Role of Information and Communication Technology in Education

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Abstract

Education in the past was usually a matter of uni-directional transfer of information from the teacher to the student. The main pedagogical approach was whole class teaching. Many argue that new pedagogical models need to be explored in order to prepare future citizens for life-long learning. There is, as yet, little consensus in societies about what these new pedagogical models should encompass. ICT stands for information and communication technologies. It consists of "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephone. In recent years there has been a groundswell of interest in how computers and the Internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings. The present paper discusses the role and importance of Information and Communication Technologies (ICTs) in Education and draws the uses of ICTs and challenges in integrating ICT in Education. Finally, it concludes the necessity of implementation of ICT in educational institutions.

I. Introduction

In the modern era, the role of Information and Communication Technology (ICT), especially internet in the education sector plays an important role, especially in the process of employing the technology into the educational activities. Education sector can be the most effective sector to anticipate and eliminate the negative impact of ICT. Internet technology can be the most effective way to increase the student's knowledge. In course of industrial, scientific and technological development, Information and Communication Technology (ICT) has become an inevitable means of pedagogy in education

II. ICT and Education

During the past 20 years, the use of ICT has fundamentally changed the working of education. In the current environment-conscious world, the importance of education and acceptability of ICT as a social necessity has been increasing. Social acceptability of information and communication tools has become necessary to improve the mobility in the society. Education as a qualitative development is not confined to the classroom situation. The modern tools of ICT such as e-Learning and online practice of learning and getting information are much sought after by the students as well as by educational institutions.

The government is spending a lot of money on ICT. The National Mission on Education is emphasizing on the role of ICT in increasing the enrolment ratio in higher education. School education in India has a problem of high dropout rate and need to work on how to minimize this rate. If we make our learning more engaging with the use of ICT, it can completely change our education system. Also, we should examine the challenges of cost-factor and availability of trained teachers in the process of dissemination of education with the help of ICT.

Aims and Objectives

The following are the aims and objectives of ICT implementation in education:

1. To implement the principle of life-long learning / education;
2. To increase a variety of educational services and medium / method;
3. To promote equal opportunities to obtain education and information;
4. To develop a system of collecting and disseminating educational information;
5. To promote technology literacy among all citizens, especially students;
6. To provide distance education throughout the global village;.
7. To promote the culture of learning at school (development of learning skills, expansion of   optional education, open source of education, etc.); and
8. To support schools in sharing experience and information with others.

III. Different Types of ICTs Their and Role in Education

1. Radio and television have been used widely as educational tools since 1920s and 1950s, respectively. There are three general approaches to the use of radio and TV broadcasting in education: direct class room teaching, where broadcast programming substitutes for teachers

on a temporary basis; school broadcasting, where broadcast programming provides complementary teaching and learning resources otherwise not available; and general educational programming over community, national and international stations, which provide general and informal educational opportunities.

2. Teleconferencing enables one to "interactive electronic communication among people located at two or more different places." There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology: (i) audio conferencing; (ii) audio-graphic conferencing, (iii) videoconferencing; and (iv) Web-based conferencing.

3. There are three general approaches to the instructional use of computers and the Internet, namely, Learning about computers and the Internet, in which technological literacy is the end goal; Learning with the help of computers and the Internet, in which the technology facilitates learning across the curriculum; and Learning through computers and the Internet, integrating technological development skills with curriculum applications.

4. Learning with the technology means focusing on how the technology can be the means to learning ends across the curriculum.

5. Many higher educational institutions offering distance education courses have started to leverage the Internet to optimize quality of their programmes.

6. ICT gives students the opportunity to collaborate with scientists in conducting earth science research. Participating students periodically take measurements of the atmosphere, water, soils, and land around their schools. It also provides teachers with guidelines and materials for structured learning activities that take off from the students' hands-on experience.

7. ICT provides e-Journals, which cover all aspects of information and communication technology, its theories and applications.

8. People learn with ICT and digital media as an integrated aspect of everyday course of living – whether in school, at home or at work.

9. ICT provides Blended Learning, which refers to an educational experience created cost-effectively using a mix of integrated distance learning technologies such as videoconferencing, e-learning, videos, and CD-ROM.

IV. Challenges in Integrating ICT and Education

Integrating ICT and Education in the Indian context is not simple and easy. Lack of support from different levels of the government / administration is one of the key elements that causes for unsuccessful implementation of technology in education. Administrators can provide the conditions that are needed, such as school-wide policy, incentives and resources. Administrative support and involvement is crucial to the successful integration of technology.

English is the dominant language of the Internet. An estimated 80% of online content is in English. A large proportion of the educational software produced in the world market is in English. For developing countries in like India, where English language proficiency is not high, especially outside metropolitan cities, this makes a serious barrier to maximizing the educational benefits of the World Wide Web.

A developing country's educational technology infrastructure should be developed for the effective implementation and integration. Sustainability and transferability in ICT implementation and integration is one of the greatest challenges which should also be addressed.

Apart from lack of support from Govt. agencies and lack of English language proficiency, there are other problems too, which obstruct the proper integration of ICTs and Education.

1. There is a tremendous amount of bad information available on the Internet, posing as good information. It takes a relatively mature person to be able to tell the difference. For students, this can be a major problem, because their motivation is often to get the assignment done as quickly as possible (and ICT allows students to get "information" very quickly) and they might well take the first 6 sources they find rather than taking the needed time to critically evaluate what they're seeing.

2. Computer presentations (e.g. PowerPoint) can be made quite "glitzy" without adding any benefit beyond what one could have had with a simple overhead. These "glitzy" features most often serve to distract the audience, rather than focus their attention on the subject at hand.

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3. The seductive nature of ICT easily leads to its misuse. For example, one can obtain a CD containing images of great works of art, and with the right "gizmos" present that, to an audience. This would seem to be an advance over slides and slide projectors. But the computer projected images are much poorer than slide projection.

4. It costs a lot, and once you're on the "technology treadmill" you've got to continually re-invest to "keep up to date".

V. Suggestions/ Recommendations

The following recommendations can help for successful implementation of ICTs in education namely:

- By using ICT integrated applications as government enabler, fostering synergy, ensuring smooth   delivery of citizen driven services.
-   By developing ICT applications geared to remove bureaucratic obstacles to investment.
- By using ICT applications to offer information useful for decision making process at political,   social and economic levels.
- By using ICT applications in e-health by improving delivery of medical services in remote and   underprivileged areas, medical follow up, data bases and continuous education for doctors   through life-long learning.
- By using e-learning applications for a more qualified citizens, to foster creativity and innovation   and increase employability.
-   By establishing databases for investment.
-   By developing e-campaigns on national causes
-   By developing applications for illiteracy eradication.
-   By developing electronic medical records to allow rapid information transfer.
-   By enhancing the internet based recruitment scheme.
-   By developing portals for cultural information and documentation.
-   By developing translation of applications for portals into the local languages.
-   By initiating a program of assistance with technical and financial inputs from appropriate forums.
-   By using all possible outlets for applications usage including phone, internet.
-   By establishing interactive public services, and public procurement.

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- By targeting e-services in sectors having high value added, using interoperable interfaces, using broad band connections and ensuring accessibility from all types of digital terminals.

VI. Conclusion

ICT has brought unimaginable transformation in the all-round development of developed countries. Developing countries like India have not understood the impact of ICT not only in the education sector but also in other sectors. ICT is being used in many imaginative ways to teach higher order reasoning skills. The ultimate aim of ICT adoption now is to facilitate effective transformation of learning through curriculum. Any plan of implementation, which deviates from this aim will result in futility. It should be curriculum driven instead of technology driven, in view of future curriculum reform. The mistake of the past is too much emphasis on technology – e.g. fast computers, expensive multimedia centres and broadcast stations, but with little attention to how they can effectively transform learning. Educational institutions in the past went wrong in adapting students to technology instead of adapting technology to students. Most educational institutions pay their attention these days more to the routine curriculum than the ICT policy statements. If ICT cannot help the implementation of the future curriculum, there is little rationale for its 'survival' or development. Probably an ICT plan is not necessary; rather there should be an educational improvement plan, which includes ICT as an important component. In other words, the implementation of ICT is inseparable from the process of introducing curriculum reform. ICT is a means to help achieving future curriculum goals by providing a learner-centred environment.

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