## Language Teaching and Learning in the Age of ICT

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**Abstract**

Due to developments in technology, the rationale for the use of ICT in education is widely accepted. It necessitated the teachers and the learners of the present day to possess the necessary skills in ICT. There is a demand for technologically equipped teachers to meet the requirements of future generation teaching. In the field of language teaching and learning, Computer Assisted Language Learning (CALL) is now used with a wide range of educational implications. It can easily generate learner-centered, self-pacing activity. As in other programmed learning packages, CALL can change the proportion of learning from teacher-led to learner-controlled activity. Though CALL started as an application of behavourist approach, use of present day multi-media technologies can be rightly justified from the point of view of the accepted assumptions in education

**Education in the Age of ICT**

Globalization and technological changes have created a new global system over the past two decades. This global system is powered by technology, fueled by information and driven by knowledge. Technological developments are playing a vital role for the changing nature of the world and these developments led to a branch of knowledge called Information and Communication Technology (ICT). The advent of ICT has challenged education worldwide in preparing students and teachers for the future knowledge-based society.

The term "ICT" is broad enough to cover all advanced technologies in manipulating and communicating information. The term is sometimes preferred to Information Technology (IT), particularly on the institutions like education and government. The educational

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institutions are keen in acquiring the basic assumptions of ICT and its applications in education. As access to information continues to grow exponentially, schools cannot remain mere venues for the transmission of a prescribed set of information from teacher to student over a fixed period of time. Rather, schools must promote learning to learn, i.e., the acquisition of knowledge and skills that make possible continuous learning over the lifetime. Thus, the illiterate of the 21st century will be defined to those who cannot learn, unlearn, and relearn. These developments prompt the teachers and educational practitioners to study the possibilities of ICT in the actual teaching-learning process.

In order to have a sense of direction in challenging the future trends of education in developing countries like India, it is necessary to acquire the basic knowledge, understanding, applications, and skills of ICT-based education. Education policymakers and planners must first of all be clear about what educational outcomes are being targeted. These broad goals should guide the choice of technologies to be used and their modalities of use. The potential of each technology varies according to how it is used. To understand the basic assumptions of ICT in education, the investigator thinks that it is necessary to have a comprehensive search for the circumstances that led to the present scenario.

## Key Features of ICT in Education

The following key features of ICT can provide the opportunities for learners to use and develop their learning skills.

**Immediacy.** Use of ICT helps learners to have a sense of immediacy and control, which is an important factor for motivation. Learners get access to information quickly from around the world using search engines. Complex calculations and process information are done in moments. Technology enables learners to send messages almost as soon as they are written and communicate with people living any part of the globe.

**Capacity.** Learners are enabled to store and retrieve large quantities of images, sounds and text. They can download resources through the Internet, interrogate CD-ROMs and edit digital video, learning as they do to process large amounts of information and sequence information effectively and efficiently. They can use a wide range of stored information to build up an understanding of the world and develop communication with people who live in circumstances different from their own.

**Automation.** Learners can use spreadsheets to record, sort and represent data to investigate possible solutions to problems. They can adapt and amend templates while the technology carries out the calculations, leaving the children to process the information and follow lines of enquiry. They can use ICT to stop and start video clips and animations, 'cut and paste', combine text and images, and correct spelling and grammar.

**Communicability.** By constructing presentations, learners can communicate their points of view using different platforms or findings. They can work together to share ideas, and develop their social skills through debate with their partners. They can learn how to manage their feelings when they disagree about an issue or understand other people's needs and emotions and enhance their own self-awareness.

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**Replication**.  As compared to traditional teacher, computers are not affected by repetition fatigue. Therefore, learners can go over a process as often as they wish to ensure they understand, and do things in their own time.

**Provisionality.**  Learners can use word-processing or related software to record their initial ideas and draft their thoughts before constructing a more formal response. They can review and refine their work, evaluating the effectiveness of their choices to ensure greater precision. They can take risks as the edit and undo tools enable them to make changes with no evidence of early drafts. They can create sounds and change the pitch, tempo or texture to meet their   requirements. They can import pictures that they adapt by changing colours, pattern, tone and shape to create their own images.

**Interactivity.**  Learners can manipulate interactive media or carry out simulations in which they are in control and are able to make changes. They receive feedback and see the consequences of their actions while in a safe environment. They can practise techniques and routines in response to randomly generated questions. They can solve problems, deciding on the best way to present their solutions and refine their approaches to achieve greater precision. They can create new problems of their own and test and confirm their hypotheses.

**Non-linearity.**  Learners can gather information from a variety of ICT sources which they can navigate in many ways to find data relevant to their enquiry. They can move between different sections of text and realign their work. They can capture pictures and images and manipulate these to improve their presentations. They are able to make choices based on their reasoning about the different options available.

**Multi-modality.**  Learners can build a website and incorporate diagrams, symbols, text, pictures and sound. They can watch a video clip, stopping the video at various places and annotating it. The children can create their own videos, using handheld video cameras to record and performance. They can share these videos, evaluating their performance and discussing improvements that could be made.

Thus, ICT provides enhanced instructional methods that include immediate feedback. Use of multimedia such as text, image, video, virtual reality, and simulation models function as extrinsic motivators for the new generation learners, and also help to create real life situations in classrooms. The sources of information are wide-open and individualized learning is always enhanced. By using different accessories, modern technology enhances collaborative learning, which contributes to the socialization of education. ICT-mediated education is more productive in comparison to the traditional approaches, as sourcing, storing, copying, editing etc. are made easy. Further, technology-enhanced learning styles prompt the learners to acquire basic skills in technology, which will be a boost in the future job market.

**Use of Interactive Multimedia**

Multimedia is media and content that uses a combination of different content forms**.** The term is used in contrast to media which only use traditional forms of printed or hand-

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produced material. Multimedia includes a combination of text**,** audio**,** still images**,** animation**,** video**,** and interactivity content forms. All these forms can be used by teachers in different situations as teaching aids.

**Text.**   Text can be made easily using computer programmes like MS Word. Editing, correcting, storing, and reproducing the text are made flexible in this digital age. Displaying computer generated text using multimedia projectors can even solve the problems related to teachers' handwriting as it is capable of substituting the traditional blackboards.

**Image.**   Images are important educational aids as one picture can save hundred words. In modern age there are different ways to get images for educational purposes. Teachers can use digital cameras to take snap of the real life objects, and they can be produced easily in a multimedia classroom. They can even use scanners to reproduce the pictures on the screen in a different shape. Free clipart from Microsoft office can be inserted to use as teaching aids. There are even websites like www.flickr.com that help to collect pictures of all subjects. Editing of images can be made using programmes like Adobe Photoshop.

**Video.**   Video programmes are used for educational purposes. It can be used for teaching all kinds of subjects. Educational software and feature films are available in different disciplines. Video can be played either using DVD players or Internet. Websites like www.teahertube.com help to download educationally relevant video files. Different programmes are used for video editing and effects.

**Audio.**   Audio is used in different ways for teaching different subjects. This is made easy using the speakers attached to the computer. Microphones are used to handle educational lectures in big halls. It can be used in language labs or even teaching science subjects.  Sound effects can be adjusted using computer software.

**Virtual Reality.**   Virtual reality (VR) is a technology which allows a user to interact with a computer-simulated environment, whether that environment is a simulation of the real world or an imaginary world. Most current virtual reality environments are primarily visual experiences, displayed either on a computer screen or through special or stereoscopic displays**,** but some simulations include additional sensory information, such as sound through speakers or headphones**.** Users can interact with a virtual environment or a virtual artifact (VA) either through the use of standard input devices such as a keyboard and mouse**,** or through multimodal devices such as a wired glove. The simulated environment can be similar to the real world, for example, simulations for pilot or combat training, or it can differ significantly from reality.

**Animation.**   It is the rapid display of a sequence of images of 2-D or 3-D artwork or model positions in order to create an illusion of movement. It is an optical illusion of motion due to the phenomenon of persistence of vision, and can be created and demonstrated in a number of ways. The most common method of presenting animation is as a motion picture or video program, although several other forms of presenting animation also exist.

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Thus, multimedia programmes enable the learners to acquire information through a variety of experiences. NCERT's position paper on Educational Technology makes a remarkable comment:

> Information and Communication Technologies (ICTs) have brought in a convergence of the media along with the possibility of multi-centric participation in the content- generation and disseminative process. This has implications not only for the quality of the interchange but also for drastic upheavals of centre-dominated mindsets that have inhibited qualitative improvement (NCERT, 2006).

## ICT and New Pedagogical Methods

Modern constructivist educational theory emphasizes critical thinking, problem solving, "authentic" learning experiences, social negotiation of knowledge, and collaboration. These pedagogical methods change the role of the teacher from disseminator of information to learning facilitator, helping students as they actively engage with information and materials to construct their own understandings. That is, students learn *how* to learn, not just *what* to learn. ICT has the potential to be used in support of these new educational methods, as tools enabling students' learning by doing. ICT can make it possible for teachers to engage students in self-paced, self-directed problem-based or constructivist learning experiences; and also test student learning in new, interactive, and engaging ways that may better assess deep understanding of content and processes.

Improved assessment tools can also be developed using ICT. Such assessments can engage students in tasks that require data manipulation, simulation or other interactive acts of knowledge construction. For example, Viz Quiz is a multimedia program that allows students to take a chemistry quiz at a computer, but with the added advantage that color graphics, animations, and video clips can be included in the questions. In addition to multimedia capability, such programs can provide hints, remedial feedback, worked out solutions or explanations, and instantaneous grading.

## Educational Implications of Internet in Education

From the above discussions, the benefits of Computer and Internet can be justified easily. But, the full significance of Internet applications for teaching-learning process can be understood only when it is viewed from the point of view of modern educational principles. Firstly, Internet enhances student-centered teaching which results in meaningful learning. In addition, learning through Internet can foster learning by exploration which can promote problem-based learning. Also, learning by sharing knowledge is promoted through internet. Collaborative learning and creation of learning communities are other important phenomena of education through Internet. It provides learning connectivity through electronic communication and the opportunities for learning are without any boundaries. Lastly, Internet promotes learning by multisensory experiences.

## ICT in Language Teaching and Learning

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The advent of Information and Communication Technology (ICT) has tremendously influenced the contemporary teaching learning process. The developments in technology paved the way for an area of discussion in language learning called Computer Assisted Language Learning (CALL). Considering the breadth of the subject, CALL can be any process in which a learner uses a computer and, as result, it improves his or her language. It encompasses a broad spectrum of current practice in the teaching and learning of language at the computer. An awareness of this spectrum allows learners, teachers and researchers to recognize appropriate materials and methodologies and adapt others to various teaching learning styles. Thus, Computer Assisted Language Learning (CALL) has been defined as "the search for and study of applications on the computer in language teaching and learning" (Levi, 1997). It is now used in a variety of instructional settings.

This has necessitated the language teachers to possess CALL expertise that includes both practical skills and a thorough understanding of information technology (IT). Though Computer assisted Instruction (CAI) is common to teaching of all subjects, CALL has become an exclusive part of language teaching, especially Second Language (L2) learning. CALL covers a broad range of activities which makes it difficult to describe as a single idea. It has come to encompass issues of material design, technologies, pedagogical theories and modes of instruction. Materials for CALL can include those which are purposively made language learning and those which adapt existing computer based materials, video and other materials. In order to set a sense of direction in the general area of language learning, it is very important to attempt to examine CALL practice which may lead to effective venture in future.

Because of the changing nature of computer, CALL is an unstructured discipline, constantly evolving both in terms of pedagogy and technological advances in hardware and software. Change is also occurring with advances in computer literacy among both teachers and learners. However, CALL is employed many ways. It is sometimes promoted as a complete method of learning language. In classrooms it can be used both as a reward for better learners or a remedial aid for weaker ones. Some language labs integrate CALL and some teachers in foreign countries use CALL activities based on email and the World Wide Web (WWW) to supplement student learning. The scope of CALL is widening with development in technology, and it is very difficult to visualize the future possibilities, as Beatty points out:

> It is likely that in future, computer based language tools will become both pervasive and invisible; that is, they will be commonly included in other applications and computer interfaces will become almost completely intuitive, perhaps through computer software able to recognize and intelligently respond to speech" (Beatty, 2003).

## CALL and Teaching Learning Process

One of the conventional rationales for the computer in language learning is the justification that it offers a powerful self-access facility. It can easily generate learner-centered, self-pacing activity. As in other programmed learning packages CALL can change

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the proportion of learning from teacher-led to learner-controlled activity. The role of teacher is more of a facilitator of learning situations. Autonomy is fostered by CALL in different ways.

As it is concerned with new technology, CALL brings about changes in the teaching methodology. As Phillips observes, one of the important possibility offered by the computer is that more of the management of learning can be embodied in the materials themselves (Phillips, 1986). This does not mean that the role of teacher is questioned by CALL because a computer managed simulation demands teaching skills of a very high order at least commensurate with anything required by the more sophisticated techniques in communicative language teaching.

Anyhow a shift is taking place in the use of general technology and also in education from the teacher-centered classroom towards a learner-centered system where the learner is in control of the lesson content and the learning process. CALL has historically been rooted in educational technology, and findings from the general field of education will continue to be influential on determining its future directions. This is due to differences between education in the pre-computer industrial society and education in the computer-based information society. (See Table 1)

The most effective uses of CALL support this new model of education and language teachers need to be able to respond by creating CALL-based activities for their particular instructional situation. It is rightly observed that there is no way the computer can replace the teacher, instead teachers who use technology will replace those who don't (Fotos and Browne, 2004).

The above-mentioned realities demand for technologically equipped teachers to meet the requirements of future generation teaching. Teachers may need to design, implement, and evaluate CALL activities in their classrooms, they may be asked to supervise an institution-wide project or to work with other institutions to develop CALL exchange program, or they may be put in charge of setting up and operating a multi-media language laboratory. It is thus becoming essential for L2 teachers to be familiar with CALL options within the classroom, at the institutional level, and at the broader level of inter-institutional collaboration.

**TABLE 1. Education in the Pre-computer Society versus Education in the Information Society***

|  | *Education in the Pre-Computer Society* | *Education in the Information Society* |
|---|---|---|
| **School** | **Isolated from society Information on school functioning is confidential** | **Integrated in society Information on school functioning is openly available** |
| **Teacher** | **Initiates and controls instruction** | **Empowers students to find appropriate instruction for their particular learning styles and strategy preferences** |
|  | **Teacher-fronted instruction of the whole** | **Teacher as facilitator guides the students independent learning ; students often work in** |

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| | class<br>**Evaluate students**<br>**Low emphasis on communication skills** | groups or pairs or singly<br>**Helps students evaluate their own progress**<br>**High emphasis on communication skills** |
|---|---|---|
| **Student** | **Mostly passive learning**<br>**Learning mostly at school**<br>**Little teamwork**<br>**Answers questions from text-books or teacher**<br>**Low interest in learning** | **Actively in charge of own learning**<br>**Learning at school and outside of school**<br>**Much teamwork**<br>**Asks questions; learns to find answers to questions**<br>**High interest in learning** |

*Adapted from Pelgrum (2001), as cited from Fotos and Browne (2004)

## CALL Approaches in Second Language Acquisition

Second-language Acquisition (SLA) refers to the study of the processes through which learners acquire a new language. SLA can be offered at the computer as learners are exposed to new language and when learners are promoted to engage in collaboration that promotes negotiation of meaning, i.e., the interactional work done by speakers and listeners to ensure they have a common understanding of the ongoing meanings of the discourse. It is based on the fact that language learning and teaching is a fluid process in which different learner and teacher learning styles to be accommodated on an almost individual basis.

In terms of CALL, the individualization of instruction makes for even greater opportunities for SLA to be, promoted through software designs that assess learners' learning styles and track their acquisition through tests which remember and revisit individual items with which each learner has difficulty. The possibilities of CALL in English Language Teaching (ELT) is an important area of study, especially in the context of the third world countries like India, where English has become a link language of the people. However, the discussion of the effectiveness of CALL in language learning is not free from the contemporary theoretical disposition on the nature of language acquisitions. This prompts the need for discussion of the approaches involved in CALL.

**Behaviourist Approach.** One of the practical applications of the behaviourist approach is the design of programmed instruction or programmed learning. A behaviourist model of instruction suggests that learners can be taught a wide variety of subjects if presented with information in small steps, each step requiring appropriate responses from the learner before going to more difficult or more advanced steps. This promoted the idea of machine instruction as a way of increasing learner autonomy to avoid an essential problem in class-room instruction, the pace of instruction in a group of learners whose comprehension and learning rates are at different levels. As Skinner says, even in a small classroom the teacher usually knows that he is going too slowly for some students and too fast for others. Those who could not go faster are penalized, and those who should go slower are poorly taught and unnecessarily punished by criticism and failure. Machine instruction would permit each student to proceed at his own rate (Skinner, 1968).

Many features of programmed instruction are found in CALL such as the use of multi-choice questions, constructed response answers and hotlinks. But critics soon saw that

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programmed instruction had its faults, pointing out that programmed instruction tended to teach details about language but not communication. Despite this criticism, programmed instruction continues to be pervasive in CALL, sometimes combined with other less behaviourist features.

The reason for its enduring appeal is simply that programmed instruction is an easy thing for the computer to do, though not pedagogically ideal. This aspect of programmed instruction is also seen in another approach, mastery learning. Mastery of learning assumes that wholes can be broken into parts, that skills can be broken onto sub-skills. Learners are diagnosed in terms of deficiencies, called 'needs', then taught until 'mastery' is achieved at each level. If this mastery, defined as behavioural competence, is achieved at each level, then the more general concept of the accumulation of the skills has also been taught.

As learner motivation is a key consideration in the creation of CALL materials many of which are set up as adventure games or include positive reinforcement in the form of points, and virtual items to be collected by the learner. Two of the computer's principal defining characteristics which make it attractive as a vehicle for a mastery-learning model are consistency and patience. The computer can provide uniform repetitive lessons to the same learner or a group of learners and test indefinitely.

But, in term of it appropriateness as a model of SLA, behaviorism has been criticized for it simplistic approach. The later theoretical propositions on the nature of language learning questioned behaviourist approach, as it does not fit with the highly complex activity of learning second or foreign language.

**Constructivist Approach.** It is argued that behaviourism, with its focus on stimulus of an organism leading to a response behaviour that was either reinforced or not, is not a true picture of the working of the mind or an accurate description of the learning of language. Attempts to provide a better picture of mental processes were provided by Noam Chomsky (1965) and his ideas have influenced the methodologies. Chomsky and other cognitivists criticized the behaviourist approach and it resulted in another model of instruction, known as constructivism.

Constructivism is a humanist model that differs radically from behaviourism, suggesting that learning is a process by which learners construct new ideas or concepts by making use of their own knowledge and experiences. The learner has greater control and responsibility over what he or she learns and relies on schema to select and transform information, create hypotheses ad make decisions.

**Schema Theory** Schema theory is important to CALL because it provides an idea of how knowledge is organized. Schema theory of language processing suggests that discourse is interpreted with reference to the background knowledge of the reader or listener. It also suggests that the knowledge we carry around I our heads is organized into interrelated patterns. These are constructed from all our previous experiences and they enable us to make predictions about future experience. Schema theory is important for CALL because many aspects of schema mirror the organization of hypertext, hypermedia ad multimedia.

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Schema theory offers a dividing line between behaviourism and constructivism. Behaviourism often assumes that the learner's state of mind is that of a blank slate, waiting to be written on; constructivism assumes that the learner comes to the class-room with a rich set of ideas and experiences. As Beatty says, a constructivist model allows and encourages learners to build on what they already know and go beyond the simple collection and memorization of information to develop individualized internalized principles (Beatty, 2003).

Constructivism supports key concepts of CALL, collaboration and negotiation of meaning. Collaboration provides opportunities for negotiation of meaning as learners struggle to build new schema and extend existing ones. The role of the teacher in a constructivist model includes presenting opportunities for learning and encouraging reflective thinking in learners, partly through collaborative peer activities. This model, influenced by the cognitive psychologists like J.S.Bruner, views knowing as a process, not a product. This process orientation of constructivism assumes that good methods for structuring knowledge should result in simplifying, generating new propositions and increasing the manipulation of information. Thus, like behaviourism, constructivism has also had a close connection with CALL. Many teachers would recognize aspects of constructivism in both class-room practice and some CALL programmes.

**Collaboration and Negotiation of Meaning.** Collaboration is among the most useful ways in which learners acquire language at the computer. Beatty defines collaboration a process in which two or more learners need to work together to achieve a common goal, usually the completion of a task or the answering of a question (Beatty, 2003). It is manifested in the actions a learner takes when working with others. When two or more learners sit at a computer and discuss process and content in the target language, they often engage in scaffolded learning, helping each other improve their language.

Learners often collaborate, either on their own initiative or as an assigned activity. Collaboration is an important activity in the class-room because it encourages social skills and thinking skills and mirrors the way in which learners often need to work once they leave an academic setting. From the point of view of learning a language, there is an additional benefit, in the process of negotiating the meaning of a task and the means by which it may be addressed; learners make decisions about the learning materials they study and the ways in which they should study.

To negotiate meaning, learners engage in discourse that provides opportunities for comprehensible input and encourage comprehensible output. This helps learners build vocabulary, skills and language awareness. Further, it is suggested that collaboration supports a communicative approach to learning. This requires coordination and decision-making and interpersonal and communication skills. Such activities often work best with group members of different language and cultural background, such as in a mixed ESL classroom where English is the only common language. Much research has been focused on individual learners using computer to collaborate over distance with other learners. In one version of this approach, collaboration takes place through local area networks within a classroom or among different classrooms in a school. Another approach is to offer opportunities for learners to use email and the World Wide Web (WWW) to communicate with the wider world. This approach is particularly appropriate for distance learning situations in which learners need to

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communicate with their teachers at greater regularity than is practical through correspondence-course mail.

A commonly observed collaborative phenomenon is pair or small groups of learners working on their own outside of a class at a single computer to complete a task or series of tasks. This type of collaboration is sometimes teacher-initiated but is more often learner-initiated. The greatest reason for collaboration at the computer is the simple human desire for social contact; learners like to explore together and work together. Working together is an aspect of education consistent with one of the goals of modern schools, fostering the socialization of learners.

However, a concern of CALL is how collaboration promotes language learning through exposure to new language and opportunities to use it through negotiation of meaning with peers. Traditional class room settings are likely to be poor places for learners to acquire language compared to the world outside the class room, in part because teachers dominate the conversation with display question mean to elicit set responses. This criticism is largely answered by collaboration, whether within or outside of a class room context in which learners are able and encourage to engage in discourse freely. So it is the responsibility of the teachers and the institutions to organize the CALL class room in such a way to promote maximum collaboration.

## CALL Applications in SLA

One of the earliest forms of CALL was the drill or pattern – practice exercise, an activity that reflected the structural orientation of L2 pedagogy in late 1970's and 1980's. Although current language teaching practices emphasize meaning –focused language use, and learners are encouraged to process target structures in authentic discourse, the effectiveness of structure-based computer software tutorials for improving learner accuracy in the drilled structure has been noted from the earlier reviews of CALL effectiveness and continues up to the present. The challenge, therefore, is to retain those elements that promote the development of accuracy while providing meaning-focused use of the target structure to enhance SLA. This challenge is met by today's language learning software. Whereas early CALL software was text-based and was characterized by low interactivity, today's hypermedia programmes provide students with instruction on and practice in using target forms, listening exercises, dictionary assistance, pronunciation exercise, translation, and communicative usages of the forms through authentic texts, sound and video clips software.

There are different CALL applications available for SLA. The scope of application can widen accordingly with the developments in technology. Some of them can be understood as Beatty points out (Beatty, 2003).

**Word Processing.** One of the most important CALL activities is writing. This includes word processing, text analysis, and desktop publishing, often combined with communication over a LAN. Most computers are now sold with some version of word processing already installed and such programmes are widely used in the composition process. Within such word processing packages, spelling and grammar checkers are standard tools. After much research in the 1980s and early 1990s, attention has shifted away from the

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influence of spelling checkers and grammar checkers. However, it is an area, which continues to merit attention as learners turn away from writing on paper to computer based composition.

When learners look through to correct a word a response to uncertainty, the word processor may help their acquisition of vocabulary to wade through dozens of related words, practicing alphabet skills and scanning through several entries. Beyond word processing, software such as Microsoft Word is increasingly multipurpose. For example, it is commonly used by teachers for creating semi-authentic learning materials featuring text, tables and illustration as well as simple websites. Many L2 teachers, for example, now request their students to use computers to write essays then to e-mail each other what they have written or to post their essays on a LAN. The students then discuss and correct each other's writing, engaging in meaningful discourse and creating knowledge through interaction.

**Games.** Most educational games make use of a form of subversive teaching; learners are unaware of the objectives or, rather do not share the same objectives as the teachers. Instead, learning takes place as an activity peripheral to play. The peripheral learning benefits in a game are likely to be small but are hopefully greater in a programme devoted to some specific educational objective. The best educational games are those which embed the pedagogical objectives so that the learner's perceptions are of play, while the teacher's hidden objectives are still achieved. On the simplest level, the computer is a suitable game player as it can provide clues, levels of difficulty and rewards for solutions through points or visual stimulation. Within the classroom environment, computer can help in motivation through the organization of learning into game like formats, by providing clues, levels of difficulties and rewards for solutions through points or visual stimulations.

Games are often in the form of quizzes, which test knowledge more than they teach it. Like games quizzes are very motivating for learners as they illustrate a learner's progress and give some security against fear of more formal exams. As computer-based quizzes are often done outside of class and not marked by teachers, learners may feel less threatened. Quiz software includes programmes to check spelling, listening, speed-reading, knowledge of synonyms and antonyms, and general knowledge and other English skills.

**Literature.** A work of literature is not a simulation, but it has a high degree of fidelity, or authenticity, in that the learning materials are both extensive and taken from real world sources. So literature forms the basis of many CALL program. The best CALL programmes offer learning in the same way as good literature, presenting a narration in which the learner draws a more general understanding of the themes. Further, computer based learning materials easily bridge the gap between fictional and non-fictional resources by routinely offering multimedia links between the two. For instance, a Shakespeare play presented on the computer is likely to offer a video of plays being performed, diagrams of costumes, virtual tours of a theater, interactive dictionaries and other tools for literary and language enrichment.

**Corpus Linguistics.** Corpus Linguistics, an important branch within applied linguistics, is also a useful tool for teaching and learning language at the computer. The 'corpus' in 'corpus linguistics' refers to a body of text. A text can be made of different

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examples of spoken and written language or a combination of both. Corpora (corpora=plural of corpus) can be used on simple and brief texts on a narrow topic or run into the millions of words. Corpora can be unformatted text made of individual words or formations. Alternatively this can be tagged for grammatical functions or for other functions. Using corpora in the class room involves making use of concordance programme's ability to spot patterns and differences in language use.

The importance of learning from corpus linguistics is that only when words are in their habitual environments, presented in their most frequent forms and their relational pattern and structures, they can be learned effectively, interpreted properly and used appropriately. Both teachers and learners can use corpus linguistics in various ways within the class room. One of the approaches used is Data Driven Learning. "Data Driven Learning is as inductive approach to learning in which learners acquire an understanding of language pattern and rules by becoming more involved researching corpora, usually through the use of a computer based concordance programmes. Instead of studying patterns and rules, learners naturally internalize them. This approach can stimulate learners interest in language and give them a sense of empowerment and responsibility for their own language education" (Beatty, 2003).

**Computer Mediated Communication.** Communicating using the computer is often referred to as Computer mediated Communication (CMC) and is one of the more popular activities associated within CALL. CMC encompasses communication by email, bulletin boards, chat lines, etc. CMC refers to a situation in which computer based discussion may take place but without necessarily involving learning.

Of course, opportunities for learning are inherently presented, especially in situations in which learners need to engage in negotiation of meaning with native speakers of the target language or even with peers of non-native proficiency. It is common for teachers in different countries to create assignment for their students to communicate a common target language. Communications using the computer is either asynchronous or synchronous. Asynchronous refers to communication that takes place at different times, for example, through email in which message is sent and may be read at leisure by the recipient. Synchronous refers to communications that takes place at the same time, such as through chat lines.

**W.W.W. Resources.** The WWW has presented opportunities for the creation of websites dedicated to the teaching and learning of English. Such sites may have different varieties in terms of age, level or even profession. One of the more popular language learning sites on WWW was created by Dave Sperling, a California-based teacher who started Dave Sperling's ESL café as a class project in 1995. This website (http//www.eslcafe.com/) now serves as a kind of portal, providing a directory of other CALL websites and attracts more than one million visits a month.

Many such websites are driven by commercial concerns. Typically the learner pays a fee for enrolling and taking online lessons. Several publishers also maintain educational websites featuring portions of their work or extra study material for their work. Other resources commonly found on the WWW include those created by learners and teachers. This includes everything from software to class handouts and presentations in the form of

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Power point files.  These resources vary in quality and extent but at least have the virtues of being free hand an easy to find with a search engine.

**Adapting Other Materials for CALL.**  Besides materials especially targeted for language learning, there are many materials that can be adapted.  Many games and simulations not intended for language learning can be adapted for such a purpose, particularly for advance learners, as they are likely to be rich in authentic language, with text, images, sound and video.  For example, a learner studying English can go to countless websites on different topics of interest related to England to learn more about culture or information related to English for specific purpose.  Learners can also visit online newspapers for the target language they are studying.

**Personal Digital Assistants (PDA).**  A Personal Digital Assistant (PDA) is a small hand-held computer for downloading and storing information such as documents, databases and calendar entries.  It is less powerful than a desktop or laptop computer, but less expensive and more portable.  Portability is achieved by eliminating the keyboard and minimizing the screen size.  The PDA market consists of several models created by different companies using different software systems by Palm, Microsoft and, most recently, Linux.

PDAs are not yet widely used in education, but their portability and expense could make them a popular choice in class rooms, especially when combined with accessories such as collapsible key boards, digital cameras and modems that allows for WWW and email access.  One of the important advantages of a PDA is that it is easy to back upon one's computer.  A one-button operation generally allows the user to synchronize and update files from their PDA to a larger laptop or desktop computer.

**Creating Course-Specific CD-ROMs.**  Apart from the above mentioned possibilities of CALL, creating course specific CD-ROMs is also an integral part of CALL, especially in the Indian context where computer technology is not much enhanced to provide larger network systems.  Most language learning software today consists of hypermedia and, because of the larger amount of memories required, such programmes are not network or web based, and they are produced on CD-ROMs.  In addition to the abundance of commercial programmes, it is possible for teachers to use multimedia-authoring software to develop their own course specific material.  CD-ROM software is an extremely useful form of CALL, especially for the many instructional situations in the world that lack abundant and up-to-date hardware, language laboratory facilities, LAN capabilities and speedy connection to the Internet.

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