

Influence of Information Technology on Education and Language Teaching

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***Abstract:** The turn of twenty-first century has witnessed tremendous scientific and technological innovations which have changed the patterns of life and society spectacularly. Information technology (IT) has flourished at a breakneck speed and people have moved towards automation from manual deed. It has exerted deep impact on educational system all over the world. Computer, internet and other technologies are now being used by teachers and learners in ever increasing rate and volume. Institutions are exploring ways to utilize IT effectively for the purpose of education. This paper considers various aspects of the influence of information technology on education, with special attention to language teaching (LT). It considers various features of IT which are found useful in education as well as how those features are best used by educationists and language teachers. The Bangladesh scenario vis-à-vis the use of IT in education has also been taken into account.*

***Key words:** Distance learning, Virtual learning, Digital Bangladesh.*

1. Introduction

We are living in the age of information technology (IT) that includes computer, internet, website, laptop, projector, and CD Rom, among other things. IT has changed the world to a great extent. Computer and other elements of IT can now be found in every office and house. It has various advantages which are being availed in almost all sectors of life. It has been used in research, medicine, business and education. There is virtually no vocation which is not using IT now. It has been used for professional development in all fields. It is now an integral part of modern life and society.

Somekh and Davis (1997, p3) observes, “Information technology has become part of our society: the so-called information society of the late twentieth century. The aim of many policy makers in the UK and around the world is to encourage evolution into a learning society for the next century: one in which all people are responsible for their own learning throughout their lives. Access to information and learning will often depend on new technologies as well as an approach to teaching which encourages and supports collaborative professional development.”

Truly, in the last few decades, education has been tremendously influenced by IT. Different features of IT have been applied to education, changing the mode of learning and teaching. Curriculum and methodology have changed, accommodating more use of computers in classroom. Hence computers are now found in all educational institutions irrespective of the level of instruction. They would be found in kindergartens and primary and high schools just as in colleges and universities. Teachers use computer as a tool to develop skills of the students. In many cases, computers have taken over the role of

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teachers. With this, the relationship between man and machine has been closer. This is the first time in human civilization when education has received so much advantage from technology.

2. Aspects of Influence

2.1 Classroom

In contemporary setting, many classrooms are adorned with computers, projectors and other gadgets of IT. The teachers can show any slide with animation and video with audio, on monitor and magnify it through projector. This makes learning more attractive to learners. Students use home PC to prepare assignments and other tasks given by teachers. For this, students learn how to use computers from their early age and use the skill throughout their life. They know how to strike the keyboard and click a mouse with their fingers and browse information on the internet. Technologically, they have become smarter than the previous generation.

With the use of IT, student's learning autonomy can be maintained. Teachers are also liberated from the boredom of continuous talking in the classroom. Davis et al (1997) note:

The traditional role for teachers has been as presenters of ready-made information and as organizers of learning experiences. One way in which information technology can be used in the classroom is to take over these presentational and organizational roles. This has implications for both teachers and learners: the computer, by providing an additional or alternate source of knowledge and information, may reduce the dependency of students upon the teacher. The aspiration is that this will liberate the teacher's time and enhance the student's repertoire of learning skills, enabling greater student autonomy. This would allow the students to maximize their active role in learning and help to prevent teaching from being construed by teachers as a technical procedure of transmitting knowledge to passive learners.

Obviously, it would bring about a change in the teacher's role. Student's autonomy in learning means that teachers no longer need to adopt a didactic approach, but gain the freedom to function increasingly as enablers of quality learning experiences. They need to take on a more active and creative role. Through student autonomy, teachers gain the time and mental space to monitor and influence more of the learning process. This in turn allows greater opportunities for teachers and students to engage in the kind of quality communication which generates mindful and deliberate use of higher-order thinking processes such as synthesizing, interpreting and hypothesizing. As a result of this change in the nature of interaction, the roles of teachers and learners can become less distinct. Indeed, the roles may even be reversed at times, as students find themselves having to explain their thinking to teachers, in order to make teachers understand their efforts. Operating in such a classroom environment necessitates active cognitive involvement on the part of both learners and teachers.

2.2 Learning software

In every subject there is now supporting software. The software is available in CD and DVD formats. In sciences, experiments are demonstrated with audio and video along with necessary text instructions. Some software includes mathematical problems and

solutions. In other disciplines, theoretical discussions are available. Many textbooks have now CD with them and they may be played with CD Rom drive. Students may have their own copies and learn from them with their own efforts. Different languages may also be learned with CD materials. It is really amazing. IT has made learning so easy and exciting. Children's lessons may be made much more attractive with digitized materials. The pictures and animations in numerous shades of colors catch the fancy of young minds.

2.3 Internet and website

Internet has tremendous impact on the sphere of education. With internet connectivity, teachers and students can browse any information available in various websites and utilize them for their purpose. They do not need to go to the library physically now, but can click and enter virtual libraries and download necessary reading materials. One only needs to have a little technical knowledge.

Browsers like Mozilla Firefox and Internet Explorer and search engines like Google and Yahoo may help one in finding and downloading stuff from the World Wide Web. To reach a particular website one needs to know the URL (uniform resource locator) address. Otherwise one will have to type particular word in the search box and find out the desired website from the search results. This may be, however, unexpectedly rewarding as it brings many other relevant links in front of the eyes of a user. One can travel from one website to another, all connected together with hyperlinks, just with the clicks of mouse in hand.

For some websites and virtual libraries, one needs to have valid access. Either one has to be a member or has to pay for extracting certain information. Information is easily available and one can easily collect them through internet if one knows the right way. Hadjerrouit (2010) recounts the benefits of websites:

The use of the Web as an educational tool has provided teachers with a wide range of new and exciting teaching experiences that are not possible in traditional classroom, such as accessing information at any time and place, online presentation of information, interactive task-based activities, effective dissemination of information, and long distance education.

2.4 Distance learning

Internet has helped education to change in various ways. One of them is distance learning. The students and teachers can easily exchange materials through e-mail. If the students have any query on any topic, they may get answer from the teacher through e-mail. If the teacher has any instruction for the students, he/she may send e-mail to them. The students may submit assignments to the teacher through e-mail, who may again give feedback on them. The teacher may have his/her own website and display necessary information on it. Students may collect the information logging onto the website.

On the development and utility of internet, Beller and Or (1998) assert:

Today, we are at the threshold of a new era in which technological learning solutions are developing into effective applications: The Internet has become an essential communications platform; private Intra-net networks are providing specific organizations and populations with higher levels of Internet service; technological learning environments are being developed; a wide range of improved graphic means of presentation are available; and simple, user-friendly means of desktop production are providing solutions which, until recently, required large, expensive facilities. Continuous improvement in Internet capabilities – both in terms of applications and transmission rates – is transforming it into a vehicle for the delivery of an ultimate learning environment for distance learning in the 21st century.

So far institutional teaching was confined to classroom where teachers and students interacted. There was no alternative to face-to-face learning. With the development of IT, distance learning has been possible. Particularly, the technologies of satellite, V-sat and web-cam have helped to modernize distance learning. Now learners can learn sitting far from the teachers. A teacher may lecture from one part of the globe and it may be transmitted to any other places instantaneously. From a distance, teachers and students can see and even talk to one another. At present many colleges and universities of the world offer distance learning programs on various subjects. Located in one country, they collect students from other countries without bringing them to campus physically. The students study online but off-campus. Their presence on the campus is ‘virtual’. This mode of education is gaining unprecedented popularity and spreading rapidly all around the world, as it avoids the hazards of visa processing and traveling. Beller and Or (1998) maintain:

“Technological advances have made synchronous (same time) distance learning both viable and effective, primarily through video-conferencing and satellite systems. Combining this with asynchronous Internet-based delivery makes it possible to provide first-class teaching by excellent instructors to distant students while maintaining interaction between instructor, students and peers. The technology allows the same experts who prepared the learning materials also to take command of and guide the learning process (unlike traditional distance teaching, where they were usually not involved in the actual teaching).”

2.5 Forums and blogs

Educational institutions now offer the facilities of forums and blogs for their students and teachers, who can express their thoughts and feelings in those places. The institutions can derive valuable feedbacks from the participants in forums and blogs, which help them to overcome problems and direct their educational programs to desired goals. It helps to develop a community sentiment among the people of an institution. This mode of interaction is quick and easy. It also avoids the hazards of putting pen on paper and making postal or courier dispatch. The students share their learning experiences as teachers share their teaching experiences through this facility. It makes learning interactive and effective. At present there are also numerous subject-specific blogs. These relate to the disciplines of news, media, literature, philosophy, religion, physics,

chemistry, mathematics and what not. Students and teachers may register and login there and interact easily with one another.

Not only reading, one can also publish her/his writings in different blogs. Teachers may create new tasks for the students with the help of HTML and other software knowledge (Dudeney 2000, p134). Considering its importance, Dudeney (2000, p28) rightly termed internet as the 'resource bank'. In his book "The Internet and the Language Classroom", he has shown how the resource bank can be used in wide variety of assignments. One can take part in social network websites and present him/herself virtually to the rest of the world. At the moment 'facebook' is the most popular social network website through which millions of people around the world interact daily for educational and other purposes.

2.6 Grade assessment

IT is also gradually changing the academic assessment mode. In many programs and courses, examinations are held with the aid of computer. The examinees are seated with computers and they write the answers there. In some cases, examinations are held online. It is held at particular times within given conditions above any constraint of geographical locations. The results may also be known in the shortest possible time. For MCQ type, the correct answers are calculated automatically by software and the teacher has to labor little. The oral examination may also be held from distance through video conferencing.

2.7 Education management

IT has also changed the job of education management. All kinds of work in an educational institution can be performed with special software. Tuition fees may be submitted through credit cards supported by banking software. The academic results may be published online, and the students may check them just with a click. The teachers may keep the lecture materials in archive and the students may collect them when necessary. The teachers may notify the students on different academic affairs and issue necessary instruction relating to their curricular study. Special kinds of software help to accomplish these jobs. These are software of virtual university, virtual college or virtual school. Mobile technology has also played a supplementary role in this regard. Students can know their academic results just with an SMS. Nowadays mobile phones are also being used in browsing internet. Some educational managements have even gone a step ahead. They have introduced 'job tracking software'. In Daffodil International University, where I happen to work, one such software is used. With the software, the teachers and employees can keep the records of their daily work as well as special assignments.

3. IT in Language Teaching (LT)

Now-a-days teachers are taking increasing interest in the use of information technology (IT) for teaching language (LT), especially English Language Teaching (ELT) in our country as elsewhere in the world. This is somewhat inevitable. It has impact on the teaching methodology, prompting the teacher to adopt an IT-friendly program. In fact, IT is gradually changing the very concept of LT, replacing the traditional book-centered ideas ingrained in the minds of learners and instructors with a modern view of learning and teaching, which gives machine the key role as learning aid.

To a language teacher, computer is not simply a typing machine – it is much more. It corrects spelling errors and makes suggestions for grammatical corrections. It distinguishes between the British and American spelling, and switches between the default and customized choices, as commanded. With the inbuilt thesaurus of the word processor, it can propose alternative words/expressions, from which the appropriate one can be chosen. With a dictionary installed, it can be much more useful in composing and editing texts. Using a translator software, the learners can render a piece of text from the mother tongue to the target language and vice versa.

Language software is available in the form of CD or DVD, being audio or video. The CD/DVD is run by multimedia, which, with the audio-visual effects, can make learning lively and funny. Audio CD/DVD is ideal for pronunciation practice. A learner can listen carefully to the particular sound, word or sentence and repeat himself/herself until he/she arrives at certain level of perfection. Teacher may initiate drill with this facility, of course. A video CD (VCD) can be used for situational language learning/teaching. These are usually used in association with books. The teacher may play a video track of conversation recorded around a particular situation of real life and explain the languages used in that situation. The teacher may then conduct a simulation practice with his/her students following the displayed one.

Headphone is an important peripheral used in listening. It is usually used with interactive learning software. A student may listen to the sounds played from the hard disk or CD/DVD drive and also give audio input to be analyzed by the computer. Some sort of voice recognition device is used in this kind of software. Headphones are often used in testing that involves speaking and listening. Headphones are also found in the language laboratory where several dozen students practice together. It provides an opportunity for practicing privately at the fixed workstations without producing any cacophony, which may otherwise disturb the whole class.

Internet is proving to be most useful a tool for LT. In practice it has been so important of late that it is claimed to have given rise to a distinct teaching method called network-based language teaching (NBLT), which obviates the necessity of face-to-face classroom teaching, heralding a new era of e-learning. Apart from teacher-student interaction, the internet may be exploited for searching necessary resources available in the form of published news, articles, essays, discussions or interviews pertaining to language.

The teachers may engage students in what are called Treasure Hunt and WebQuest. Treasure Hunt puts students in the task of collecting information from internet on a particular topic as directed by the teacher. WebQuest demands a bit more than Treasure Hunt. It is the process by which students gather information, adapt them to suit the need and produce output of their own as desired by the teacher. WebQuest supports learners' thinking at the levels of analysis, synthesis and evaluation.

A noteworthy benefit of internet is chatting facility, for which a text-chat software is used. With this facility, a non-native second language learner can interact with the native speaker and get an idea of the real usage tips of the language. The text-chat may be supported by audio-visual equipment, which enables chatters to exchange voices and see

each other alongside writing. Lately chatting has become more interesting with IM (Instant Messaging), which offers added features for chatters.

Switching from the traditional book-based language teaching to the IT-based language teaching is what we can call a quantum jump. It offers numerous advantages for the teachers/students as well as the program managers. Smith and Baber (2005) summaries the advantages of the IT-based LT in the following terms:

1. It provides access to up-to-date material on every imaginable topic.
2. It makes transferring straightforward information very simple, potentially allowing the teacher to spend classroom time more meaningfully.
3. It can help the teacher create exercises and materials that are easily reusable, thereby saving his/her time in the long run.
4. It renders geographical distance less significant or even insignificant.
5. It can be cheaper than face-to-face teaching.
6. It allows non-native speakers to interact with native speakers.
7. It allows students to study at their own pace, whenever they want.
8. It enables people living far apart to come together and form communities.
9. It can be intrinsically motivating.

4. Some Conceptual Issues

Recent research in education has keenly concentrated on the theoretical and practical concerns of the use of IT. McDougall & Jones (2010, p2) observe, “The most important and fundamental role for the use of IT in education research is the provision of a huge increase in our power to study the processes of learning, and as a consequence to improve approaches to and strategies for teaching. For this endeavor there are intensive theoretical frameworks that already underpin much of the activity in IT use in education.... Learning theorists have provided an extensive literature attempting to elucidate the processes of learning, in individuals and in group and social settings.”

In the course of interaction between IT and education, many learning concepts have emerged such as “Web-based learning”, “virtual learning”, “technology-based learning”, “network learning”, “online learning”, “multimedia-based learning”, “Web-enhanced learning”, “Internet-enabled learning”, etc. “Web-based learning environment”, “Web-based learning tools” and “Web-based learning application” are also in use. In the context, Hadjerrouit (2010) has developed a particular module which he terms WBLR (Web-Based Learning Resources). He defines it as follows:

WBLRs can be defined as a technology with four major features: (a) It is delivered through the Web; (b) It teaches content that meets specific learning objectives aligned with the curriculum; (c) It is designed on the basis of a learning theory and pedagogical strategy; (d) It contains reusable elements. (Hadjerrouit 2010, p56)

Hadjerrouit argues that the use of WBLRs in classroom is strongly connected to teachers’ epistemological orientations, personal theories and perceptions about teaching and learning processes. A true integration requires that teachers consider technology, content,

and pedagogy not in isolation, but rather in the complex relationships in the system defined by three key components: (a) knowledge of the pedagogy that is applicable to the specific content; (b) knowledge of how technology can support pedagogical goals; and (c) knowledge of how the subject matter is transformed by the application of the technology. (Hadjerrouit 2010, p55)

Therefore, teachers' technical knowledge alone is not sufficient to achieve learning outcomes using web resources. Equally important is how web resources can support pedagogical goals that are set by the teacher and how the content is transformed through the technology. As a result, teachers' epistemological orientations and knowledge should not be underemphasized when it comes to organize, design, implement, and evaluate pedagogical situations in classroom around web resources.

Language teaching methodology is also changing. IT-based LT is founded on the principles of Computer Assisted Language Learning (CALL), which incorporates all aspects of computer technology, including internet, into teaching. According to Levy (1997, p1), CALL is "the search for and study of applications of the computer in language teaching and learning." The program which exclusively emphasizes the use of internet is called Network-Based Language Teaching (NBLT). Kern and Warschauer (2000, p1) define NBLT as "language teaching that involves the use of computers connected to one another in either local or global networks." NBLT is therefore a special form of CALL. Chapelle (2000) in his article "Is Network-Based Learning CALL?" examines the relationship between CALL and NBLT and finds that CALL has assumed various shapes over the past few years with the extensive use of computer-aided tasks in classroom. CALL is expounded from approach, design and procedure levels, which define a full-blown method, in the sense of Richards and Rodgers (2001).

At the approach level, CALL/NBLT has been bolstered with language learning theories. Supports have been advanced from structural, cognitive and sociological theories. In structural consideration, the role of computers is to provide unlimited drill, practice, tutorial explanation, and corrective feedback. In cognitive consideration, the role of computers is to provide language input and analytic and inferential tasks. In sociological consideration, the role of computers is to provide alternative contexts for social interaction, to facilitate access to existing discourse communities and the creation of new ones. At the design level, CALL/NBLT has been supported by task-based syllabus. At the procedure level, students solve different kinds of tasks with the aid of computer/internet to learn a language. For NBLT, students perform the tasks designed by the teacher, albeit supervised by him from a distance. Classroom, as seen traditionally, may or may not be necessary.

5. Bangladesh Perspectives

We can consider how far Bangladesh has advanced to take advantage of the benefits of education in ELT. And, if it lags behind, what are the reasons behind it? Bangladesh has already been well acquainted with IT and its wonders. Computer and internet have been a common sight in all areas, especially in cities, where electricity is available. The educational institutions also are now using them. But it might be noticed that the use of

computers here is mainly restricted to the offices of schools, colleges and universities; the technologies have not yet found their place in classrooms. Except for a few extraordinary cases, education is still heavily dependent on books and other printed materials. If we analyze the existing state of affairs in Bangladesh, we can find the following reasons for our slow pace of advance in implementing an IT-based education and LT programs (Barman 2007):

Firstly, IT is comparatively new in the country. It is not before nineties of the last century when computers came to be widely used in different fields. The teachers and institutions have been able to access them only recently.

Secondly, the training facility for the professionals on the use of the technology in education and LT is rare in the country. For lack of training, the teachers hardly know how to make proper use of computers, the internet, educational software and other electronic materials for teaching.

Thirdly, the technology is still out of the reach of the common people, mainly due to poverty on the one hand and high cost of technology on the other. Many students cannot afford to buy a computer and connect it to internet just as many institutions cannot afford to equip the classrooms with necessary digital gadgets.

Fourthly, the education policy makers of the country are still of old mindset. They love to stick to traditional ideas instead of introducing novel teaching practices. They showed little interest in IT-based education and LT and hence failed to incorporate it in the national curriculum.

Recently Awami League-led Bangladesh government has started a Digital Bangladesh (DB) campaign in line with the electoral manifesto to increase the use of IT in different sectors, leading to e-governance, e-commerce, e-banking, e-agriculture, e-health, etc. It is assumed that with the campaign, schemed under Vision 2021, the government wants to make the country fully digitized by 2021 through application of third generation information and communication technology (ICT). It has stirred the minds of the young generation, who would be trained in IT and lead the country forward. It is expected to cause a boost-up in the education sector. Its prospects have been envisaged by Hafiz Siddiqi (2009):

The universities of Bangladesh are already partly digitized. DB visualizes that by 2021 all universities, colleges, high schools, primary schools, and madrasahs will have computerized connectivity. ICT is intended to be used as teaching-learning aids. After five years of schooling all students should have regular access to computers with internet facilities. The goal is to improve the quality of education. The use of automated library is spreading slowly in most universities, although they have to go a long way to be digital in the real sense. By 2021 the entire education sector should be digitized with third generation wireless technology.

However, there are many hurdles, mainly infrastructural. Md. Anwarul Kabir (<http://mukto-mona.com/wordpress/?p=103>) identifies the following problems which might get in the way of reaching the goals of Digital Bangladesh: a) power deficit, b)

city-centric network infrastructure, c) low use of internet, d) disruption in submarine cable connectivity, e) low network readiness, and f) insufficient use of open source software. If these problems are overcome, Bangladesh can reach its desired goal as drummed up by DB campaign and its people will reap the real benefits of IT.

6. Conclusion

Technology can play an important role in disseminating education and improving learner efficiency. Foltos (2002) says, “Recently, a growing number of researchers have published studies that provide substantial evidence that technology can play a positive role in academic achievement. Several organizations like Edutopia, the North Central Educational Lab (NCREL) and the Center for Applied Research in Educational Technology (CARET) are documenting research studies that link technology to increases in academic achievement. Two studies are reflective of the growing body of research on technology's role in academic achievement.”

IT has brought the world really to one's hand. The world has been global in the actual sense of the term. Education has been greatly influenced by the development of IT. The method of education is rapidly changing with the emergence of new IT features. The technological innovations will be going on throughout the twenty-first century, making further impact on students, teachers and education managers. In Bangladesh, teachers have started to grasp the importance of IT-based education, and are thinking of ways to develop necessary skills to face the challenge of the day – modernizing LT with the maximum utilization of IT and other resources compatible with the technology. They are poised to embrace the innovations and prepare themselves with necessary training and other measures to survive and succeed in their profession in the emerging era of e-learning.

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