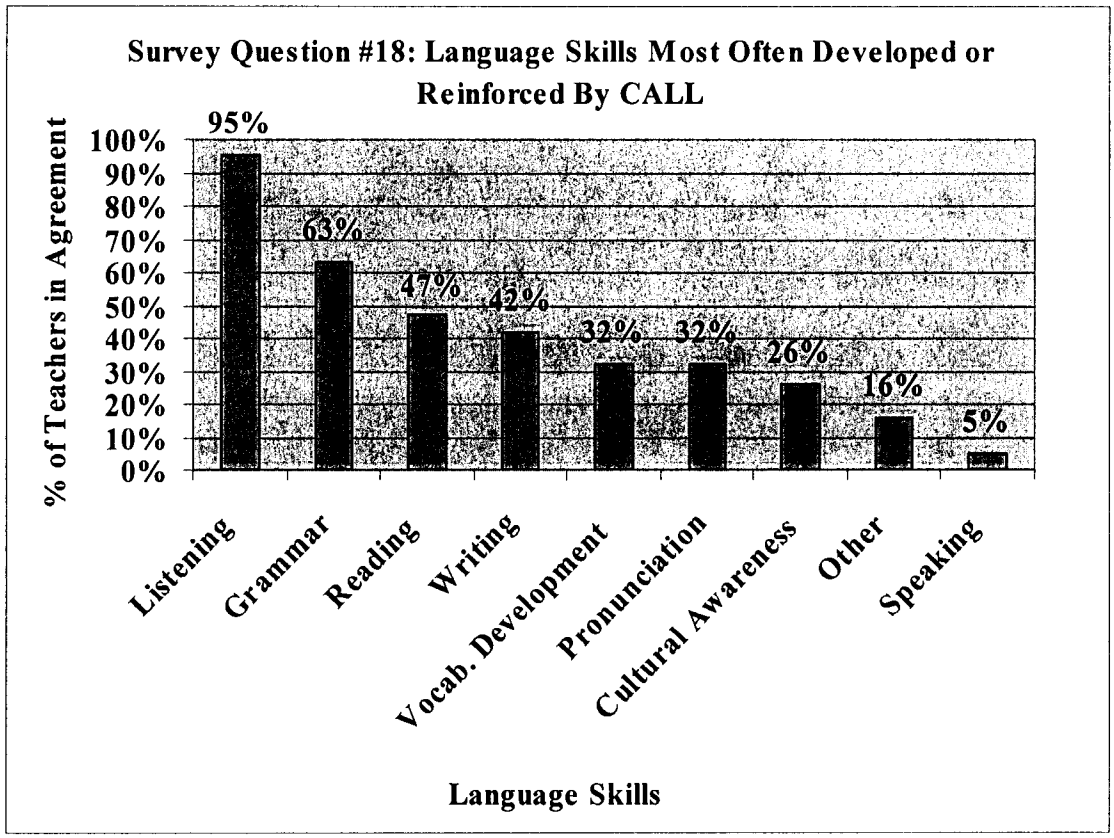
Types of CALL Activities and Resources



Whereas Survey Question #14 asked teachers which language skills they have helped students develop with CALL (even if it was only one time), Survey Question #18 asked teachers which language skills they *most often* develop with CALL. In descending order, 95% of the teachers most often use CALL for developing or reinforcing listening skills; 63% use CALL to develop grammar; 47% develop reading skills; and 42% use CALL for developing writing skills. Figure 15 shows the complete results for Survey Question #18.

Figure 15:

Language Skills Most Often Developed by CALL



Even though these teachers have used CALL to develop a wide range of language skills, listening and grammar are most often developed or reinforced. When comparing the results of Survey Questions #14 and #18, the number of teachers reinforcing listening skills was fairly constant. All of the teachers have, at one time or another, used CALL grammar lessons, but only 63% of the teachers *often* use CALL grammar lessons. Other language skills such as reading, pronunciation and writing are used even less frequently (47% - reading; 42% - writing; and 32% - pronunciation). This data clearly reveals that teachers seem to be focusing on only a few language skills in the CALL lab.

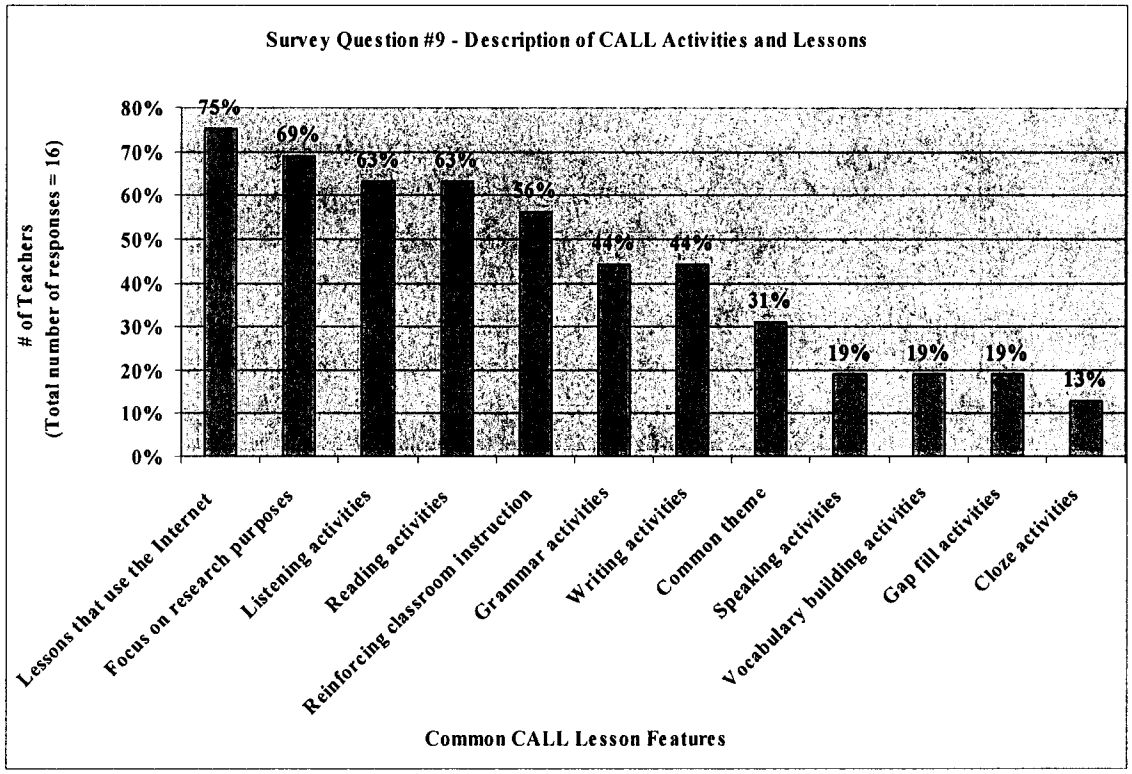
Survey Question #9 was an open-ended question asking teachers to briefly describe some of the CALL activities and lessons they have produced. Sixteen out of the nineteen teachers responded to this question and the responses ranged in length from one line to a full page. The diversity of answers provided a general idea of the kinds of CALL activities and lessons being used in this program. In an attempt to clarify the data, the responses were categorized according to common CALL lesson features. The following twelve common lesson features emerged:

1) Lessons that use the Internet
2) Lessons revolving around a common theme (e.g. "folktales", "local entertainment")
3) Focus on research purposes
4) Lessons relating to classroom topics and instruction
5) Grammar activities
6) Speaking activities
7) Listening activities
8) Reading activities
9) Writing activities
10) Vocabulary building activities
11) Gap fill activities and
12) Cloze activities

The number of teachers who mentioned each lesson feature is depicted in Figure 16.

Figure 16:

Description of CALL Activities and Lessons



When teachers were asked to respond to this question it was assumed that they would describe activities and lessons that were familiar and commonly used in their CALL classes. However, their descriptions should be interpreted as a snapshot of what they do in the computer lab; not the full repertoire of their CALL activities and lessons. The most common purposes for CALL lessons were: using the Internet (75%), conducting research (69%), listening activities (63%), reading activities (63%) and reinforcing classroom instruction (56%). On the other hand, speaking activities, vocabulary building activities, cloze activities and gap fill activities are, according to this data, less frequently part of these teachers' CALL lessons. This data shows a close relationship with data from Survey Questions #14 and #18.

Research Question #3 – What obstacles do the teachers encounter when developing and implementing CALL?

This section will highlight the perceived barriers that teachers encounter when developing and implementing CALL in their ESL classes. Many of the barriers mentioned in this section are further explored under Research Question #5 –What recommendations do these teachers have for ongoing support and implementation of CALL? Addressing the perceived barriers to CALL is important if it is to become a useful, substantial and effective part of this ESL program. If teachers cannot overcome the barriers it will be difficult for CALL to become a valuable mainstay of their teaching practice.

Survey Questions #11, #11a and #36 explored the barriers teachers perceive they face when developing and teaching with CALL. With respect to the barriers teachers experience when developing CALL activities and lessons, *lack of time to develop CALL lessons and activities* was the barrier selected by most (84%) of the teachers. This is not surprising considering that some teachers expressed the view that they are presently overworked. The additional time commitments required to plan and prepare new CALL lessons is sometimes perceived as an extra demand that teachers do not have time for. As Melissa stated,

> Teachers spend a lot of hours just prepping and marking. Teachers are already putting in more hours than what they get paid for – then to add the computer time on top of this is asking for a lot.

Sheila concurred when she remarked, "A problem before and now is that teachers don't have the time to learn new programs and plan new CALL activities". Searching for

valuable Internet websites is also a time consuming process that can be a source of frustration for teachers. As Sheila stated, "I can look on the Internet and find nothing; hence the hours spent have been wasted." Teachers in this program teach four hours per day, five days a week. After class they plan, mark and prepare for the next day of teaching. CALL development, at this point, does not seem to be an educational priority for the majority of teachers in this program.

Seventy-nine per cent of teachers also see their *lack of familiarity with CALL software* as a major barrier to CALL development. The data suggests that there is a lack of professional development available for introducing the available CALL software programs to teachers and better prepare them. As the data from Survey Question #8 indicates, most teachers learn how to use the CALL programs through *self-teaching.* Learning in this way, even though it may be more effective in the long run, takes substantially more time compared to being taught through a formal course where an instructor demonstrates the various components of a software program. In this sense, this barrier is linked to the lack of time reported for the development of CALL lessons and activities.

Although most teachers are familiar with general software programs such a *Microsoft Word* and *Microsoft Power Point*, 42% of the teachers are still not comfortable using these programs. For these teachers, developing and implementing valuable CALL lessons may seem far beyond their computer knowledge and ability, which may prevent them from using, or attempting to use these software programs.

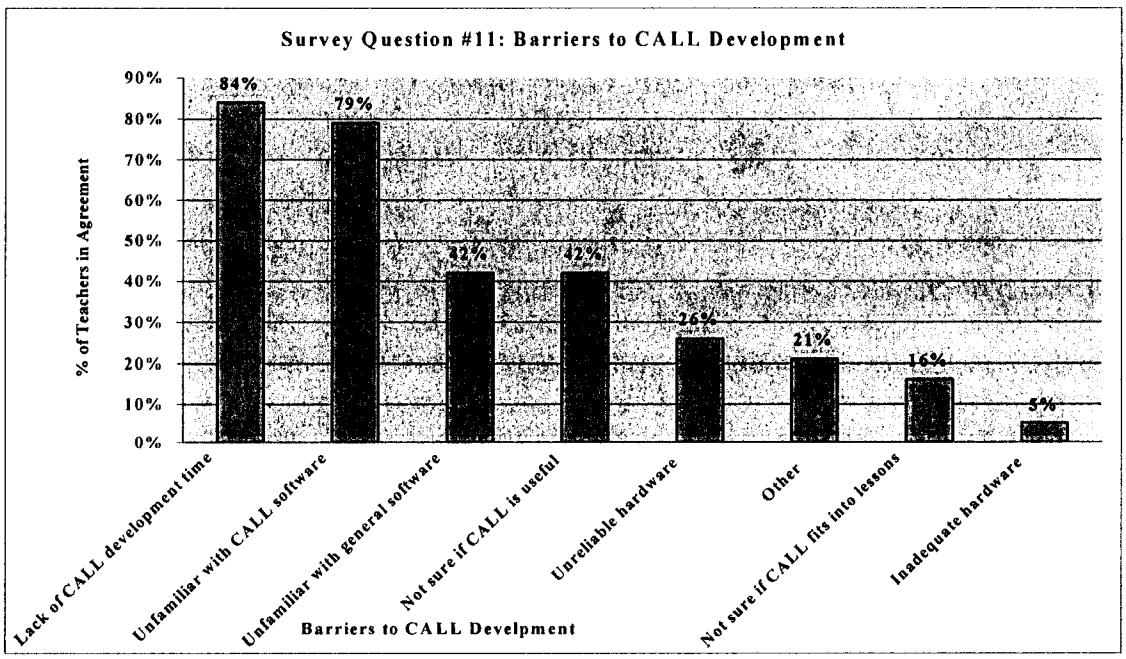
A relatively high number of teachers are also *not sure if CALL is useful* (42% of teachers). These teachers question why they should invest time in something that may

not be helpful to their students. Classroom instruction is an established component of current educational practice and teachers are comfortable in this environment. Since it can be argued that CALL is yet to be established as an effective language-learning tool (see Sisken, 1999 & Dunkel, 1991), some teachers may be reluctant to invest a substantial amount of time developing lessons and activities.

Four teachers chose to add to the list of barriers. One teacher expressed a lack of personal ability with computers and inability to see how CALL is beneficial to language acquisition or how it fits into the curriculum; another teacher stated that there is limited time available in the CALL lab; one teacher mentioned that the software provided is inappropriate; and finally, one teacher wrote that students lack interest in CALL activities and lessons. Figure 17 provides a visual representation of the data results from Survey Question #11.

Figure 17:

Barriers to CALL Development

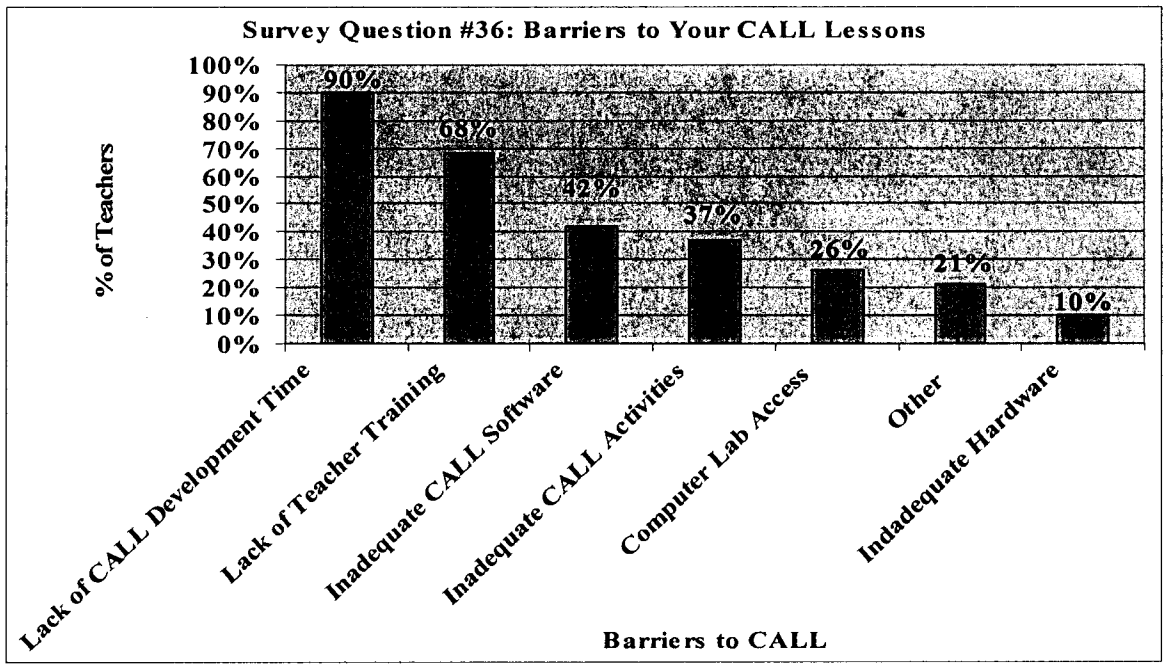


Survey Question #11a asked teachers what would enable them to overcome the barriers selected in Survey Question #11. This question produced an overwhelming request for CALL professional development. Thirteen out of the sixteen teachers who responded to this question (81%) commented that more professional development is needed. Whether or not this would increase the effectiveness and use of CALL in this program is unknown; however, it can be concluded that the teachers perceive that the greatest barrier to CALL is the lack of teacher training. Sixty-three per cent of the teachers in this study also mentioned that more time should be made available for teachers to develop and plan CALL lessons.

Whereas Survey Questions #11 and #11a focused on barriers experienced in the development of CALL activities, Survey Question #36 asked teachers to identify the barriers they encounter when using CALL. Although several of the barriers listed in this question were also identified in Survey Question #11, the goal of this survey question was to focus on the implementation of CALL as opposed to the planning and preparation process. *Lack of time* again received the greatest number of teacher responses (90%), followed by *lack of teacher training* (68%). The remaining choices, as depicted in Figure 18, were *inadequate CALL software* (42% of teachers), *inadequate CALL activities* (37%), *computer lab access* (26%) and *inadequate hardware* (10%). Three additional responses about the barriers to use of CALL provided by teachers under the "Other" category include unreliable hardware, limited access to the CALL lab, and a request for support from an available CALL instructor.

Figure 18

Barriers to CALL Lessons



The interviews also produced valuable and in-depth data pertaining to the barriers to CALL. According to Ingrid, there were problems with how CALL was introduced in 1998, which seems to be an obstacle that teachers still confront. Ingrid described the introduction of the CALL component as an initiative that was introduced without consultation with the instructors in the program. This left a feeling of resentment among the teachers because "...teachers were not involved in the development and design of the computer lab" (Ingrid). Teachers felt they have not had a stake in CALL since the beginning which has led to a limited commitment to using computers for English language instruction. Instructors were also not given training in how to use the computers to teach ESL and, according to Ingrid, "every time we asked for help, it was begrudgingly given to us and when it didn't help and the teachers complained, it made things worse." Clearly, there were major flaws in the way the CALL component was

initiated in this program, according to this teacher. This seems typical of the technocentric approach often dominating CALL implementation where there is a major investment in hardware and software with little consideration given to how teachers and students will use it to enhance language learning (Lam, 2000; McKenzie, 2001; Ryan, 2003). The lack of training and professional development is also well documented in the CALL Survey data and is discussed in greater detail under Research Question #5 – What recommendations do the teachers have for ongoing support and implementation of CALL.

Teacher perceptions about the way CALL was introduced may also be linked to the discomfort and fear felt by the teachers at the beginning of this process of change; this has possibly had a lingering effect on the teachers. Several of the teachers still maintain a certain level of anxiety and discomfort when working with CALL.

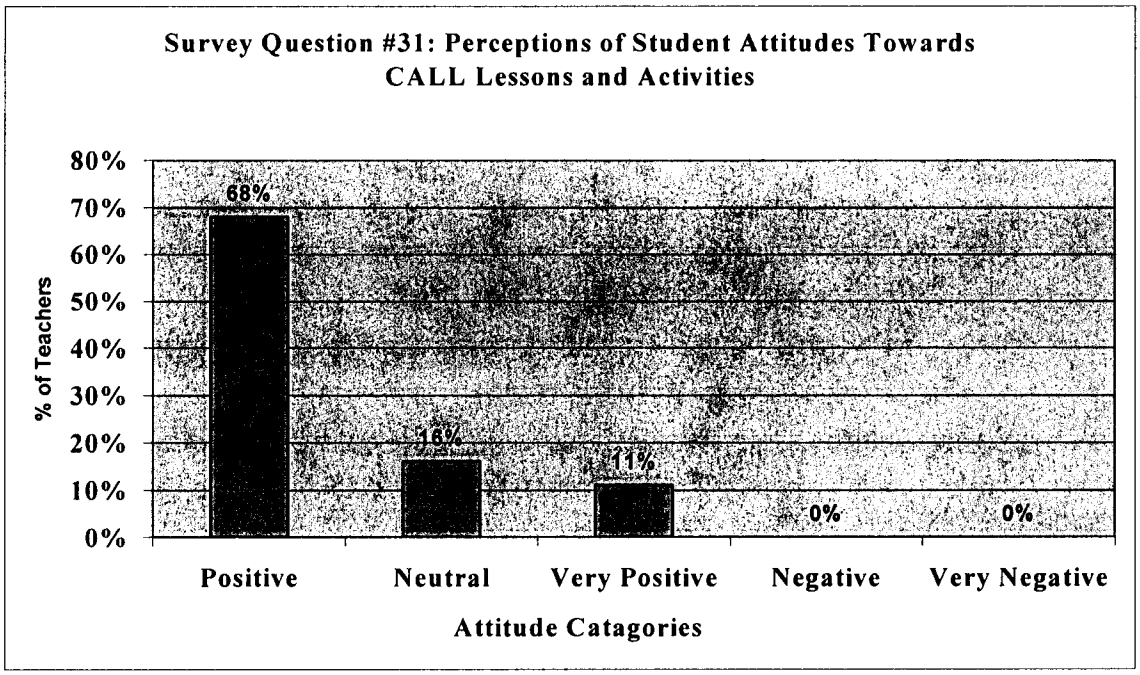
As a group, teachers in this study perceive there to be a number of significant barriers preventing the successful development and implantation of CALL within the program. Lack of time to develop CALL activities, lack of familiarity with CALL and non-CALL software, lack of understanding (or agreement) of CALL's efficacy, and lack of teacher training and a limited personal commitment to CALL were the barriers most often mentioned. The initial steps for improving CALL in this ESL program should probably be to address these barriers. If this is not done, it is unlikely that using computers for language learning will reach its full potential in this environment.

Research Question #4 – What do these ESL instructors perceive to be the advantages and disadvantages of CALL for their students?

Research Question #4 explored the perceived advantages and disadvantages of CALL for the ESL students in this program. Survey Question #31 asked teachers to describe their students' attitudes towards CALL. Seventy-nine per cent of the teachers indicated that they perceive their students' attitudes as either *Positive* or *Very Positive*. Only three teachers felt that students have a *Neutral* attitude, and none of the teachers believed that their students have *Negative* or *Very Negative* attitudes towards CALL (see Figure 19). According to the teachers, their students generally enjoy the CALL lessons and activities. Student attitudes, however, could be directly tied to the kinds of CALL activities and the teacher's skill to deliver effective CALL lessons. It may be that the three teachers who indicated that their students displayed a *Neutral* attitude towards their CALL lessons did not have the ability or motivation to plan and deliver interesting lessons in the computer lab.

Figure 19:

Perceptions of Student Attitudes toward CALL



Survey Question #19 asked teachers how they encourage their students to use CALL. Nine teachers responded that they encourage students by providing specific assignments to be completed. According to these nine teachers, a well planned, structured lesson provides the direction needed to focus students' language learning, which in turn encourages them. Five teachers indicated that using computers for independent study encourages students, and three teachers stated that their students did not need much encouragement because using computers for language learning is intrinsically motivating.

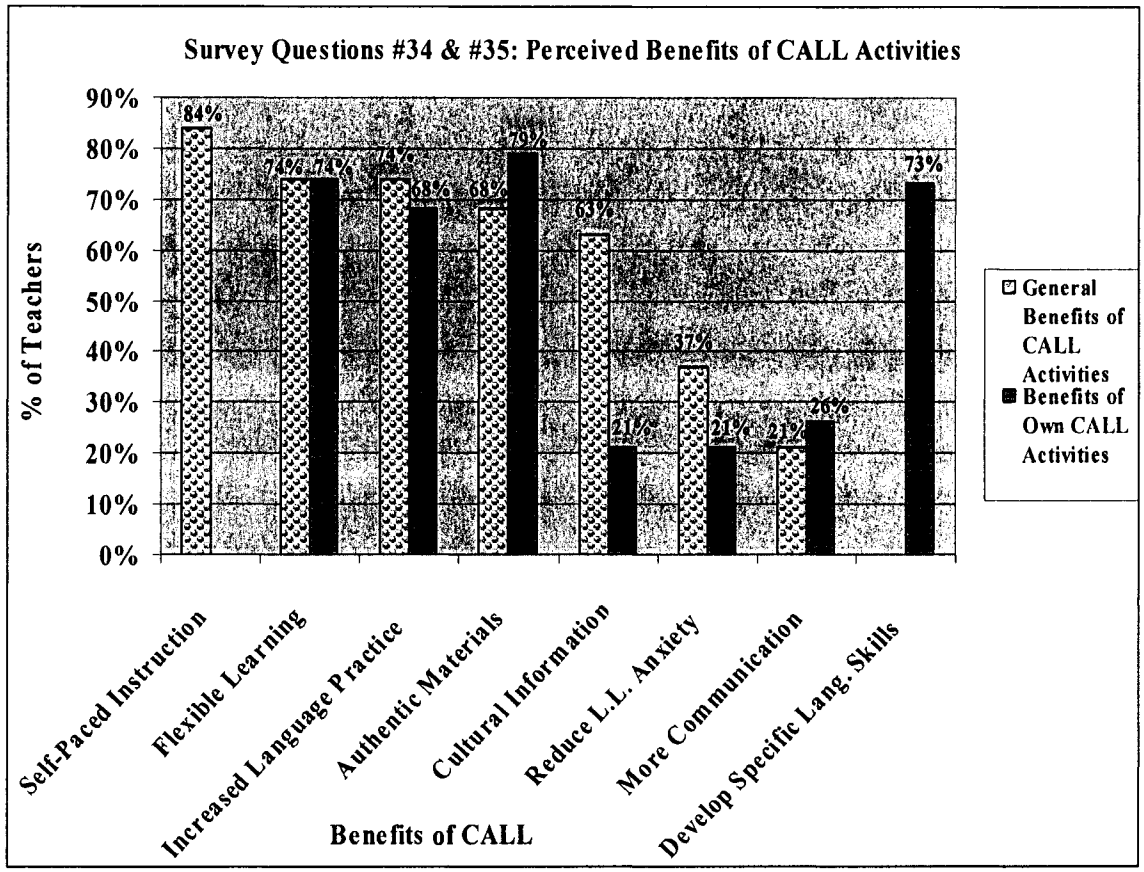
When this group of teachers was asked how CALL can be best utilized by their students (Survey Question #17), 90% of the teachers selected the response *for variety and motivation*; 90% chose *for independent study* and 74% selected *for developing particular language skills*. Only two teachers thought that CALL can best be used *as the focus of a*

course, indicating that the majority of teachers believe CALL should not be the primary method of language instruction.

When teachers were asked generally what they think CALL's greatest potential benefits are for their students (Survey Question #34), 84% of the teachers selected *self-paced instruction*; 74% chose *flexible learning*; 74% selected *increased language practice*; 68% chose *exposure to authentic materials*; and 63% felt that *more exposure to other cultures* is one of the greatest potentials of CALL. *Reducing language learning anxiety* and *providing more opportunities to communicate* received relatively low scores (37% and 21% respectively). Teachers were also asked to indicate the strongest benefits of their *own* CALL activities for their students (Survey Question #35). Seventy-nine per cent of the teachers perceived *exposure to authentic materials* to be a benefit of their CALL lessons; 74% thought *flexible learning* is a benefit; 74% selected *development of specific language*; and 68% of the teachers chose *increase of language practice* to be of benefit. These categories were not mutually exclusive. Figure 20 shows a comparison of teacher responses from these two related questions.

Figure 20:

Perceived Benefits of CALL Activities



The six benefits of CALL that were listed in both survey questions produced relatively similar results, except for the benefit of *providing cultural information.* Whereas 63% of teachers believe this can be a benefit of CALL activities, only 21% of teachers perceive this as a benefit of their own lessons. The CALL benefit *Self-paced instruction* was only listed in Survey Question #34 and the *Development of specific language skills* was only an available choice in Survey Question #35; both of these potential benefits received high ratings (84% and 73% respectively) and suggest that teachers see them as important benefits of CALL. However, because they did not appear in both questions, they cannot be compared in the same way as the other six items.

The interview data is also valuable in highlighting the benefits of CALL for students as perceived by the instructors in this ESL program. Melissa enthusiastically stated that "computers are a critical and essential part" of her class and she would like more opportunities to integrate CALL. As collectively mentioned by the interview participants, the perceived advantages of CALL for the students include:

- Independent and individualized study
- More exposure to authentic materials
- Flexible learning
- Development of specific language skills such as listening and reading comprehension

These four points are also supported by the survey data. One additional perceived advantage of CALL not revealed in the survey but mentioned by Sheila was that with the Internet and the websites she uses for ESL instruction, students are given opportunities to experiment with the language. As stated by this teacher, "Indirectly the Internet can help teachers find things that allow students to play with the language".

Neither the survey data nor the interview data reveals perceptions of disadvantages of CALL for students in this program. The perceived disadvantages of CALL that were noted are more teacher-centred as opposed to student-centred. The majority of teachers perceive that CALL can provide value to their students; however, barriers such as a lack of time to develop CALL lessons and the need for CALL teacher training prevent teachers from utilizing CALL to its full potential. This concern is addressed in more detail under Research Question #3 – What obstacles do these ESL instructors encounter

when implementing CALL and Research Question #5 – What recommendations do these ESL instructors have for on-going support and implementation of CALL?

Overall, the teachers in this program perceive that students have positive attitudes towards their CALL lessons. The teachers also feel that computers can provide a number of valuable benefits to the language learning process. Thus, these results lend support to the notion that students can benefit from the integration of CALL into the ESL curriculum which, in turn, is encouraging for the potential of future CALL development and implementation.

Research Question #5: What recommendations do these teachers have for on-going support and implementation of CALL?

Data from the CALL Survey and the interviews reveal four central recommendations for ongoing support and implementation of CALL. They are: 1) provide professional development opportunities for the teachers, 2) provide technical and pedagogical support, 3) allocate more time for teachers to plan and prepare CALL lessons, and 4) improve computer hardware and software reliability.

Professional Development (PD)

The importance of CALL professional development (PD) is well documented in the research literature (see Egbert, Paulus & Nakamichi, 2002; Lee, 2000; Levy, 1997b; McKenzie, 2001). In concurrence with Galloway's (1999) findings, the lack of PD has been a major barrier to the successful integration of CALL in this program. Throughout the CALL survey and the interviews the strongest recommendation from the majority of the teachers is for more CALL professional development (PD). When asked how important teacher training is (on a 10-point Likert scale with 1 being "not important" and

10 being "very important"), an average rating of *9.11/10* was obtained (Survey Question #24). Similarly, when teachers were asked how important it is for the administration to offer professional development for staff who engage in CALL (Survey Question #41) an average rating of *9.68/10* resulted. Of the seven administrative factors that teachers rated in this question, PD was ranked as the most important. The open-ended responses to Question 43 ("What else could be done to encourage and support the integration of CALL?") also highlighted the importance of CALL training for the staff. Of the twelve teachers that chose to respond to this question, ten indicated the need for more and ongoing PD. Examples of responses include:

a) "Training needs to be provided – effective, ongoing training. One time half hour sessions don't work."

b) "A commitment to teaching in-service programs during the day is crucial. Professional development should be organized to involve all instructors who have experience teaching teachers (always a challenge)."

c) "Full day professional development in which programs are explained and explored is needed."

The interview data also reinforces the need and desire for CALL professional development. All three interviews highlighted the importance of PD and the perception that not enough has been done to educate the teachers in how to use computers for ESL instruction. Overall, Melissa made eleven comments about the importance of CALL PD. Some of the strongest statements made by this teacher include:

a) "Teachers need PD on how to teach languages with computers. Teachers have to be taught how to use the tool – *Even teachers have to be taught"*

b) "What is needed is more PD days to show teachers the CALL programs, the Internet and some good websites"

c) When asked what the administration can do to improve CALL in this program Melissa replied "PD, PD, and more PD. The department needs to invest in CALL PD in order to make it valuable."

Sheila did not have as much to say about CALL professional development, but still expressed the need for teachers to receive training. When asked what the teachers need with respect to CALL, this teacher stated, "There have been some workshops, but the workshops need to be tied into the language learning aspect of teaching."

Ingrid was the most forthcoming with statements about the need for CALL teacher training and the inadequacies of past attempts. This teacher made sixteen separate comments relating to CALL professional development. After stating that ongoing PD would be necessary to make CALL a valuable part of this ESL program, this teacher expressed frustration concerning the lack of response to the teachers' requests for CALL workshops. According to this teacher, the workshops that were organized were not very useful because either the person running the workshops did not know the programs well enough or it was not tied specifically to ESL teaching. As stated,

> the people teaching didn't know how to use the programs they were teaching. Then it was how in the world do you teach language using computers? Then they brought over someone from education to teach WEBCT, which had nothing to do with language teaching. They never understood that we needed an expert. They never understood that we need training in how to use computers for teaching a language (Ingrid).

This teacher stopped going to the few CALL professional development workshops because "It was painful to watch because the person didn't know what they were teaching and they put it together in a half hour." When asked what administration should do to support CALL in this program, this teacher stated,

> It would be helpful if someone came in and said "this is how you can use the computer to teach languages and we have been asking for this to happen since 1998. And to this date we have seen a few things come in, but we have not had good, ongoing training. (Ingrid)

Technical and Pedagogical Support

Participating teachers in this study referred to a need for forms of support other than PD in a number of survey and interview questions. Several teachers requested that there be a consultant or lab assistant available to ensure that the computers are in working order, to help when technical problems arise and to offer guidance when CALL lessons are being developed and taught. For example, when asked what changes or additions teachers would like to see in the CALL lab (Survey Question #38), one teacher responded "We need a lab technician on site who can help with machines and programs; someone who would help make sure the room and machines are used for their intended purposes." Similar responses to this question were given by five other teachers. Another instructor suggested that "There could be one person (well qualified, an ESL teacher) in the computer lab – all levels, same instructor that has better knowledge of computers and the computer room (theoretically!)". This suggestion, of course, goes beyond the idea of providing CALL support. It takes the CALL component out of the hands of the teachers and gives the responsibility to a specialist.

Several teachers also stated in Survey Question #11a (*What would enable you to overcome the barriers and obstacles to CALL?*) that they would like to have a bank of pre-made CALL activities. Again, this would relieve the teachers of the responsibility to plan and develop their own CALL activities and lessons. Ingrid gave further support to this suggestion by mentioning, "Someone has to put together a training module with explanations, exercises and checks. Someone has to be there to give ongoing help and feedback to the teachers." Requests for providing additional support were also contained in the responses to Survey Question #43 which asked, "What else could be done to encourage and support the integration of CALL?" Three out of the twelve teachers who responded to this question mentioned the need for more and ongoing support for the CALL component.

The teachers' requests for support came in two different forms: technical support to ensure the hardware and software are reliable and educational support, in the form of a CALL expert or a bank of CALL activities. Teachers expressed another form of support in the form of allocated time to develop and prepare CALL lessons.

Time to Develop CALL Materials and Lessons

Several teachers also mentioned that paid time needs to be allocated for the development of CALL activities and lessons. When teachers were asked how important certain administrative factors were for the successful development of the CALL component (Survey Question #41), "time allocation for staff to develop CALL activities and lessons" was ranked as the second most important factor. On a 10-point Likert scale a rating of *9.53/10* was obtained. To Survey Question #43 ("What else could be done to encourage and support the integration of CALL?"), four teachers mentioned in their

open-ended responses, the need for "time to create appropriate, quality materials for classroom use" (Survey Participant #3). In support of these results, Sheila stated that "there should be time set aside to develop computer activities and lessons" and Ingrid mentioned that "time to develop activities with CALL" should be provided for teachers in this program. Thus, like requests for PD, participating teachers requested paid time to develop CALL activities.

Reliability of Hardware and Software

In addition to requesting PD support, time to prepare lessons and technical and pedagogic guidance, teachers in this study also made reference to the importance of the reliability of hardware and software in several survey questions and in the interview responses. According to the survey data, the majority of teachers feel that suitable and reliable hardware is very important to the success of CALL. In Survey Question #24, teachers were asked to rate (on a 10-point Likert scale) how important "Adequate and reliable computer hardware" is for the successful implementation of CALL. As a group, teachers rated the importance of hardware as *9.1/10.* This result was reinforced by the open-ended responses to Survey Question #10, which asked teachers to explain why suitable hardware is important for CALL development. Responses include:

a) "Unreliable hardware can ruin even the best prepared lesson"

b) "It's an essential requirement"

c) "Up to date, fast and reliable computers are the bedrock of any computer based lesson".

Similarly, when asked what changes or additions teachers would like to see in the CALL lab (Survey Question #38), comments such as the following were provided: a) "more

reliable hardware" and b) "All the computers and programs in working order (reliability is the key to any success)". Finally, in further support of this point, to Survey Question #44 (Do you have any other additional comments concerning CALL?) one participant wrote:

> There is always something wrong with the equipment in our labs: Computers not working, sound not available, broken printer or projector. Never a dull moment! You can never rely on your 'plans' and 2 successful hours in the computer lab. And the service [support] is far from being quick. (Survey Participant #11)

Such comments suggest that it is unlikely that this teacher will make a strong commitment to CALL.

The reliability issue was also raised in the interviews. Ingrid made several statements regarding the inadequacies of the program computers available for planning and teaching. For example, this teacher stated, "teachers should have better quality machines" and "People [teachers] would do more work here if the computers were better." Thus, even though 90% of the teachers perceived that the computer hardware in the CALL lab was "always adequate" or "adequate most of the time" (Survey Question #37), teachers still, on occasion, experienced troubling technical problems.

Teachers in this study made four main recommendations: 1) provide CALL professional development, 2) provide technical and pedagogical support, 3) allocate paid time for teachers to develop CALL activities, and 4) ensure that the computer and software are reliable. Even though the survey and interview data provided the strongest support for these four key recommendations, other valuable suggestions were given by participants in this study. For example, other noteworthy suggestions include:

- Experienced CALL teachers should share their ideas with the other teachers in the program.
- An ESL webpage should be developed for the students.
- More CALL software for lower level ESL students should be purchased.
- There should be more access to computer facilities for CALL lessons.
- Teachers should have more access to CALL software for planning and preparation.

These are important recommendations though they were isolated comments and can not be stated as being representative of the group as a whole.

CHAPTER 5: DISCUSSION

This chapter will provide an interpretation of the findings from the CALL Survey and the three follow-up interviews. Recommendations generated from this research data will be used to highlight the most prominent issues explored by the five research questions. Because some of the findings were duplicated under more than one research question, it was decided that the recommendations would not be organized to address each individual question. Instead, the recommendations are grouped according to the following six categories.

a) CALL professional development and support

b) Software issues

c) The Internet

d) Bank of CALL activities

e) Additional time for CALL development

f) Administrative issues

The study's limitations will then be discussed in terms of the research design and the data collection methods. Finally, suggestions for future research will be explored along with concluding remarks summarizing the implications of this research.

This study successfully revealed the perceptions and attitudes of this group of teachers towards the use of computer-assisted language learning. The survey questions evoked more surface level responses reflecting teachers' attitudes towards CALL, while the interviews allowed the researcher to delve deeper into CALL issues that were initially exposed through the CALL Survey. The data revealed the following findings:

1. Teachers in this program are using CALL and believe it can potentially be a valuable tool. The perceived benefits of CALL are self-paced instruction, flexible learning, increased language practice, exposure to authentic materials and development of specific language skills.
2. Teachers are relatively comfortable using CALL and have a moderate interest in using computer for language teaching.
3. The most widely used CALL application is the Internet.
4. Teachers are familiar with only three out of the thirteen CALL software packages available to them. Teachers are also using Microsoft Word, Encarta 98 Encyclopedia and Microsoft PowerPoint in their CALL classes.
5. Teachers are attempting to reinforce their classroom lessons with CALL activities.
6. Teachers are developing/reinforcing grammar, listening, and reading skills in their CALL lessons.
7. Teachers perceive a lack of time to develop CALL activities and a lack of professional development as the most prominent barriers to CALL in this program.
8. According to the teachers, the ESL students in this program have a positive attitude toward CALL.

In the beginning stages of the CALL initiative, the teachers in this program felt that they did not have a professional investment in its development, which seemed to result in a limited commitment and some resentment towards having to use computers for language instruction. Not consulting the teachers has resulted in a situation where

teachers have not taken complete ownership of the CALL component and some still view the requirement to teach in the computer lab as something they are forced to adhere to. However, over time other teachers have come to accept, at least in part, that CALL has potential benefits and can be a valuable tool if certain changes take place to enhance its educational effectiveness. At the time of this study, the teachers expressed the view that the potential benefits of CALL were not being fully realized and substantial changes needed to be implemented in order to make CALL more valuable for language learning.

Nevertheless, the data shows that the majority of teachers are indeed spending the required two hours per week in the CALL lab. The results also reveal that, as a group, the teachers are fairly comfortable and have an above average level of interest in using computers to teach ESL to their students. This is an important finding because it provides a foundation from which CALL can move forward. If the results had shown that teachers carried with them a negative or lethargic attitude towards CALL and were not conducting ESL classes in the computer lab, it would be much more difficult to promote the growth of CALL to this group.

Professional Development (PD)

Overcoming the initial fear of using computers is important. It seems that time has reduced much of the teachers' initial fear and uncomfortable feelings associated with using computers for language instruction. It may be that the teachers in this study are now more comfortable than they were five years ago because they have activities to fill their class times. More knowledge and skill with CALL may be required for teachers to achieve a high level of comfort and confidence and to gain the ability to develop and

deliver more effective CALL lessons. This may require more PD, time and commitment to CALL.

Although teachers are relatively comfortable with CALL, the overwhelming request for CALL professional development (PD) suggests that teachers feel that their knowledge and ability regarding how to use computer technology in their ESL classes is insufficient. According to the data, there have been very few CALL professional development opportunities, and the ones that were provided did not address the needs of the teachers.

Because the teachers are still not convinced of the virtues of CALL, they need to be shown practical examples that they can implement to support the program's educational and curriculum objectives. Once teachers have a better idea of how CALL can be beneficial, a series of PD workshops should be made available that will develop the teachers' CALL skills and knowledge.

The data reveals suggestions for two stages of CALL PD. First, teachers need to learn how to use the specific software programs or, in the case of the Internet, how to find appropriate content. Secondly, teachers have to learn how to adapt or integrate these CALL applications to their specific language learning situations. For example, with a program like *Microsoft PowerPoint* teachers have to first learn how to use the program to create slideshow presentations and integrate the various presentation options. Teachers then have to learn how to use the functionality that PowerPoint offers in a language teaching situation. In the case of a pre-packaged ESL program, teachers will have to become familiar with the program's content and capabilities, and then discover how it can be used to benefit students and meet specific teaching objectives. The comment by

Ingrid, "We were shown WebCT (a teaching tool) but not how it applies to language teaching...." highlights the point that just simply showing teachers how to use a program is not enough. PD needs to link the technology to a specific application and environment – in this case ESL teaching and learning.

It is also important to situate CALL into the pedagogy of teaching ESL. By using teaching or instructional models teachers are more likely to be able to see where CALL can fit into their overall practice. For example, if the B-SLIM teaching model presented earlier (Bilash, 2001) is used as a point of reference, CALL activities and lessons should be situated within the stages of the model so that teachers will have some guidance as to where and how CALL can be integrated successfully. In this way, CALL will find its place in this program and be seen as a valuable addition to ESL teaching and learning.

Suggestions were also made to increase the frequency of PD workshops. As stated by Ingrid, "The one-time workshops do not work". There needs to be ongoing PD where teachers have a forum to ask specific questions, explore new ways of using computers for language teaching, and share CALL lessons and ideas with their peers.

According to the findings, the majority of teachers in this program use CALL to 1) reinforce classroom lessons, 2) develop specific language skills and 3) provide independent study. If these are the predominant uses of CALL, PD should reflect or reinforce a variety of ways to achieve these goals. Once these goals are firmly established as valuable CALL contributions, teachers may be more open to the introduction of other CALL applications and possibilities.

The role that CALL is fulfilling in this program appears to be somewhat limited. At present, CALL is predominantly used for its ability to provide access to resources and

for its ability to provide: individual instruction; student motivation; and a variety of computer-based activities. Professional development should focus on expanding and defining these roles. For example, e-mail, synchronous voice programs and chat and discussion boards can be used as valuable communicative tools for language learners. However, the data from this study suggests that teachers in this program need to receive direction on how to use these kinds of programs to benefit their ESL students.

A comment by Sheila questioned why teachers should use computers when they can just as easily do the same activities in the classroom. This is certainly a legitimate question to ask and highlights the need for teachers to learn how to exploit the unique capabilities that computers bring to language instruction. Many teachers have already discovered the unique potential of computers as shown by comments such as "the Internet allows students to do much more research and makes authentic texts much more readily available" (Melissa). The roles of CALL can be expanded when new and innovative teaching practices are highlighted and presented to teachers as viable teaching methods.

New roles of CALL, if deemed valuable, could expand the teachers' views of CALL's potential. At the time of this study, teachers in this program most often focus on listening comprehension and grammatical competency in their CALL classes. Other language skills, such as reading, writing and vocabulary development, are not developed by many of the teachers (47%, 42% and 32% of teachers respectively). If computers are to become a more effective teaching tool, the development of a wider range of language skills should also be promoted. Expanding the educational uses and roles of CALL

through professional development will be important to the continued growth of the CALL component in this SL program.

Teachers also indicated through the CALL survey and interview data the need for two kinds of support: technical support and pedagogical support. Even though the results indicated that, for the most part, the hardware in the computer lab is adequate for the instructional needs of these teachers, several individuals expressed their frustration when computer problems caused either the cancellation of a class or a scramble to change their CALL lessons at the last moment. Although rare, these situations perpetuate the belief that the computer lab cannot be relied upon to be fully functional teaching tool. If a teacher prepares a new CALL lesson that fits into the curriculum at a specific time, and is then prevented from delivering the lesson because of technical issues, the confidence that the computers will be operational the next time will be in question. This may be the reason why teachers are reluctant to make a strong commitment to CALL. At this time, providing immediate technical support is limited. Unfortunately, the administrative infrastructure responsible for providing high-level computer technical support for the CALL lab does not allow for immediate attention. Low level support (i.e. a mouse or monitor cord requires reconnecting) is available; however, if there is a problem with network connections to the university server or to the Internet, support is not instantly available. This is because the technical support is provided by a centralized department that is not in the near vicinity of the CALL lab. Because immediate help is not available teachers should be shown how they can plan and prepare to deal with technical problems. Presently, technical problems are an inevitable part of teaching with computers. Computers will crash, documents will be lost, Internet connections will go down and

website links will be changed or removed. Teachers should be prepared as much as possible for instances when their CALL lessons are disrupted because of these and other technical problems. If a lesson is Internet dependent and the Internet connection goes down, there may be very little the teacher can do. However, if anticipated, back-up plans can be made to ensure the delivery of the CALL lesson with the functioning technology. For example, if students are to access a reading comprehension exercise from a website, the teacher could copy and paste the reading and exercise into a document just in case the Internet is not accessible at the time of the lesson. At present, computer technology is still occasionally unreliable. Teachers therefore need to prepare for situations and know how to adapt their CALL lessons. This could be another component of a professional development workshop.

Teachers also asked for pedagogical support in the form of professional development workshops, but also on an on-call basis. If teachers have questions related to CALL instruction while teaching in the computer lab, they would like to have a resource person they could call upon. At the present time, there is an individual who is available for this type of on-call support, but his services are rarely utilized. Instead, teachers often look to their peers for immediate assistance, which may be satisfying the need for pedagogical support. It may be that the teachers are not aware that there is a resource person designated to provide on-call pedagogical support. It would be beneficial to have this person discuss with the teachers what kinds of support he can provide and encourage teachers to use his expertise. This message could be communicated at a staff meeting and through PD workshops.

Software

Teachers in this program generally make use of three CALL software programs: *Ellis, Tell Me More and Grammar 3D.* These programs seem to be adequate for teachers as there was not a great demand for additional software. This may have been because teachers are not aware of other CALL packages that would valuable for their ESL teaching.

If the decision is made to purchase additional CALL software, the choices should take into consideration the perceptions of what these teachers believe to be characteristics of useful CALL programs. According to the data, new software should be user friendly, pedagogically sound and should provide some user instructions for the teachers. If new software contains these characteristics, teachers will be more inclined to integrate them into their CALL lessons. When there is interest in new CALL software products, they should be made available to teachers for review and evaluation. If teachers decide that the product would benefit their students and support the program's educational objectives, PD should be organized around how to use and integrate the software.

A drawback of using pre-packaged materials to supplement language instruction is that they may not easily fit into the curriculum. Teachers that use programs like *Ellis, Tell Me More* and *Grammar 3D* are required to fit the content provided into the curriculum, which may be difficult. One kind of software program that may be more useful for teachers would be authoring software, where teachers are able to generate activities based on materials they choose to input. If teachers are willing to take the time to develop these kinds of CALL activities, it is likely that their CALL lessons would have a closer fit to their classroom teaching. It would be beneficial to showcase an authoring software program and highlight its possibilities for ESL instruction. If the teachers

indicated that they were interested in using it, PD should be organized to teach the instructors how to develop educationally beneficial CALL activities.

The three non-specific CALL software programs predominately used by this group (*Microsoft Word, Encarta Encyclopedia, and Microsoft PowerPoint*) also seem to have limited roles. Professional development could draw attention to innovative and educationally sound ways to use non-specific CALL programs for language instruction.

The Internet

The results showed that the CALL application most widely used by these teachers is the Internet. The vast diversity of what the Internet has to offer makes the possibilities endless with respect to language teaching and learning opportunities. However, comments from some of the teachers also highlighted the fact that the vast amount of materials on the Internet can sometimes be a source of frustration. Teachers often have to spend a great deal of time searching for teaching materials suitable for their students. Teachers would greatly benefit from some guidance on where to find useful materials and how to successfully integrate them into their CALL lessons. One effective strategy may be to have teachers showcase some of the most useful Internet sites. Another possibility would be to show teachers how to effectively and efficiently use search engines, such as Google, to find appropriate information and activities.

Development of a Bank of CALL Activities

Several teachers mentioned that they would like a bank of CALL activities that they could use as part of their lessons. This may promote further use of CALL and perhaps encourage teachers to develop materials to contribute to the bank. Further, it may help them to see how CALL can improve their lessons instead of increase their

planning time. One of the challenges associated with developing a bank of CALL activities for this particular program is that there are ten different levels of ESL instruction. The bank would have to divide the CALL activities into levels so that students would not be repeating the same lessons at different levels. To ensure that each level has sufficient CALL lessons (fourteen hours per semester) for all ten ESL levels would require a substantial amount of work. However, this may be a sound investment which can be developed over time.

Time for CALL Development

Another issue that needs to be addressed is the perception that teachers do not have enough time to develop CALL lessons and activities. If these teachers had to prepare for two hours of classroom instruction rather than two hours of computer lab instruction, this would not likely be a problem. However, because teaching with computer technology is relatively new to this group, it may take them longer to plan and prepare lessons for the computer lab. Additional time provided to teachers for the development of CALL activities may promote the creation of more effective ESL CALL materials and lessons. If teachers develop new and innovative CALL activities, they may also be encouraged to share their ideas with each other, which could then be a starting point for building a bank of level-specific computer activities that all teachers could access.

What Administration Can Do

The administration is seen by the teachers as very important in the development and growth of the CALL component. According to the teachers, the administration has not done enough to encourage teachers to use the computer lab. As well, the

administration should provide CALL professional development, offer financial backing for new resources, and provide a structure in which both technical and pedagogical support is readily available.

Limitations and Delimitations

This study has a number of limitations based on the specifics of the group and the research instruments used. Because this study was conducted with one group of instructors who all taught in one ESL program, care must be taken when attempting to generalize the findings to other language learning programs and environments. The selection of CALL resources available, the existing computer lab and the educational focus of this program all contribute to shaping the use of CALL, and consequently the findings may not apply to other CALL situations.

This study set out to paint an overall picture of teachers' perceptions towards CALL, how CALL is being used and what steps are needed to make CALL more valuable to language teaching and learning in this ESL program. This study did not provide detailed information about how teachers develop various language skills with computers, but instead focused on what skills are being taught through the use of CALL.

Accurately capturing attitudes and perceptions through written responses can be a challenge. Although the survey produced a considerable amount of data, it was often difficult to probe deeply into some of the issues involved with using CALL. The teachers' survey responses may not have been a precise or complete representation of their views. The interviews, on the other hand, allowed the researcher to delve deeper into teacher perceptions and attitudes. However, with only three teachers taking part in

this component of the study, conclusions and recommendations from this data may not be reflective of the entire group.

Another limitation to this study is the relatively small sample size. With only nineteen teachers taking part, it may be difficult to generalize the results to other programs. The results and recommendations should only be considered applicable to this specific group of teachers.

Future Research

With respect to the specific uses of CALL, the data generated through the research instruments mainly focused on *what* CALL tools teachers were using in their classes and what language skills were being reinforced. Two areas that require further exploration are *why* teachers are using specific computer applications and *how* teachers are using CALL. Teachers were not asked in this study if what they were doing represents what they think was most useful for their students. As well, how exactly teachers were using, for example, the *Internet* or *Ellis*, for language learning was not explored in great detail. Observing and documenting how these and other CALL applications are being utilized in classes would provide valuable information and warrants further research.

Two other perspectives that need to be explored, and then taken into consideration with the findings from this study, are the students' attitudes and perspectives of CALL and the administrative positions and challenges associated with developing a thriving CALL component. As the CALL literature documents, often financial constraints or resource limitations prevent the growth of educational movements like CALL.

Where the teachers' perceptions are concerned, taking action on the recommendations generated from this study could initiate some changes required to make CALL a more effective and valuable component of this ESL program. Further, it might help mend any lingering negative feelings teachers harbour about the initiative being imposed upon them. The conclusions from the study move to clarify one of the areas required for this goal – the teachers' perspectives of CALL. There is certainly more research to do in this area.

Conclusion

This study has explored teacher perceptions of computer assisted language learning with a group of nineteen ESL instructors teaching in one adult education program. Over the last five years, since the inception of the CALL initiative, teachers have become more comfortable using CALL and are integrating computers into their language teaching. However, as the results have shown, there are several areas where change is necessary if CALL is to become a more valuable language learning component in this program. The results have shown that, although CALL is being used by all teachers, the development of new and innovative activities and lessons is stagnant; and consequently, CALL's vast potential benefits remain untapped in this program. Following up the recommendations outlined in this chapter will perhaps provide the impetus to move applications of CALL forward to the next level. Briefly stated, professional development needs to guide these instructors on how to better implement CALL in this program; teachers should be given additional CALL development time; new resources should be made available; pedagogical and technical support should be provided; and an environment should be created where teachers are encouraged to share

CALL ideas and resources with their peers. If teachers are afforded the needed support, they may take ownership of the CALL component and recognize more fully the value of using computers to teach ESL to their students. The end result will be a more effective, dynamic and vibrant SL program and, ultimately, it will be the students who benefit the most – which is, after all, why professional teachers teach.

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Appendix A

Definition of Terms

The majority of the following definitions were compiled with the help of Wikipedia (http://en.wikipedia.org/wiki/) – an online encyclopedia. When this resource was not used the appropriate reference is provided.

Computer-Assisted Language Learning Terms

1. *Artificial intelligence (AI)* is defined as intelligence exhibited by an artificial (*non-natural, manufactured*) entity. Such a system is generally assumed to be a computer.
2. *Asynchronous communication* is a form of computer mediated communication that does not occur in real-time, allowing participant to respond at any time.
3. *Broadband* refers to data transmission where multiple pieces of data are sent simultaneously to increase the effective rate of transmission.
4. *CAI* is an acronym for Computer-Assisted Instruction and is used to "highlight the computer's subservient, auxiliary role and the function of the computer as merely a part of the total learning experience (Levy, 1997, p. 78)
5. *CBE* is an acronym for Computer-Based and is used to highlight the central role of computers in education. (Levy, 1997)
6. *Computer-mediated Communication* (CmC) is any form of communication between two or more individual people who interact and/or influence each other via separate computers through the Internet or a network connection - using social software. CMC does not include the methods by which two

computers communicate, but rather how people communicate via computers. It is only peripherally concerned with any common work product created.

7. *Hypermedia* is a term used as a logical extension of the term hypertext, in which audio, video, plain text, and non-linear hyperlinks intertwine to create a generally non-linear medium of information. The World Wide Web is a classic example of hypermedia, whereas a movie on a DVD is an example of standard multimedia.
8. *Integrative CALL* is an approach that attempts to integrate various language skills (e.g., listening, speaking, reading, and writing) as well as technology more fully into the language learning process. Students learn to use a variety of technological tools as an ongoing process of language learning and use (Warschauer, 1996).
9. *Mainframes* are large and expensive computers used mainly by government institutions and large companies for mission critical applications, typically bulk data processing such as censuses, industry/consumer statistics, ERP, and financial transaction processing.
10. *Multimedia* is the use of several different media to convey information (text, audio, graphics, animation, video, and interactivity).
11. *Online learning* – Internet based instruction of any sort. This term is used interchangeably with web-based learning, web-based instruction and online instruction.
12. A *network* is a number of computers connected together to share information and hardware.

13. An *authoring tool* is a software application used to create multimedia content typically for delivery on the World Wide Web.
14. *Speech recognition* technologies allow computers equipped with a source of sound input, such as a microphone, to interpret human speech, for example, for transcription or as an alternative method of interacting with a computer
15. *Synchronous communication* is a form of computer mediated communication that takes place in real time, requiring that all participants communicate simultaneously.
16. *Technocentrism* is the fallacy of referring all questions to the technology.
17. *A Technophile* is an enthusiast of technology.
18. *Technophobia* is fear or dislike of advanced technology or complex devices and especially computers.

Second Language Acquisition Terms

1. The *Audio-Lingual Method (ALM)* arose as a direct result of the need for foreign language proficiency in listening and speaking skills. It is closely tied to behaviorism, and thus made drilling, repetition, and habit-formation central elements of instruction
2. *Authentic materials* are resources that have been developed specifically for native speakers. These include print, audio, and visual materials. (http://www.learner.org/channel/libraries/tfl/key_terms.html)
3. *Autonomous learning* is a school of education which sees learners as individuals who can and should be autonomous i.e. be responsible for their own learning climate. *Autonomous learning* helps students develop their self-

consciousness, vision, practicality and freedom of discussion. These attributes serve to aid the student in his/her independent learning

4. *Behaviourism* is a school of psychology that confines itself to the study of observable and quantifiable aspects of behavior and excludes subjective phenomena, such as emotions or motives.
5. *Communicative competence* is a linguistic term for the ability not only to apply the grammatical rules of a language to form correct utterances, but also to know when to use these utterances appropriately.
6. *Communicative Language Teaching* (CLT) is an approach to the teaching of second and foreign languages that emphasizes interaction as both the means and the ultimate goal of learning a language.
7. A *concordance* is an alphabetical list of the principal words used in a book or body of work, with their immediate contexts.
8. A *Constructive approach* assumes that learners construct their own knowledge on the basis of interaction with their environment.
9. *EFL* is an acronym for English as a Foreign Language and usually refers to teaching or learning English in a country where English is not spoken.
10. *ESL* is an acronym for English as a Second Language. ESL programs tend to concentrate on English for daily needs and for living in an English-speaking community, particularly for those newcomers who are immigrants or refugees.
11. *Interactionist approach is* a theory of second language acquisition which subscribes to the idea that a second language is best learned and taught through interaction (Gass, 1977).

12. *L2* is an acronym for Second Language and refers to any language other than the first, or native, language learned.
13. *Meta-analysis* combines the results of several studies that address a set of related research hypotheses.
14. *SLA* is an acronym for Second Language Acquisition. It is a theoretical and experimental field of study which, like first language acquisition studies, looks at, and seeks to understand the phenomenon of language development, in this case the acquisition of second languages.
15. *Target language* is a language that a non-native speaker is in the process of learning.
16. *TESOL* is an acronym for Teaching English as a Second Language or Teaching English to Speakers of Other Languages.

Appendix B

The CALL Survey

COMPUTER-ASSISTED LANGUAGE LEARNING (CALL)

SURVEY

Intensive Day Program (IDP) Instructors

Faculty of Extension

University of Alberta

If you were unable to complete the survey could you please briefly explain why?

_____

_____

_____

_____

COMPUTER ASSISTED LANGUAGE LEARNING (CALL) SURVEY

I would like to thank you for taking the time to complete the following survey on computer assisted language learning (CALL). The data collected from the survey will be used in the writing of my master's thesis towards the completion of a MEd.

My thesis will attempt to reveal how computers are being used in the English Language Intensive Day Program (IDP) at the Faculty of Extension and suggest ways that CALL can be improved in the IDP. Findings from the research will hopefully lead towards educational improvements in CALL, benefiting both the IDP instructors and the English Language Program.

I will also be looking for 3-6 instructors to participate in one-hour semi-structured interviews. If you would be willing to participating in an interview please complete the "Request for Interview" form at the back of the CALL Survey and submit it to the appropriate envelope in my mailbox.

I would like to emphasize that the data collected from this survey will be kept confidential and ANONYMOUS. The raw data will only be available to myself and my advisor, Dr. Olenka Bilash in the Department of Secondary Education at the U of A. If the thesis leads to a publishable paper(s), the name of the institution and the instructors will again be kept confidential and anonymous.

The survey is divided into 7 sections:

I) *Computer Assisted Language Learning (CALL) Background*
II) *Development of CALL Activities and Lessons*
III) *Using CALL in the Intensive Day Program*
IV) *The Potential Benefits and Obstacles Associated With CALL*
V) *The ELP Multimedia Centre in Room 3-06*
VI) *Administrative Support and CALL Infrastructure*
VII) *Extra Space for Survey Questions*

If there are any questions in the survey that you do not feel comfortable answering feel free to leave them blank. During the pilot testing phase participants required between 1 hour to 1 hour and 15 minutes to complete this survey. If you have any question please contact me by phone at 492-5862 or by e-mail at bryan.braul@ualberta.ca

You are under no obligation to return the survey or answer the question on the cover. If you decide to participate in this research project, please return the CALL Surveys and the Request for Interview form to the appropriate envelopes in my mailbox by April 22nd, 2003.
Thank you,
Bryan Braul

COMPUTER ASSISTED LANGUAGE LEARNING (CALL) SURVEY

Definitions:

a) **CALL = Computer Assisted Language Learning – using computers to assist in the language learning/teaching process.**

b) **Authoring Tool = a software program that allows teachers to input their own content, ideas and/or activities in a format for use with a computer.**

c) **Network = a configuration where several computers are linked together so that they can communicate with each other.**

I) Computer Assisted Language Learning (CALL) Background

1. **How comfortable do you feel using computers?**

Not Comfortable at all _____ Very Comfortable
1 2 3 4 5 6 7 8 9 10

2. **What pieces of equipment do you use in your classroom teaching and how often do you use them?**

Teaching Equipment	Do Not Use	Rarely Use	Sometimes Use	Often Use
a) Overhead Projector				
b) Television/VCR				
c) Laptop Computer and Projector				
d) Slide Projector				
e) CD/Cassette Player				
e) Other				

3. **How would you rate your interest in CALL (Computer Assisted Language Learning)?**

Not Interested at all _____ Very Interested
1 2 3 4 5 6 7 8 9 10

4. **Check the box(es) below that best describe(s) your own experience with CALL**

- ❑ **A) I have taken at least one computer course.**
- ❑ **B) I have taken at least one CALL course.**
- ❑ **C) I have looked into CALL (read about CALL or attended a CALL seminar or conference etc.).**
- ❑ **D) I regularly design new CALL lessons for my students.**
- ❑ **E) I have examined in detail at least one commercial CALL software package.**
- ❑ **F) I have participated in a formal evaluation(s) of a commercial CALL software package.**
- ❑ **G) I have developed my own CALL activities using an authoring tool.**
- ❑ **H) I have participated in the design and/or development of at least one CALL software package.**
- ❑ **I) I regularly design, develop, and write CALL software programs.**
- ❑ **J) Other _____**

5. **How many years have you been:**

A) observing the development or implementation of CALL? _____ years.
B) using CALL in your ESL classes? _____ years.
C) developing CALL activities and lessons? _____ years.

6. **How comfortable are you teaching ESL classes in the ELP Multimedia Centre (Room 3-06)?**

Not Comfortable at all _____Very Comfortable
1 2 3 4 5 6 7 8 9 10

*Cartoon by Mark Parisi. Used with special permission.

7. **All of the following computer software programs can be found on the computers in the ELP Multimedia Centre (Room 3-06). How familiar are you with these computer programs? (Please circle the appropriate number)**

I. General Software Programs	
a) Microsoft Word	Not Familiar at all 1 2 3 4 5 Very Familiar
b) Power Point	Not Familiar at all 1 2 3 4 5 Very Familiar
c) Excel	Not Familiar at all 1 2 3 4 5 Very Familiar
d) Microsoft Access	Not Familiar at all 1 2 3 4 5 Very Familiar
e) Microsoft FrontPage 2000	Not Familiar at all 1 2 3 4 5 Very Familiar
f) Encarta 98 Encyclopaedia	Not Familiar at all 1 2 3 4 5 Very Familiar

II. CALL Specific Programs	
a) Clarity	Not Familiar at all 1 2 3 4 5 Very Familiar
b) Connected Speech	Not Familiar at all 1 2 3 4 5 Very Familiar
c) Daedalus	Not Familiar at all 1 2 3 4 5 Very Familiar
d) Delta Systems - TOEFL	Not Familiar at all 1 2 3 4 5 Very Familiar
e) Ellis	Not Familiar at all 1 2 3 4 5 Very Familiar
f) Esri	Not Familiar at all 1 2 3 4 5 Very Familiar
g) Grammar 3D	Not Familiar at all 1 2 3 4 5 Very Familiar
h) Longman Dictionary of Contemporary English	Not Familiar at all 1 2 3 4 5 Very Familiar
i) Longman Preparation Course - TOEFL	Not Familiar at all 1 2 3 4 5 Very Familiar
j) TOEFL Power Prep	Not Familiar at all 1 2 3 4 5 Very Familiar
k) Tell Me More	Not Familiar at all 1 2 3 4 5 Very Familiar
l) American Language Academy – TOEFL Mastery	Not Familiar at all 1 2 3 4 5 Very Familiar
J) Clarity - Tense Busters	Not Familiar at all 1 2 3 4 5 Very Familiar

II) Development of CALL Activities and Lessons

8. When you develop CALL activities and lessons, what kinds of software or computer applications do you use most often? Please check the appropriate box(es). (You may select more than one.)

- ❑ **A) Commercial language learning software**
- ❑ **B) Word processing software (e.g. Microsoft Word)**
- ❑ **C) Power Point**
- ❑ **D) Microsoft Excel**
- ❑ **E) Web design software (e.g. Dreamweaver, FrontPage)**
- ❑ **E) A programming language (Java, C++, Visual Basic, etc.)**
- ❑ **F) The Internet**
- ❑ **G) Other (please specify) _____**
- ❑ **H) Other (please specify) _____**

8a. How did you learn to use the above computer application(s)?

- ❑ **A) Self taught**
- ❑ **B) Taught by colleagues**
- ❑ **C) Attended a formal course (please specify) _____**
  _____
- ❑ **Other (please specify) _____**

9. Briefly describe some of the CALL activities and lessons you have produced (if more space is needed please use the space provided on page 21)

_____
_____
_____
_____
_____
_____

10. How important do you think the availability of suitable hardware is to the successful development of CALL activities and lessons?

Not Important _____ Very Important
1 2 3 4 5 6 7 8 9 10

Why?_____
_____
_____
_____

11. What do you consider to be the most significant obstacles/barriers to the successful development of your CALL activities and lessons at the present time? (Check all that apply.)

- ❑ **Unfamiliar with general software programs**
- ❑ **Unfamiliar with CALL software programs**
- ❑ **Lack of time to develop CALL activities and lessons**
- ❑ **Hardware in the computer lab is unreliable**
- ❑ **Hardware in the computer lab is inadequate**
- ❑ **Not sure CALL activities will be useful for students**
- ❑ **Not sure where CALL activities will fit into the course**
- ❑ **Other (please specify) _____**
- ❑ **Other (please specify) _____**

11a) What would enable you to overcome these obstacles/barriers?

_____
_____
_____
_____
_____

III) Using CALL in the Intensive Day Program (IDP)

12. Each course in the IDP is allotted 2 hours per week in the ELP Multimedia Centre. Do you use the full two hours per week?

- ❑ **I usually use more than the two hours.**
- ❑ **I always do.**
- ❑ **I often do.**
- ❑ **I sometimes do.**
- ❑ **I rarely do.**
- ❑ **I never do.**
- ❑ **I try to avoid the computer lab altogether.**
- ❑ **Other (please specify) _____**

13. How much class time would you like in the computer lab?

- ❑ **Two hours per week is not enough time. I would like _____ hours per week.**
- ❑ **Two hours per week is about the right amount of time.**
- ❑ **Two hours per week in the computer lab is already too much time. I would like _____ hour(s) per week.**
- ❑ **Teachers should not be required to use the computer lab.**

14. **Please check the types of CALL software resources or CALL activities that you have used as part of your ESL classes. If possible, please name the software or computer application (e.g. the Internet) you have used to help students develop abilities in each of the following categories. (* Use the list of computer software in question 7 if needed.)**

- ❑ A) Speaking _____
- ❑ B) Listening _____
- ❑ C) Reading _____
- ❑ D) Writing _____
- ❑ E) Grammar _____
- ❑ F) Vocabulary _____
- ❑ G) Pronunciation _____
- ❑ H) Culture _____
- ❑ I) Games _____
- ❑ J) Gap filling exercises _____
- ❑ K) Text manipulation and/or reconstruction _____
- ❑ L) Tutorials _____
- ❑ M) Interactive audio _____
- ❑ N) Interactive video _____
- ❑ O) On-line chat or e-mail _____
- ❑ P) Other (please specify) _____
- ❑ Q) Other (please specify) _____

15. **Choose the term(s) that best describe(s) the role(s) you see the computer taking in language learning. You may select more than one.**

- ❑ A) A tool (e.g. word processor)
- ❑ B) A surrogate teacher
- ❑ C) A useful provider of mechanical language practice
- ❑ D) A manager of tasks
- ❑ E) A complement to classroom instruction
- ❑ F) A means to provide visual representations and sounds
- ❑ G) A database of textual and visual materials
- ❑ H) An aid to communication (e.g. e-mail)
- ❑ I) Other (please specify) _____
- ❑ J) Other (please specify) _____

16. **How do <u>you use</u> CALL in your ESL classes? You may select more than one.**

- ❑ To reinforce classroom lessons
- ❑ For independent study
- ❑ For developing particular language skills
- ❑ As the focus of the course
- ❑ Other (please specify) _____

17. **How do you think CALL can be best utilized by your ESL students? You may select more than one.**

- ❑ For variety and motivation
- ❑ For independent study
- ❑ For developing particular language skills
- ❑ As the focus of the course
- ❑ Other (please specify) _____

18. **Which language skills do you most often use CALL to reinforce or develop?**

- ❑ Reading
- ❑ Writing
- ❑ Speaking
- ❑ Listening
- ❑ Grammar
- ❑ Vocabulary development
- ❑ Pronunciation
- ❑ Cultural Awareness
- ❑ Other (please specify) _____
- ❑ Other (please specify) _____

19. **How do you encourage your students to use CALL?**

_____
_____
_____
_____
_____

20. **When developing or using new CALL activities, which factors do you initially consider? Please check the appropriate box(es). (You may select more than one.)**

- ❑ A) Patterns in language that seem compatible with the computer
- ❑ B) Certain "potentials" of the computer
- ❑ C) A CALL activity template
- ❑ D) A software program that allows you to input content (authoring tool)
- ❑ E) A way to reinforce what was learnt in your classroom lessons
- ❑ F) Your view of language learning
- ❑ G) Your language learning methodology (e.g. Communicative language learning, etc.)
- ❑ H) No particular framework
- ❑ I) Other considerations (please specify) _____

_____
_____

21. **Do your CALL lessons utilize:**

❑ **A) Language Learning Software**
(Please check the language learning software program(s) that you use)

❑ Clarity	❑ Connected Speech
❑ Tense Busters	❑ Delta Systems - TOEFL
❑ Ellis	❑ TOEFL Power Prep
❑ Grammar 3D	❑ Longman Dictionary of Contemporary English
❑ Esri	❑ Longman Preparation Course - TOEFL
❑ Tell Me More	❑ American Language Academy – TOEFL Mastery

❑ **B) Software programs not specific to language learning**
(Please check the software program(s) that you use)

❑ Microsoft Word	❑ Encarta 98 Encyclopaedia
❑ Power Point	❑ Microsoft FrontPage 2000
❑ Excel	❑ Microsoft Access
❑ Other:	❑ Other:

❑ **C) Specific ESL websites**
(If possible, please list the ESL websites you frequently use)

❶	❶
❶	❶
❶	❶

❑ **D) Website not ESL related**
(If possible, please list the non-ESL related websites you frequently use)

❶	❶
❶	❶
❶	❶

❑ **E) Online Chat programs (MSN Messenger)**
❑ **F) CALL activities developed by yourself or another teacher**
❑ **G) E-mail**
❑ **H) Other (Please specify)** _____
❑ **I) Other (Please specify)** _____

22. **Do you think CALL <u>has the potential to be</u> a valuable addition to ESL teaching and learning in the IDP?**

- ❑ **Yes**
- ❑ **Maybe**
- ❑ **No**
- ❑ **Undecided**

Why?

_____
_____
_____
_____

23. **Do you think CALL <u>is</u> a valuable addition to ESL teaching and learning in the IDP?**

- ❑ **Yes**
- ❑ **Maybe**
- ❑ **No**
- ❑ **Undecided**

Why?

_____
_____
_____
_____

*Cartoon by Mark Parisi. Used with special permission.

24. Below is a list of factors that are considered to <u>be important for the successful implementation of CALL activities</u>. How important are the following factors for the success of your CALL activities and lessons?

- ❑ **My knowledge of computers and CALL is not sufficient to formulate an opinion.**

A) Adequate and reliable computer hardware

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

B) Well-designed language learning computer software

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

C) Time allocated to teacher education and training

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

D) Well-packaged CALL activities and lessons

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

E) Powerful software authoring tools

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

F) A clear pedagogical framework to guide developers

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

G) Other (please specify) _____

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

H) Other (please specify) _____

Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

25. Below is a list of factors that are considered to significantly contribute to a successful CALL software program. How important do you think the following factors are for a CALL software program?

- ❑ **My knowledge of computers and CALL is not sufficient to formulate an opinion.**

A) Is easy to use for teachers and students

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

B) Has an authoring capability – to be able to input your own content

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

C) Is designed according to pedagogical principles

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

D) Has networking capability

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

E) Is compatible with readily available computer systems

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

F) Is available in different versions for different computers

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

G) Contains relevant pre-packaged CALL activities and lessons

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

H) Contains clear and readable documentation with teaching ideas

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

I) Is of high technical quality

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

J) Other (please specify) _____

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

26. How important do you believe the teacher/instructor is in the development of CALL activities and lessons?

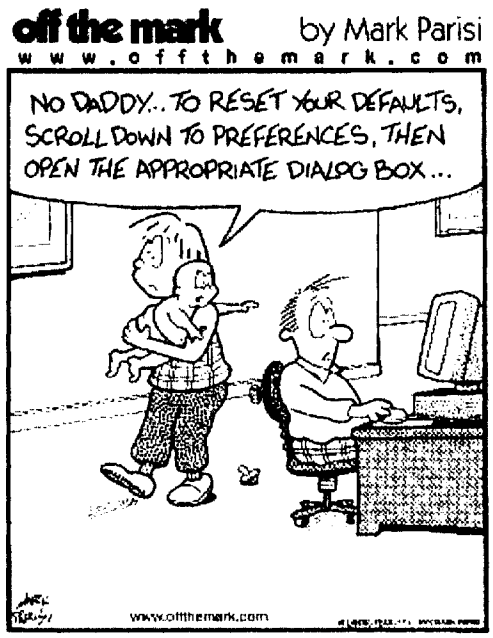
Not Important _____ **Very Important**
1 2 3 4 5 6 7 8 9 10

27. Do you think the introduction of the computer has modified the teacher's role in language teaching and learning?

- ❑ **Yes**
- ❑ **No**
- ❑ Undecided

Please explain your response:

_____
_____
_____
_____



*Cartoon by Mark Parisi. Used with special permission.

28. Below is a list of <u>teacher-determined factors</u> considered important for CALL development and implementation. How important do you think the following teacher factors are for the success of CALL?

❑ **My knowledge of computers and CALL is not sufficient to formulate an opinion.**

A) General level of confidence/competence with computers

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

B) Ability to make use of commercially-produced language learning software

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

C) Ability to use the most common computer programs, such as Microsoft Word and Power Point

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

D) Confidence using commercial authoring tools to produce CALL activities

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

E) Ability to understand what language skills will lend themselves to computer instruction

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

F) Ability to integrate CALL lessons into classroom work

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

G) Adequate classroom management skills in the computer lab

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

H) Attitude toward the validity of CALL

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

I) Other (please specify) _____

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

J) Other (please specify) _____

Not Important _____ Very Important
1 2 3 4 5 6 7 8 9 10

29. Under what conditions do you think CALL is most useful?

- ❑ WITH the teacher present,
- ❑ WITHOUT the teacher present,
- ❑ BOTH

30. In order for your students to participate in the CALL activities and lessons you plan and develop, how important are the following basic computer skills? Please place checkmarks in the appropriate boxes.

Basic Computer Skills	Never Important	Rarely Important	Sometimes Important	Often Important	Always Important
a) Keyboarding					
b) Using the mouse					
c) Saving files					
d) Surfing the Internet					
e) Navigating through software programs					
f) Composing and sending e-mail					
g) Printing documents					
h) Using a word processor					

31. In general, how would you describe your students' attitudes towards the CALL activities and lessons you plan, develop and deliver?

- ❑ Very positive
- ❑ Positive
- ❑ Neutral
- ❑ Negative
- ❑ Very Negative

32. Do you see CALL as:

- ❑ an independent part of your course
- ❑ a component that reinforces what is done in the classroom
- ❑ other (Please specify)

_____

33. **In what ways do your CALL activities and lessons tie into or reinforce your classroom lessons?**

_____

_____

_____

IV) The Potential Benefits and Obstacles Associated With CALL

34. **What do you think CALL's greatest potential benefits are? (Check all that apply)**

- ❑ **Flexible learning**
- ❑ **Self paced instruction**
- ❑ **Lowering students' language learning anxiety**
- ❑ **Increasing language learning practice**
- ❑ **Exposure to authentic materials**
- ❑ **Exposure to other cultures**
- ❑ **More opportunities to communicate**
- ❑ **Other (Please specify)** _____
- ❑ **Other (Please specify)** _____

35. **What do you think are the strongest benefits of <u>your CALL activities</u> for your students? They: (Check all that apply)**

- ❑ **Reduce language learning anxiety**
- ❑ **Provide a flexible learning environment**
- ❑ **Expose students to cultural information**
- ❑ **Help develop specific language learning skills**
- ❑ **Expose students to authentic text and information**
- ❑ **Encourage communication in English**
- ❑ **Provide additional needed language practice for students**
- ❑ **Other (Please specify)** _____
- ❑ **Other (Please specify)** _____

36. **What are the greatest barriers to the successful use of CALL as they relate to your ESL classes? (Check all that apply)**

- ❑ **Computer lab access**
- ❑ **Inadequate CALL activities**
- ❑ **Inadequate CALL software**
- ❑ **Lack of teacher training specific for CALL**
- ❑ **Lack of time to develop CALL activities and lessons**
- ❑ **Inadequate computer hardware**
- ❑ **Other (Please specify)** _____
- ❑ **Other (Please specify)** _____

V) The ELP Multimedia Centre (Room 3-06)

37. How adequate are the computers in the ELP Multimedia Centre (Room 3-06) for your CALL lessons?

- ❑ They are always adequate
- ❑ They are adequate most of the time
- ❑ They are adequate some of the time
- ❑ They are rarely adequate
- ❑ They are never adequate

38. What changes or additions, if any, would you like to see in the ELP Multimedia Centre (Room 3-06).

_____
_____
_____
_____

39. Do you think the teacher's computer, the projector and sound system in the ELP Multimedia Centre (Room 3-06) are user friendly?

- ❑ Yes
- ❑ Somewhat
- ❑ No
- ❑ Don't know

39a) If you answered "No" to question 39, what problems have you experienced in the past and how did you resolve them?

_____
_____
_____
_____

40. The Synchroneyes program can be found on the teacher's computer in the ELP Multimedia Centre (Room 3-06). The program allows the teacher to view all of the computer screens in the lab on the teacher's computer. Do you use the Synchroneyes program when teaching in the ELP Multimedia Centre?

- ❑ Yes
- ❑ No
- ❑ I am not familiar with this program

VI) Administrative Support and CALL Infrastructure

41. Implementation of any new initiative requires administrative infrastructure and support. Below is a list of such administrative factors. Please circle the number that best describes how important you perceive each factor to be.

- ❑ **My knowledge of computers and CALL is not sufficient to formulate an opinion.**

A) Provision of computing facilities

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

B) Commitment to the effectiveness/usefulness of CALL

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

C) Institutional interest in CALL

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

D) Professional development for staff who engage in CALL

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

E) Interest of key personnel

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

F) Realistic expectations held by administrators

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

G) Time allocation for staff to develop CALL activities and lessons

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

H) Other (please specify): _____

Not Important _____ **Very Important**

1 2 3 4 5 6 7 8 9 10

42. In your opinion, how important are the attitudes and expectations of the administration or management to the successful implementation of CALL?

Not Important _____ Very Important

1 2 3 4 5 6 7 8 9 10

43. What else could be done to encourage and support the integration of CALL in the IDP?

44. Do you have any other additional comments concerning CALL in the IDP at the Faculty of Extension?

Thank you very much for taking the time to complete the survey!

VII) Extra Space for Survey Questions

Extra space for question 9, "Briefly describe the CALL activities and lessons you have produced."

Extra Space for Other Questions

Question _____

Question _____

Question _____

Question _____

Question _____

Appendix C

Permission from Mark Parisi to use his cartoons in the CALL survey

The following message is the e-mail correspondence with Mark Parisi in regards to using his cartoons in the CALL Survey.

In a message dated 2/25/03 5:30:54 PM, bryan.braul@ualberta.ca
writes:

To Mark Parisi,

I am a graduate student at the University of Alberta in Canada. For my Masters thesis I am developing a survey to distribute to a group of 19 instructors and I would like to include 3 of your cartoons in the survey.

As a student, my financial situation does not allow me the means to purchase the use of your cartoons. However, I would still like to ask for your permission to include them in my survey as it would be for non-profit use.

Thank you,
Bryan Braul

In a message dated 3/22/03 3:36 PM, markparisi@aol.com
writes:

Hi Bryan,
I can grant you permission to use some cartoons in school survey, but please don't alter or crop the image or text in any way, and please leave on the title and web address. Below the cartoon, add this blurb, "Cartoons by Mark Parisi. Used by special permission." If you want to show your gratitude by going to my site and buying one of my books, well I'll leave that up to you!

Regards, -Mark www.offthemark.com

Appendix D

The CALL interview questions

1) At the end of 1998, CALL became a mandatory component. What were the initial reactions of the teachers to this change? What were your initial reactions?
2) How has CALL changed since its inception in 1998?
3) After working with CALL for 5 years now, do you think CALL is an important component of this ESL program? Why or why not?
4) Has CALL improved the language learning in this program?
    a) Positive response: How has CALL improved language learning in this program? If you had a choice to take out the CALL component or leave it in, what would you do?
    b) Negative response: Why do you think CALL has not improved language learning in this program?
5) What unique attributes and potentials do you think computers bring to language learning?
6) What do you think are the most prominent limitations of computers for language learning?
7) Has your comfort level with computers and CALL increased since CALL has become a mandatory component of this program?
8) What were some of the initial challenges you faced in the beginning? How did you overcome these challenges?
9) What are some of the challenges you now face? How are you overcoming these challenges?

10) Many teachers are familiar with only two or three of the CALL programs in the lab. You have indicated that you are familiar with (number indicated from survey response) CALL programs.

Do you think it is important for teachers to become familiar with more of the CALL programs in the computer lab? Why or why not?

a) Of the CALL programs you use, what features do you find most useful? In what ways are these features useful? How do you structure lessons around using the CALL programs?

11) The Internet provides a vast array of information and activities suitable for language learning. The majority of the teachers use the Internet in their CALL classes. Do you use the Internet for your CALL classes?

a) Positive response: What advantages and disadvantages do you think the Internet brings to language learning in this program? How do you structure lessons around using the Internet?

b) Negative response: What are the reasons you don't use the Internet for CALL classes?

12) Reflecting on your CALL lessons and activities, what factors do you think need to be present to ensure the success of CALL with your classes?

13) Can you describe a typical CALL planning session and lesson?

14) In general, how do you think CALL is being used by the teachers?

15) Many teachers indicated that students usually have a positive attitude towards CALL. Would you agree?

a) Positive response: How can teachers capitalize on this positive attitude in their CALL classes?

b) Negative response: Do you think it is important to develop a positive attitude towards CALL? How could teachers foster a positive attitude towards CALL?

16) In general, is the CALL component useful for language learning in this program?

17) The majority of teachers indicated that they would like more CALL professional development.

a) What kinds of PD do you think would be most helpful for the teachers?

b) When do you think the best time for CALL workshops would be?

18) Many teachers also indicated that they would like more time to develop CALL activities and lessons. Do you have any suggestions that would provide teachers with more time for CALL development?

19) What can the administration do to improve CALL in the program?

20) What are some <u>other</u> changes you would recommend to improve the CALL component?

21) I'm just curious as to why you volunteered for an interview?

<u>Interviewee Specific Questions based on Survey Responses</u>

- Ingrid – You have indicated a high interest level in CALL, but are still unsure as to whether it is useful or not? Can you explain why you are unsure if CALL is useful?
- Melissa – You have indicated that you would like more time in the computer lab. If given more time what would you like to do?

- Sheila – What do you mean by "CALL classes give me a break from being a teacher"?
- Ingrid - You indicated that it is important for the administration to have realistic expectations and to take more of a role in the direction of CALL. Can you explain what you meant by this?
- Melissa - You indicated that the computer has changed the role of the teacher. In what ways has the role of the teacher changed with the use of computers?
- Sheila - You have indicated that you are not comfortable teaching in the computer lab. Why are you uncomfortable? How would you become more comfortable?

Appendix E

Information Letter to the ESL Instructors

To the IDP Instructors,

My name is Bryan Braul and I am in the process of completing my Masters Degree in Education. My thesis is focused on exploring how computers are being used to assist the language learning process in the IDP program at the Faculty of Extension. Data for this research will be collected through a Computer Assisted Language Learning (CALL) Survey and semi-structured interviews. Through this research I hope to develop a better understanding of several issues. The following list comprises the main issues I wish to explore.

1) IDP Instructors' attitudes towards CALL
2) IDP Instructors' comfort level when developing lessons and using CALL
3) If there are correlations between gender, age, education level and teaching experience and IDP instructor attitudes and perceptions towards CALL
4) IDP Instructors' comfort level with educational technology
5) IDP Instructors' interest level in CALL
6) IDP Instructors' experience with CALL
7) The kinds of CALL lessons IDP instructors are developing and using
8) What IDP instructors perceive to be the most significant barriers to CALL development and use
9) In what role are IDP instructors using CALL
10) The perceived advantages and disadvantages of CALL to ESL students
11) How IDP instructors are integrating CALL into ESL courses
12) Do IDP instructors perceive the ELP Multi Media Centre to be adequate for their CALL lessons

Participation in the survey and/or interviews is strictly voluntary and you may opt out of the research project at any time. I would also like to emphasize that the data collected from this survey will be kept confidential and ANONYMOUS. The raw data will only be available to myself and my advisor, Dr. Olenka Bilash in the Department of Secondary Education at the U of A. If the thesis leads to a publishable paper(s), the name of the institution and the instructors will again be kept confidential and anonymous. I am hoping the results and conclusion from this research will eventually lead to educational change in the CALL component of the IDP courses.

If you have any questions or concerns about this research or your involvement in this project please feel free to contact me by e-mail at: bryan.braul@ualberta.ca or by telephone at 492-5862.

Thank you,
Bryan Braul

In case of concerns, please contact:
Dr. Olenka Bilash
olenka.bilash@ualberta.ca
Office: 492-5101

This study has been reviewed and approved by the Research Ethics Board of the Faculties of Education and Extension at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the Research Ethics Board at 492-3751.

Appendix F

Research Consent Form

University of Alberta

Research Consent Form

I, _____ , consent to be a participant in the "Computer Assisted Language Learning ," research project conducted by Bryan Braul. Participating in this research group will require completing a survey and participating in a one hour oral interview.

I understand that:

- I may withdraw at any time without penalty, or that the project may be terminated
- All information gathered will be treated confidentially and I will not be identified
- Data will be validated by participants and kept on file in a locked and secure place for a period of five years
- Any interpretations that I do not want included will be removed at my request
- Anonymity will be respected

I understand that the results of this research project will only be used for the following:

- Research project
- Presentations and written articles for other educators

In case of concerns, complaints or consequences, the following person may be contacted:

Research Supervisor: Dr. Olenka Bilash
olenka.bilash@ualberta.ca
Office phone: 492-5101

_____ _____

Signature of Participant Date signed

This study has been reviewed and approved by the Research Ethics Board of the Faculties of Education and Extension at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the Research Ethics Board at 492-3751.

Appendix G

Request for Interview Form

Request for Interview

To the IDP Instructors,

Thank you for completing the CALL survey. To acquire a more in-depth picture of what the IDP instructors think about CALL, I would also like to interview between 3-6 instructors. Each interview will last approximately 1 hour and will expand upon themes covered in the survey. I would also like to audio record the interviews so that I can ensure the accuracy of your responses. Following the interview, I will summarize your responses in writing and give you a copy to validate. You may add, delete or make any changes you feel necessary.

You will also have the option of identifying your CALL survey. This will help me formulate the most relevant interview questions.

If you would like to be involved in a CALL interview please check the boxes below, provide the requested information and sign at the bottom of the page.

A) If you would like to be involved in a CALL interview please fill out the following information.

❑ I agree to be involved in a CALL interview.

- o Name: _____
- o Convenient Interview date(s) and time(s):
  _____

B) Please check the appropriate box.

❑ I agree to identify the CALL survey I completed.

- o What is the CALL Survey identification number (found on the inside front cover of your survey)?
  CALL Survey Identification number: _____

❑ I do not want to identify my CALL survey.

_____

Signature of Participant Date

_____

Printed Name of Participant

Appendix H

Internet Websites Used by Teachers in this ESL Program

ESL Specific Websites	*Websites not ESL specific*
www.aitech.ac.jp/~itesj/quizzes	www.adbusters.com
www.bbc.com	www.askjeeves.com
www.comenius.com/englishbaby.com	www.bbc.co.uk
www.englishclub.net	www.bbc.co.uk/worldservice/learningenglish
www.englishlistening.com	www.cbc.ca
www.english-zone.com	www.ccc.comment-edu
www.eslbee.com	www.cnn.com
www.eslcafe.com	www.ctv.com
www.eslflow.com	www.dictionary.cambridge.org
www.esl-lab.com	www.discovery.com
www.eslnotes.com	www.discovery-xwordmaker
www.eslpartyland.com	www.edmontonjournal.com
www.faceweb.okanagan.bc.ca/pron	www.google.ca
www.linguisticfunland.com	www.macleans.com
www.listeninglounge-randall's.com	www.nationalgeographic.com
www.manythings.org	www.newint.org/teaching
www.nanana.com	www.npr.org
www.owl.com	www.owl.english.purdue.edu
www.tehenglishprofessor.com	www.pbs.org
	www.public.edmonton.com