Computer – Assisted Language Learning: An Overview

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Introduction

As a technological tool whose potential for English language teaching has been recognised for more than thirty years, Computer-Assisted Language Learning (CALL) can be used in many ways to promote English language learning. This article gives a brief overview of CALL development and its uses in English language teaching and learning, as well as its advantages and limitations.

Definition of CALL Computer-Assisted Language Learning (CALL) is defined as *"the search for and study of applications of the computer in language teaching and learning"*. (Levy, 1997: 1) The main aim of CALL is thus to find ways for using computers for the purpose of language teaching and learning. Computer technologies that can be used for this purpose include word processing, presentation packages, guided drill and practice, tutor, simulation, problem solving, games, multimedia CD-ROM, and internet applications such as E-mail, chat and the World Wide Web (WWW) for language learning purposes.

There are several terms associated with CALL. Apart from the more or less generic term CALL, Computer-Assisted Language Instruction (CALI) and Computer-Enhanced Language Learning (CELL) are also in use. CALL and CALI generally refer to computer applications in language learning and teaching, while CELL implies using CALL in a self-access environment. (Hoven, 1999)

Why CALL? Here are some of the reasons why ELT teachers use CALL:

- Computers can do some of the work of the teacher and provide great assistance to the learner even without the presence of the teacher. (Pennington and Steven, 1992)
- New technologies have made computers smaller, faster, and easier for the teacher to use. (Evy, 1997) At present, well-designed CALL software is readily available to the teacher.
- Technologies now equip computers with multimedia functions, incorporating video, sound, and text, and these capacities allow the learner to interact with both the programme and other learners. (Felix, 1998)
- The computer offers great flexibility for class scheduling and pacing of individual learning, choosing activities and content to suit individual learning styles. (Oxford and others, 1998)
- The computer can provide a meaning-focused, communicative learning environment, which serves the purposes of communicative language teaching.

History of CALL Development This section offers a brief history of CALL development. The review aims at showing, chronologically, the development of CALL over the past 30 years by linking to important technological developments, theories of learning and language teaching approaches. Some key examples of CALL programmes and projects developed in this period are also shown.

Warschauer (1996) identifies phases of CALL development as follows:

- Behaviouristic CALL
- Communicative CALL
- Integrative CALL (Multimedia CD-ROM), and
- Integrative CALL (Internet).

The beginning of a new phase does not necessary mean the end of programmes and methods of the previous phase; rather the older is included within the newer phase. (Warschauer, 1996)

The historical development of CALL is summarised in the tables which follow:

Behavioristic CALL

Main-frame and Mini Computers (1950s-1970s)		
Technological Development by Year	**Approaches to Language Teachning**	**Approaches to CALL & Examples**
• 1950 - Mathematician and computer pioneer Alan Turing predicted that one day there would be a machine that could duplicate human intelligence in every way. • 1951- Whirlwind, the first real-time computer was built. • 1957- FORTRAN language was developed. • 1959-COBOL (Common Business-Orientated Language) was developed. • 1960-Tandy Corporation founded. • 1964-DEC Mini Computer was built. • 1965-BASIC language was developed. • 1967-Development on PASCAL • 1968-LOGO language was developed. • 1970-Development of UNIX operating system • 1971-First Microprocessor-4004 was invented. • 1972-C language was developed. • 1972-8008 Processor was released by Intel. • 1972-The first international connections to ARPANET are established. ARPANET became the basis for the internet. • 1974-Introduction of 8080. An 8 Bit Microprocessor from Intel. • 1975-Formation of Microsoft by Bill Gates and Paul Allen. • 1976-Apple Computer, Inc. founded, releasing the Apple II, first mass-market of PC. • 1979-Introduction of 8088 processor. • 1979-Compact disk was invented	• Empiricist theory • Behaviorism • Audiolingualism • Structural Linguistics Principles of Language Learning: • Focus on stimulus, response, reinforcement. • Language learning is a process of habit-formation. • Focus on drill and practice. • Learn through imitation and repetition. • Give immediate feedback. Individualized instruction was included to serve the pace of the learner.	Behavioristic CALL (eg. PLATO project: Aims at providing interactive, self-paced learning using mainframe computers.) Main characteristics of behavioristic CALL: • Based on behaviorist theory of learning. • Focus on repetitive drills. • Mainly drill and practice type software. • Computer as tutor. • Learning activities promote language accuracy rather than fluency. Designed to be implemented on mainframe and mini computers. Criticism of Behavioristic CALL: The Behaviorism and Audiolingualism were rejected theoretically and pedagogically by theorists and practitioners.

Communicative CALL

Personal Computers (PC) (Late 1970s - Early 1980s)		
Technological Development by Year	**Approaches to Language Teachning**	**Approaches to CALL & Examples**
• 1980-Development of MS-DOS/PC-DOS began by Microsoft • 1981-The first WIMP (Windows, Icons, Menus and Pointing Devices) by The Xerox Palo Alto Research Lab. • 1982-The TCP/IP Protocol established, and the "Internet" is formed. • 1982-80286 processor was released. • Compaq released their IBM PC compatible • 1983-MS-DOS 2.0 was released. • Hewlett-Packard released LaserJet printer. • AT was released. • Apple Macintosh was released. • 1984- MS-DOS 3.0 was released. • 1985 - 80386 DX was released. • VGA was released. • 1988 - MS-DOS 4. The development of word processing such as: • WordMaster • WordSta • WordPerfect	Cognitive Psychology Communicative Language Teaching Transformational Grammar Principles of Language Learning: • Learning is process of discovery, expression, and development. • Focus on functions of the language. • Emphasis on language use rather than usage. • Contextualization is important. • Communicative competence is the desired goal. • Focus on using language forms rather than forms themselves. • Teach grammar implicitly. Encourage students to produce language rather than manipulate the language, (Brown, 1994).	Communicative CALL: (e.g. Storyboard, Text reconstruction, Cloze exercises) • Serious educational applications appeared. • A boom of CALL due to the introduction of Personal Computer Main Characteristics: • View that drill and practice exercises did not yield enough genuine communication. • Computer-based activities • Focus on using the language in context. • Non-Drill Practice format Type • Text reconstruction • Paced readin Cloze exercises Criticism of Communicative CALL: Computers were not fully well integrated into the curriculum. The greater contribution is on marginal rather than the central educational elements.

Integrative CALL: multimedia CD-ROM

Multimedia CD-ROM (Late 1980s-Early 1990s)		
Technological Development by Year	**Approaches to Language Teachning**	**Approaches to CALL & Examples**
• 1982 Audio CDs were introduced. • 1982 Book on Audio CDs was introduced by Sony and Phillips—beginning of the Compact Disk. • 1982 MIDI, Musical Instrument Digital Interface was introduced. • CD-ROM, invented by Phillips, produced by Sony. • 1989 CD-I released by Phillips and Sony. • 1989 Release of Sound Blaster Card, by Creative Labs • 1990 Introduction of Windows 3.0 by Bill Gates & Microsoft. • 1990 - MPC (Multimedia PC) was introduced. • 1991 - 80486 DX was released. A sound card and triple speed CD-ROM were added. • 1992 Introduction of CD-I launched by Phillips. • 1993 Pentium was released • 1993 a CD-ROM drive capable of 300KB/sec (double speed) was introduced.	Humanistic Approach Focus on Communicative Language Teaching: • Focus on meaning. • Use of authentic, meaningful and contextualized materials. • Fluency in language is a primary goal. • Focus on interactive language learning. • Consider learners' factors such as age, interest, learning styles, motivation. • Tasks relevant to students' real life interests and experiences (Felix, 1998) • Shift away from language usage to language use (Felix, 1998) The teacher became a facilitator rather than the person who gives out information.	Integrative CALL:Multimedia CD- ROM (eg.Toolbook, Authorware, Planet English, Real English, Wiser Educator) Main Characteristics Use advantages of multimedia CD-ROM in teaching language for communicative purposes. • Allow computer to incorporate a variety of media (text, graphics, sound, animation, and video) by Hypermedia. • Emergence of friendly-user, powerful authoring software such as Toolbook, Authorware, and Director. • Based on communicative language teaching approach. • Built on student's intrinsic motivation • Foster the interactivity between the learner and the learner, and learner and computer. • Multimedia resources are linked together. • Learners can navigate their own path and set their own pace by pointing and clicking mouse. • More authentic language learning environment is created. • The four language skills are integrated. • Focus on content and language skills. • Allow learners to link to a variety of sources such as grammatical explanations, glossaries, pronunciation, exercises, etc.

Integrative CALL: internet applications

Computer-Mediated Communication (1990s-present		
Technological Development by Year	**Approaches to Language Teachning**	**Approaches to CALL & Examples**
• 1969-Computer-mediated communication (CMC) but serious applications appeared in early 1990s. • 1960s-Hypertext was invented by Ted Nelson. • 1989- World Wide Web—the integration of hypertext and the Internet- was invented by Tim Berners-Lee. • 1990- Internet applications became popular such as E-mail, FTP, Talk (UNIX system). • 1992- Gopher was released. • The release of CERN (WWW), a hypertext based system for finding and accessing internet resources. • 1993- Mosaic (Web browser) was released). • 1994- Netscape 1.0 was released. • 1995- Windows '95 was launched with Internet Explorer by Bill Gates & Microsoft. • 1995 - JavaScript was introduced by Netscape. • 1998 – Windows'98 was released. • 1995-1999 - Development of: • QuickTime • Real Audio • Real Movie • Shockwave • Web-based E-mail • Web-based Chat • Voice Chat • Internet Phone • Emergence of web authoring software such as Hot Potatoes, Authorware, and Director. • Desktop Conferencing	<u>Communicative Language Teaching</u> Focus on using the internet applications for communicative language teaching: • Foreign language learning will be an acquisition of language content through purposeful and reflective participation. • The curriculum is dynamic. • The role of the teacher is a facilitator, an inseminator of ideas, who draws on student's motivation. • The learner is responsible, reflective and creative. • Textbook is a resource along with electronic resources. • Classroom becomes a reconfigurable space with electronic facilities. (Debski (1997:47-48)	<u>Integrative CALL</u>: <u>Internet Applications</u> (eg. E-mail communication, FTP, World Wide Web, Chat, Gopher sites, MOO servers, CU-SeeMe, Desktop Video Conferencing) • Aim at integrating computer-mediated communication applications for communicative language teaching as follows: • E-mail • Allow learners to have direct communication around the globe. • FTP • Allow learners and teachers to download documents, graphics, sound, videos, and animation.WWW • Learners search and share different kinds of files on the internet (documents, graphics, sound, video, animation). Chat: • Allow learners to have real time communication. • Internet resources are linked together by Hypermedia. • Main Characteristics: • Allow computer to incorporate a variety of media from the internet such as text, graphics, sound, animation, and video. • Based on communicative. language teaching approach. • Built on student's intrinsic motivation for authentic communication. • Encourage interactivity between the learner and internet users around the world.

Integrative CALL: internet applications

Computer-Mediated Communication (1990s-present		
Technological Development by Year	**Approaches to Language Teachning**	**Approaches to CALL & Examples**
		• More authentic language learning environments are created. • The four language skills are integrated (listening, speaking, reading, and writing). • Focus on a variety of content and multi-cultures.

Uses of CALL in English language teaching

This section gives a brief overview of how CALL has been used or can be used for the purpose of language learning and teaching. The use of CALL can be divided as follows: (1) Drill and practice, (2) Computer as tutor, (3) Computer as simulation/problem-solving, (4) Games on computers, (5) Computer as a tool for ELT teachers and learners, and (6) Internet applications.

Drill and Practice In this use of CALL, computers are viewed as a tool for saving time with immediate feedback. The theoretical principles underpinning *Drill and Practice* are the behavioural learning theory and the audio-lingual approach. The main aim of *Drill and Practice* is to review the content/background knowledge, and to assist the learner to master separate language skills (such as reading, listening, etc.). *Drill and Practice* consists of three steps:

- Providing stimulus
- Receiving active response from the learner, and
- Giving immediate feedback.

There are several types of *Drill and Practice* activities or exercises, such as paired associate (matching); sentence completion; multiple choice; part identification; true-false; and short-answer questions.

Well-designed *Drill and Practice* programmes can record the

learner's progress and scores and the time a student spends on each exercise. Some programmes add timing features to help the learner to control their speed while practicing. *Drill and Practice* CALL programmes in the early years focused on practicing language skills and components separately, for instance, vocabulary, grammar (such as irregular verbs, past tense, articles), reading, and translation.

A lot of *Drill and Practice* exercises were produced by classroom teachers. There are, however, several limitations of *Drill and Practice* exercises such as the lack of interaction and content materials which are not authentic meaningful, and contextualised. (Felix, 1998) As a result, the receptive language *Drill and Practice* programmes of the 1960's-1970's did not produce enough authentic communication for the learners.

Another type of *Drill and Practice* is the so-called "contextualised activities". These involve gap filling, reconstructing texts, etc. Examples of these programmes are those developed in early 1980's such as *Cloze exercises*, *Text reconstruction*, and *Eclipse* (by Higgins). A key authoring programme used to generate text reconstruction is *Storyboard*, written by Higgins. (Levy, 1997)

Computer as Tutor The role of the computer as tutor is to present to the learners the content of the lesson as text graphics, video, animation, or slides, including learning activities, drills and practice. The computer serves as a means for delivering instructional materials.

The programme consists of the following stages: (1)Introduction (stating aims, background knowledge), (2) Presentation of the content, exercises and/or testing; and (3) Giving the feedback.

Examples of CALL tutorial programmes are:

- **Grammar**: *Longman Grammar Software; Grammar Expert Plus*; *Tense Buster* (Clarity Software); *Grammar Mastery* (ALA); *Grammar Rom* (Addison Wesley Longman); *Grammar 3D*: *Contextualised Practice for Learners of English* (Heinle & Heinle).
- **Reading**: *Read It! Study Skills* (Clarity Language Consultants) (EAP reading); *RocketReader* (1998) (a speed reading programme); *ReadFlex* (Speed Reading); *Reading for English* (Athelstan) (Reading

Comprehension); *SEEN: Tutorials for Critical Reading* (KenCD Software) (tutorials designed to develop analytical thinking and critical reading skills); *Accelerated Reader* (Advantage Learning Systems).

- **Writing**: *Paragraph Punch* (a writing tutor for effective paragraph); *WriteExpress Easy Letters* (effective business letters); *Power Editing* (an interactive tutorial on how to edit and revise sentences); *Report Writer for Science and Engineering Reports* (Clarity Language Consultants) (EFL/ESL report science and engineer writing).
- **Speaking, Pronunciation & Listening**: *Learn to Speak* (The Learning Company); *English Pronunciation* (1997-98) (Okanagan University College); *Dragon, Naturally Speaking* (A voice recognition program); *See It, Hear It, Say It!* (Courseware Publishing International); *Accent Improvement* (SpeakWare); *Real English* (Wiser Software).
- **Integrated Skills / Courseware**: *Ellis* (CALI), *Dynamic English* (DynEd); *English Discoveries* (Berlitz); *English Language Development* (Jostens); *Rosetta Stone* (Fairfield Language Technologies); *Planet English* (Unisearch Ltd and the University of New South Wales); *Issues in English* (Protea Software); *Active English* (Courseware Publishing International).

Computer Used for Simulation/Problem-solving

Simulations and problem-solving are used to foster analysis, critical thinking, discussion and writing activities. The computer is not used much for tutorial purposes. The programme is designed to create language interaction through problematic situations, conditions or problems challenging the learner to solve. Many simulation programmes are problem-solving games, which are both entertaining and educational in nature and purpose *("edutainment")*.

Oregon Trail (1995-1998) (CD-ROM)<http://www.cd-romlink.com> is one of the earliest educational problem-solving simulation games. The learners are challenged to make a series of

decisions to guide their party from Missouri to Oregon by a covered wagon. These decisions begin with choosing a departure date, through the daily decisions relating to pace, restocking and direction. The learners face a series of obstacles: fires, floods, injuries, water shortage, bad water, no grass, food spoilage, etc. The learners have to make life-or-death decisions. Though *Oregon Trail* is not directly designed for ELT classes, the teacher can create learning activities in both receptive and productive skills.

Other educational problem-solving simulation games include *Carmen Sandiego, A Day in the Life* (1995), and *Carmen Sandiego Word Detective* (1999), which helps learners to master essential language skills, *Amazon Trail II* (The Learning Company) which is a simulation of a trip up the Amazon River.

Games on Computer The main principle behind computer gaming is that "Learning is Fun." The principal aim is to create a pleasurable learning environment and to motivate the language learner. However, good educational games should have clear educational objectives.

CALL games and simulation games are similar in that both are designed to motivate students to learn through entertainment. However, they are different in certain ways. Simulation games always use simulations (real-life situations) in the presentation of a game, while CALL games focus on providing fun, but challenging environment to the learner. Though CALL games have clear learning objectives, they are different from *Tutorials* and *Drill and Practice.* The main function of CALL games is not so much to present the language content as tutorials do but to provide entertainment to the learner.

Examples of CALL vocabulary games are *Spelling Games*, *Spelling Bee and Magic Hat*, *Scrambled Word*, *Word Worm*, *Hangman*, *Word Order*, *Find a Word*, *Word Puzzles*, *Spelling Buddy*, *Cross Words*, *I Love Spelling* (DK multimedia), *Scrabble Deluxe* (Virgin Games) (Computerized version of the board game), etc.

Computer as a Tool for Teachers and Learners

Word processors The most common tool used by teachers and learners in CALL is probably word processors. Word Processors are tools for creating documents for making handouts, sheets, desktop

publishing, letters, and flyers for language teaching and learning. A wide variety of word processors are available, ranging from high quality programmes such as *Microsoft Word* <http://www.microsoft.com>, *Corel Word Perfect <http://www.corel.com >* to simpler and cheaper programmes such as *Microsoft Works <http:www.microsoft.com>*, and *Claris Works <http://www.apple.com/appleworks>*. Teachers can choose those most suitable for their students.

Spelling checkers Spelling checkers are tools for ELT teachers and learners for conducting spelling check. Most high quality word processing programmes such as *Microsoft Word*, *Word Perfect* have built in spelling checkers. However, there are also separate spelling checking programmes including *Spell it Deluxe (1997)* <http://www.davd.com>, or *Sentry Spelling-Checker Engine*.

Grammar checkers ELT teachers can use grammar checker programmes to check and point out grammatical problems in writing. Like spelling checkers, grammar checkers are also available as separate programmes such as *Grammatik*, or built-in programmes such as the *Grammar Check* in Microsoft Word. However, these grammar checkers still have limited abilities and are intended for native speakers. So they are not recommended for ESL/EFL learners since they may be confusing.

Concordancers Concordancing is an alphabetical list of words. It displays, in context, all occurrences of words, phrases, etc. from a text database. Teachers and learners can use concordancing software to search large databases to find all the uses of a particular word. It might be confusing for ESL/EFL beginners. The best concordancer for ELT teachers and students is *Oxford MicroConcord*. The software includes a total of about 1,000,000 words from British newspapers.

Collaborative writing Collaborative writing is software that helps the learner to write collaboratively on computers, which are linked in a local area network. *Daedalus Integrated Writing Environment* is the most popular one. This software includes real-time discussion, word processing, electronic mail, brainstorming, and a dictionary.

Reference software At present many CD versions of encyclopedias, dictionaries, thesauruses, maps and other references are available to the teachers and learners. Popular reference CD-ROM programs are *Microsoft Encarta 99* < http://www.iac-on-encarta.com/

>, *Longman Dictionary of American English, Oxford Picture Dictionary CD-ROM* (1997) <http://www.oup-usa.org>and *BookShelf* <http://www.Microsoft.com>, *Microsoft Encarta Interactive World Atlas 2000* <http//www.microsoft.com>, *Roget's Thesaurus* <http//www.thesaurus.com>, *WorldWeb* (a thesaurus/dictionary), *Collins On-Line Dictionaries, American Heritage Dictionary* (Softkey), *London Multimedia Dictionary, Grammar Reference* (US English Grammar usage), *American Heritage Talking Dictionary* (The Learning Company). Please note that entries in many of these programmes may be biased towards the country of origin.

Authoring Generally, ELT teachers use commercially available CALL software. However, much software does not meet the demand of the learners or does not suit the learning objectives. Teachers need to adapt or create their own materials from scratch. In this case, the teacher has to become an author, or a teacher-programmer (Levy, 1997). Authoring software allows teachers to select appropriate content and learning activities according to their students' needs. There is a variety of authoring software ranging from pre-scripted authoring programmes such as *Authorware* (Macromedia), *Toolbook* (Asymetrix), etc. which requires the user to write scripts, to customised template authoring programmes and allow the teacher to create customised teaching activities and exercises such as *Storyboard, Clozemaker, ChoiceMaster, GapMaster* in *Wida's Authoring Suite*, *Wiser Educator*, *Author Plus* (Clarity Language Consultants), *Authorware Attain* (Macromedia).

Internet applications Computers can be connected to the internet and can incorporate interactive multimedia: text, graphics, audio, video, and animation. It can be said that the explosive growth of the internet has given new life to interactive media and CALL.

To access text, graphics, audio, video, and animation published on the internet, the teacher and learner need to use "Web browser" software, a computer based graphical programme that allows users to search and explore information on the internet. Common Web browsers are *Netscape Navigator* and *Microsoft Internet Explorer*. It is expected that the internet will become one of the most popular media for CALL because it allows for world-wide distance education.

The use of the internet is easy. The user usually interacts just

by clicking the mouse. Easy navigation is an advantage of using the internet in linking to different sites around the world.

The following are internet applications that ELT teachers can use for language teaching:

Electronic mail (E-mail) Computer-mediated communication makes it easy for ELT learners to have direct authentic communication with the teacher, other learners or interested people around the world by using e-mail. E-mail is an excellent method for teaching interactive writing. One of its advantages is that it provides interaction with native speakers through pen-pal correspondence. E-mail writing is considered to be more personal and meaningful than classroom writing activities. (Felix, 1998) A problem concerning interaction through E-mail is that the communication does not take place at the same time (asynchronous).

There is a variety of E-mail programmes that can be recommended to the learner. The most popular programme on the Unix platform is *Pine* of Washington University <http://gpu.srv.ualberta.ca/HELP/mail/pine1.html>. *Eudora* <http://www.eudora.com> and *Netscape Mail* <http://www.netscape.com> are easy to use. However *Pine* and *Eudora* require direct connection to the internet through the server in which the user is a member. If the user wants to access to E-mail anywhere and anyplace in the world, he/she can apply for free web-based e-mail services such as *Hotmail.com* <http://www.hotmail.com>, *Yahoo.com*<http://www.yahoo.com>, *Mail.com* <http://www.mail.com>, *AltaVista.com* <http://www.AltaVista.com>, etc.

File Transfer Protocol (FTP) The File Transfer Protocol (FTP) is a facility for transferring files over the internet. The original FTP was available on the UNIX system. But now FTP is also available on the web, and it is becoming more user-friendly than the one operating on the UNIX system.

When the user connects to a remote computer with FTP, he/she is communicating between the two machines: one local and the other remote. Once you connect to the remote computer with FTP, you can do several jobs concerning files such as sending local files (text and binary images, and sound) to the remote site, retrieving files from the

remote site, changing directories, naming and deleting files both on the local and remote sites.

ELT teachers can use FTP to download or upload files such as software programmes, texts, images, sound, videos. A lot of FTP sites are available on the internet at several servers such as the FTP server at University of Illinois at Urbana-Champaign <ftp:// ftp.ncsa.uiuc.edu/>Washington University at St. Louis <ftp:// wuarchive.wustl.edu/>, FTP server at Monash University <ftp:// ftp.monash.edu.au>.

World Wide Web (WWW) Computer networks have allowed users to connect to information around the world, and share millions of documents – texts, graphics, sound, and video via hypertext keywords or links. WWW or the web now has absorbed many of the above services. For example, the web can now do E-mail, ftp, chat and voice chat, desktop conferencing, and MOOs (Multiple-user-domains Object Oriented), which allows for real time communication.

The WWW provides a rich resource of "authentic materials" for language teaching and learning. Using web browsers such as *Netscape* <http://www.netscape.com> and *Internet Explorer* <http:// www.microsoft.com/>, the WWW yields good (and bad!) resources for the teacher and the learner. Learners can find information which suits their own interests and fields of study.

The teacher and learner can search for the following materials on the WWW:

a) Texts

Texts can be downloaded, saved as .html or .text files, and printed and kept as worksheets. Teachers can download suitable texts and put them on the school's website for further reading assignments or doing English exercises such as grammar, vocabulary, etc. There is a wealth of texts on a variety of topics on the WWW that the teacher and the learner can choose to serve their own interest. You can find texts in almost any field on the WWW. However, there are some limitations on using text files on the WWW. Many web sites consist of poorly written texts with grammar and spelling mistakes or poor writing style. The teacher must be selective in choosing text files for ELT learners. A good web site is *CNN News Room* <http://lc.byuh.edu/cnn n/cnn-

n_page.html>. The student will learn both news and do some language exercises such as vocabulary, grammar, reading, etc.

b) Pictures

Pictures can be very useful in language teaching and learning. Pictures can convey meaning and stimulate language learning. By using a web browser, teachers can download, save and print pictures and keep them as a resource for language teaching. There is a variety of pictures on the web. Many pictures are copyright-free for educational use. *AltaVista* <http:www.altavista.com> is a good search engine for searching pictures on the internet.

c) Audio files

A lot of web sites provide audio clips that the user can download and store for use in language teaching and learning. With advanced technologies such as the *RealAudio* program <http://www.real.com>, the teacher can download 'live' audio files such as news, short stories, songs for use in class and a self access centre or for individual listening at home. Web sites that provide audio files include *CNN News*<http://www.cnn.com>, *BBC English* <http://www.bbc.co.uk/worldservice>.

d) Video files

The WWW is also a rich resource for Video files (video films, video clips, digital movies). To view video files, there is a need for video and movie viewing programmes such as *RealVideo*<http://www.real.com>, *QuickTime Movie*<http://www.apple.com/quicktime/>, which can be downloaded from the internet. Useful videos and movies that can be downloaded and saved are previews of video films, movies, conversations or dialogues among people, news, speeches, and documentary films. Teachers can use videos and movies with other media, such as textbooks, pictures, handouts, or audio materials. However, there are some technical limitations with downloading video materials. Video clips, which are usually short, are easy to download and manipulate. However, long videos and movies, which need a lot of computer RAM and disk spaces, always cause problems. The computer must be powerful and must have a fast internet connection.

e) Chat & voice chat

Computer-mediated communication allows users to exchange

real time instant messages (no time delay as in E-mail). The applications of this capacity are chat programmes that allow users to connect to remote sites to send and receive instant written messages. "Talk" is an original version of chat on the UNIX system. Web-based chat is easier to use than the UNIX system "talk". Examples of chat programs on the web are: *ICQ* < http://wwp.icq.com/>, *IRC* (Internet Relay Chat) <http://www.ircnet.org/>, *Yahoo* <http://www.yahoo.com>. With the progress in real time audio technologies, voice chat is becoming available (e.g. Yahoo Voice Chat <http://chat.yahoo.com>). Voice chat allows users to exchange real time-instant digital voice messages with users in remote sites.

Chat provides a strong motivation for interactive and communicative use of language. ELT teachers can use chat sessions as a means for meaningful authentic communication with the real audience. The learner can join several chat groups according to his/her interest.

f) Desk-top teleconferencing

One of the most important aspects of MOOs (Multiple-user-domains Object Oriented or Multi-User Object Oriented systems) is communication (verbal, non-verbal, expressing feelings) with people connected to the MOO from around the world. MOOs evolved from MUDs (Multi-User Domains). MOOs allows for real time communication, simulation, and role play among users. The users can build their own new 'rooms' and write the description, to determine who could come in and out. The user can even create his/her own virtual home.

Recently a lot of special MOOs have been set up for ESL learners to participate in such as CU-SEEMe <http://www.cuseeme.com>. In using MOOs special client software programmes such as TinyFugue (for Unix, MUDDweller (for Mac), or MUDwin (for Windows) are needed.

MOOs provide a strongly motivated means for meaningful authentic communication with a real audience. Those who are interested in this desk-top teleconferencing can join MOOs on many web sites such as the *CU-SeeMe web site* <http://www.cu.seeme.com>, and at *Rachel's Super MOO List* <http://cinemaspace.berkeley.edu/~rachel/moolist/>.

Advantages and Limitations of CALL

While the section above shows some of the benefits of how CALL can be used for language teaching and learning, this section reviews both the advantages and limitations of CALL.

Advantages of CALL

Learner factors

- CALL can adapt to the learners' abilities and preferences.
- CALL can adapt to the learners' cognitive and learning styles.
- CALL can adapt to the learner's self-paced learning. CALL can be used for remedial work for slow learners and to accelerate learning for fast learners.
- CALL offers individualised and private learning.
- CALL, with branching capability, provides choices and paths for learning, allowing learners to work independently.
- CALL allows learners to control their own learning process and progress.

Motivation and attitudes

- CALL provides strong motivation for learning. Students will often do on a computer what they are reluctant to do in a textbook or paper-pencil.
- Some CALL features such as graphics, sound, animation, video, and audio are interesting and motivating for many learners.
- CALL can improve learners' attitudes towards learning English.
- CALL (internet) provides authentic communication that motivates students to use language outside the language classroom.

Feedback and progress record

- CALL can provide immediate responsiveness and feedback.
- CALL provides accurate records of the learner's performance and progress.

Teacher's roles and the relationship with the learner

- CALL can change the relationship between teacher and student.
- The teacher becomes a facilitator rather than a person who controls the learning environment.
- CALL is predictable and non-judgemental.

Mastery learning

- CALL provides opportunities for mastery-learning language skills.
- CALL can lower the amount of time required to master some materials.

Co-operative learning

- CALL (e.g.simulation games) encourages learners to work cooperatively in problem-solving situations.
- CALL allows learners to learn cooperatively as a result of working together (such as group work, and discussion.)

Communication

- CALL (e.g. games and puzzles) create information gaps which provide learners a need to communicate or interact with each other or with the programme.
- CALL (e.g. E-mail, chat, moos) promote direct communicative skills for the learners.
- CALL (e.g. E-mail, chat, moos) provides authentic, real communication with native speakers of English outside the classroom.

Access to information and cultures

- CALL (e.g. CD-ROM and the internet) can increase access to information to the learners.
- CALL (CD-ROM and the internet) allow learners to access to cultures around the world.

Learning environment

- CALL is a neutral medium. Compared to teachers, computers do not lose patience, get angry, or play favourites as some teachers do. This creates a safe learning environment.

- CALL can provide an active and positive learning environment.
- Integration of a variety of multimedia such as texts, graphics, sound, animation, and video, allows for creating authentic meaningful language learning environments.
- CALL (the internet) has no limitations regarding different time zones and places.

Cost effectiveness

- CALL is cost effective.

Limitations of CALL

Cost:

- Schools may lack funds for CALL implementations. Some CALL hardware and software are very expensive. It is problematic in schools that have limited funding.
- The design of good CALL software needs expensive equipment and cooperative teamwork.
- Not all students can access CALL (e.g. the internet). In many developing countries, there is a discrepancy between the 'haves' and "have nots" regarding internet access.

Teacher's attitudes and anxiety

- ELT teachers may have negative attitudes towards CALL.
- There is fear that CALL might replace teachers.
- Many ELT teachers are anxious about CALL because they have limited skills and experience in CALL theory and delivery.
- There is fear that the computer might isolate students from social activities.

Training

- A lot of ELT teachers still lack training and skills in using the CALL, and training costs are high.
- Training learners to use computers takes students' time away from other educational activities.
- ELT teachers may lack the necessary computer-related

skills.

Hardware, compatibility, and technical support

- Computer hardware is difficult to install and maintain for classroom teachers.
- Spontaneous language production (e.g. speaking) is still limited by the hardware capabilities such as voice-recognition and voice recording.
- Graphics and sounds provided on the computer are sometimes unrealistic and incomprehensible.
- CALL presentation is sometimes restricted by the capabilities of the hardware (e.g. not enough RAM to run big CD-ROM programmes).
- Disk space is still problematic for storing large multimedia files.
- CALL (e.g. CD-ROMs) are sometimes not suitable for all computers, platforms and hardware.
- Web pages appear differently on different computer platforms (e.g. Windows, Mac). It sometimes makes students confused.

Software

- There are many poor CALL software programmes due to the lack of programmers with linguistic knowledge and language teaching experience.
- A lot of CALL software (e.g. *Drill and Practice* type) focus on teaching separate, discrete language skills and component, ignoring discourse, contexts, and cultures.
- Some CALL (e.g. the internet) does not support face to face communication (e.g. E-mail, chat) well, though some present technologies can provide sound and pictures during communication; but there are some limitations with speed, sound and picture quality.
- A lot of CALL activities (e.g. behavouristic approaches to CALL) are limited to certain types of exercises such as multiple-choice, true/false, matching, ignoring question-answer interactions.
- There are a lot of web pages of poor quality. There is

a lot of junk on the internet. Teachers need to evaluate internet web pages with great care before downloading or assigning the students to access them.

- At present CALL software still lacks ability of abstract reasoning and problem-solving processes.

Accessing CALL on the internet

CALL on the internet is not yet fast enough.

- Accessing audio, video and graphics files may be slow and unreliable on modem connections
- Searching CALL on the internet is time-consuming and distracting since it is non-linear.
- Searching on the internet is compromised by a lack of effective search engines on the web. Many users end up with no information at all after many hours of searching.

Feedback and evaluation

- Feedback is still limited. It has to rely heavily on the teacher's input.
- Feedback on internet-quizzes is sometimes slow.
- Evaluation and exams on the internet are still difficult. It may cause some inconvenience and students might cheat since it is not closely supervised (compared to conventional paper and pencil tests).

Tips in using CALL

The following are tips for effective use of CALL for ELT teachers:

- Use CALL to serve educational purposes. Teachers should not jump on the bandwagon just because other people have done so. Many teachers use CALL because it is a new technology (like the language lab used to be about 30 years ago) without considering whether it serves or gives true value to educational objectives.
- Do not isolate CALL from the rest of the curriculum. Try to integrate CALL with other subjects or disciplines in the curriculum. Using CALL across the curriculum will make

it more integrative.

- Consider CALL as one of many learning resources. Teachers should try to incorporate other learning resources and materials such as books, magazines, video, audio tape, with their teaching.
- Choosing appropriate CALL software for the learner, for example age, need, and interest is important. Software evaluation guides are important tools for the teachers in choosing suitable software.
- Using CALL is not an end in itself. Follow-up activities are also important. A lot of lessons end when CALL finishes in class. In fact, follow-up activities such as group discussion, writing assignments, searching for more data from other learning sources, e.g., interviews and surveys, are also important.
- Do not expect that all students in class would enjoy working on the computer. A lot of students prefer human interaction (such as student-teacher or student-student) than with the computer. Teachers should provide alternative activities for those students who prefer traditional learning approaches.
- Do not expect that all students can work easily with the computer. Many students take much longer to learn certain skills such as using the keyboard, the mouse, etc., while other students pick up these skills easily. Teachers must be patient and willing to help slow groups.
- Try to incorporate a variety of activities on CALL such as desktop publishing (e.g. word processing), E-mail correspondence, web publishing (e.g. home pages, newspapers), chats and MOO's, and web-based assessment.
- Do not expect that teaching with computers would be easy for all teachers. It can be exhausting or may require a lot of preparation such as setting up the computer lab, preparing suitable software and materials (printed and online), including follow-up activities. Team work seems to be the best solution for implementing CALL in school.

Conclusion

CALL has important potential for English language teaching. If used properly with clear educational objectives, CALL can interest and motivate learners of English. CALL can increase information access to the learner, provide flexibility to instruction and thereby better serve the individual's learning pace, cognitive style and learning strategies. CALL allows learners to control their own learning process and progress. Using effective and suitable software applications, CALL can provide communicative meaningful language learning environments. Good quality and well-designed CALL software can offer a balance of controlled practice and free communicative expression to the learners, including immediate feedback. In the future, with the advance of computer technologies, it is expected that CALL will be able to absorb some teaching functions.

However, despite greater user-friendliness and effectiveness, CALL will never replace the teacher. Like other new technologies, CALL is not a magic solution to language teaching. The effectiveness of CALL relies on how CALL is utilized to meet language learning goals for individualized learners in specific educational settings.

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