

## Technology and its Use in Education: Present Roles and Future Prospects

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### Abstract

Preparing students for lifelong learning requires new approaches to education that incorporate technologies increasingly a part of students' everyday lives. While the importance of reading, writing and arithmetic still holds true, educators need to look at these and other subjects in new ways, using readily accessible technologies to engage and inspire students to take a more active role in learning. It's accepted that a well-rounded education is a gateway to personal success. It sets students on a path to life-long learning that enables them to succeed in a changing world. Through education, individuals can expand their mind and embrace new ideas and opportunities, and at the same time, build better lives for themselves and their communities. In a world where geographic boundaries are blurring, student also need the flexibility to connect with and collaborate with people anywhere at any time- communicating information in more dynamic, engaging ways. For today's students to become tomorrow's leaders in science, technology, healthcare, the arts and other areas, they need to know how to use all the technological tools at their disposal. If our country is to successfully integrate technology into education, it should address the needs and concerns of those on the front lines- our nation's teachers. This efforts increased open communication among all the education's key players.

New technologies on their own will not bring about improvements in educational quality, but when we change our mindsets to use them reflectively and strategically, teaching learning processes can be deepened. This includes living behind paradigms of teacher as master. Creative and contextualized appropriation of new technologies contributes to more active and interactive pedagogies, increased motivation, updated teaching materials, discovery of self and others, and changed roles and relationships among teachers and students become partners in accessing information, constructing relevant knowledge, and representing self and others.

The purpose of the present paper is to focus on the essential benefits and uses of technologies or ICTs in education. It also attempts to highlight the role and future prospect of technologies in education.

### Introduction

Globalization and technological change, processes that have accelerated in tandem over the past twenty years, have created a new global economy. The emergence of this new global economy has serious implications for the nature and purpose of educational institutions. As the half-life of information continues to shrink and access to information continues to grow exponentially, schools cannot remain mere venues for the transformation 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. "The illiterate of the 21<sup>st</sup> century," according to futurist Alvin Toffler," will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn." Concerns over educational relevance

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and quality coexist with the imperative of expanding educational opportunities to those made most vulnerable by globalization, developing countries in general; low-income groups, girls and women, and low-skilled workers in particular. Global changes also put pressure on all groups to constantly acquire and apply new skills. The International Labour Organisation defines the requirements for education and training in the new global economy simply as “Basic Education for All”. Information and communication Technologies (ICTs) which include radio and television, as well as newer digital technologies such as computers and the internet have been touted as potentially powerful enabling tools for educational change and reform. When used appropriately, different technologies are said to help expand access to education, strengthen the relevance of education to the increasingly digital work place, and to raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life.

When looking at the current widespread diffusion and use of technologies in modern societies, especially by the young the so-called digital generation, then it should be cleared that technologies will affect the complete learning process today and in the future. Authenticity is an important issue which should be addressed in the design and development of learning environments (Collins 1996). Learning environments need to reflect the potential uses of knowledge that pupils are expected to master, in order to prevent the acquired knowledge from becoming inert (Bransford, Sherwood, Hasselbring, Kinzer, & William, 1990; Duffy & Knuth, 1990). In addition, teacher should stimulate pupils to engage in active knowledge construction. Technologies may contribute to creating powerful learning environments in numerous ways.

According to UNESCO- integrated technology into education can help to bring quality education to everyone, everywhere- a key goal of the Educational for All initiative. The citizens of the future must be equipped with sufficient knowledge to keep up with technological advances and demands of the 21<sup>st</sup> century. UNESCO also believes that recognizing innovation technology in education practices can encourage and enhance even more educational innovations.

### **Benefits of Technology in the Education Process**

Moreover, few of technologies benefits to the classroom and the education process which are mentioned below are that ICTs:-

- Offer the opportunity for more students-centred teaching,
- Provide greater opportunity for teacher-to-teacher and student-to-student communication and collaboration,
- Give greater exposure to vocational and workforce skills for students,
- Provide opportunities for multiple technologies delivered by students,
- Create greater enthusiasm for learning amongst students,
- Provide teachers with new sources of information and knowledge,
- Prepare learners for real world,
- Provide distance learners country-wide with online educational materials,
- Provide learners with additional resources to assist resource-based learning

Furthermore, it states technologies to cover all the ICTs used for holding and communicating information and their use specifically in education with overall policy and goals off:

- Producing ICT literate citizens,
- Improving the efficiency of educational administration and management at every level from the classroom, school library, through the school and on to the sector as a whole,
- Broadening access to quality educational services for learner at all levels of educational system and
- Set specific criteria and targets to help classify and categorize the different development levels of using ICT in Education.

### **Education without Technology versus Education with Technology**

To measure the benefits of using information technology it has been divided into two categories. If we impart education without technology then these are the outcomes:

- a. It is passive
- b. It is formal
- c. It is instructor driven
- d. It is time dependent
- e. Content defined by others
- f. Grade is given only after final evaluation
- g. Not all the students fully participate.

Now if education is imparted with technology then these are the outcomes:

- a. It is active
- b. It is informal
- c. It is student driven
- d. It is not time dependent
- e. Content defined by students
- f. Individual contribution is measured
- g. Progress is accessed throughout
- h. All students fully participate.

### **Technology Use in Education**

Educators virtually everywhere have long looked to the emerging technologies of their time to improve the delivery of instruction in the classroom and to help them reach students (and teachers) in remote locations. In the early days of technology use, the focus was on the delivery of direct instruction (e.g., radio, interactive radio, instructional television). Instructional technology widely used for this purpose in low-income countries include the use of programmed instruction, the distribution of lessons on audiotape, the use of duplicating and photocopy machines to prepare learning aids, and television broadcasts of lessons at times that coincide with the school teaching schedule.

Newer technology-based instructional strategies, incorporating the Internet and the World Wide Web (WWW), are used more to expand communication and increase access to resources. The newer technologies represent a significant change in the teacher's role in the instructional process. Whereas earlier technologies provided teachers primarily with a tool for continuing to teach in the manner they were already teaching (though presumably more efficiently), technologies such as e-mail and Internet tend to push teachers towards fundamentally different ways of teaching. Depending on how they are used, these techniques shift more responsibility to the students to seek out information and interact with people at other locations. This, in turn, is putting pressure on teachers to modify their approach to classroom teaching. The notion that students can search for and assemble information on their own is very consistent with the constructivist philosophy of teaching. However, that approach is at odds with the pedagogical practices of many schools around the world.

Online resources are used within education system primarily in seven ways.

1. The most common use is in direct instruction. Lessons developed in one location can be broadcast via radio or television or made available through e-mail or the World Wide Web for use by students (individually or in group) in other locations. Excellent teaching can be made widely available.

2. Similarly, teachers can use online searches to find and access resource materials that are then used in the teachers' own lesson preparation.

3. A variation on this approach is that teachers can use the web to access curriculum and instructional guides for their own use.

4. Students can use the web to find and retrieve information they can use in their own research projects. In some schools, allowing students to use school computers for independent study is used as a way to motivate and reward good students. However, this approach tends to be limited to classrooms that have sufficient technology to allow students to use the equipment for independent study.

5. Some teachers use web-based chat rooms and online communications technology to connect two or more classrooms in different parts of the world. Students at different locations can ask and answer questions from those of the other locations.

6. Teacher can have their lessons broadcast to multiple classrooms simultaneously. This is already widely used in higher education as a means of offering courses in low-enrolment subject areas. In secondary education this allows students in remote locations to have direct interaction with teachers at a central location.

7. Finally, technology-based instruction is used in many countries as a means in delivering in-service teacher education.

A common element across all these innovations is that, in order to effectively use such technologies, teachers sometimes have to learn new knowledge and skills, spend more time in lesson preparation and engage in different types of conversation with students (Hernes, 2002; UNESCO, 2002). One consequence is that teachers resist- not because the educational benefits of these new technologies are not clear, but because they lack sufficient incentives to undertake the increased workload, do not understand what is expected of them, or do not know how to cope with new demands imposed by the technology (Fullan, 2001).

### **Present Role of Technology in Education**

There are many aspects of technologies used in education in India in which we already have sufficient knowledge, based on experience in using different media for more than forty years for educational and developmental purposes. The technological tools play a major part in educating the new generation in the develop world where the technology skills are necessary as reading, writing and arithmetic. Therefore technology is heavily integrated into primary, secondary and higher education system around the world. The technologies are used by the academic and business communities to improve the efficiency of organisations and eventually advance every aspects of life. Therefore it is highly desirable and beneficial to promote the application of technologies in developing countries such as India. Technology play a significant role in improving the quality of classroom teaching, in promoting students' learning, enhancing the quality of teaching and teacher education and improving distance learning etc. some of the common roles are mention below:

### **Technologies in Classroom Teaching**

Bringing technology into the classroom can have a considerable impact on the practice of teachers, in particular when ICT is conceptualized as a tool that supports a real change in the pedagogical approach. Not only does the teacher need to change their roles and class organisation, they also need to invest energy in themselves and their students in preparing, introducing and managing new learning arrangement. Using technology in the classroom, whether in elementary or secondary schools, is an expectation in the curricula of just above every grade level. Some teachers are at a loss as to how to do this. Power-point and Window Movie Maker are easy to use multi-media tools to enhance our lesson plans.

Government of India has announced 2010-2020 as the decades of innovation. Reasoning and critical thinking skills are necessary for innovation. Foundation of these skills is laid at school level. It is desirable that affordable ICT tools and techniques should be integrated into classroom instructions right from primary stage so as to enable students develop their requisite skills. Most of the tools, techniques and tutorials are available in open domain and accessible on web.

Of all the technologies available to students, telecommunication networking is of greatest value for familiarizing them with the world beyond the classroom. Telecommunication networking includes the internet and other means of shared communications. Today's popular 'Internet' is an international collection of interconnected electronic networks that allow communication between computers on these networks. In educational setting, computer is expected to serve as not only an informational tool, but at different times a teacher, evaluator, and baby-sitter. While it can fill all of these roles in some capacity, technology was never intended as an educational panacea. Technology is not an educational end in itself, but rather a means to an end that must be applied in an effective and appropriate manner. OTA (Office of Technology Assessment, America) finds that successful applications of technology bring a wider range of resources into the classroom; motivate learners; provide new teaching tools; accommodate individual learning styles; and even redefine the role of the teachers.

### **Technologies in Promoting Students' Learning**

Just as technology is influencing and supporting what is being learned in schools and universities, so too is it supporting changes to the way students are learning. Moves from content-centred curricula to competency-based curricula are associated with moves away from teacher-centred forms of delivery to student-centred forms. Through technology-facilitated approaches, contemporary learning settings now encourage students to take responsibility for their own learning. In the past, students have become very comfortable in learning through transmission modes. Students have been trained to let others present to them the information that forms the curriculum. The growing use of technology as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process. The following sections describe particular forms of learning that are gaining prominence in universities and schools worldwide.

Technology has the capacity to promote and encourage the transformation of education from a very teacher directed enterprise to one which supports more student-centred models. Evidence of this today is manifested in:

- The proliferation of capability, competency and outcomes focused curricula
- Moves towards problem-based learning
- Increased use of the Web as an information source, Internet users are able to choose the experts from whom they will learn

The use of technology in educational settings, by itself acts as a catalyst for change in this domain. Technologies by their very nature are tools that encourage and support independent learning. Students using information technologies for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools the influence of the technology on supporting how students learn will continue to increase.

### **Technologies in Teacher Training**

Technologies have also been used to improve access to and the quality of teacher training. For example, institutions like the Cyber Teacher Training Centre (CTTC) are taking advantage of the Internet to provide better teacher professional development opportunities to in-service teachers.

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The government-funded CTTC, established in 1997, offers self-directed, self-paced Web-based courses for primary and secondary school teachers. Courses include “Computer in the Information Society,” Education Reform,” and Future Society and Education.” Online tutorials are also offered, with some courses requiring occasional face-to-face meetings. Large-scale radio and television based teacher education has for many years been conducted by the Radio and TV University. At Indira Gandhi Open University, satellite-based one-way video and two-way audio-conferencing was held in 1996, supplemented by print-materials and recorded video, to train 910 primary school teachers and facilitators from 20 district training institute of Karnataka State. The teacher interacted with remote lecturers by telephone and fax. Research has shown that the appropriate use of ICTs can catalyse the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21<sup>st</sup> century. If designed and implemented properly, ICT-support education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning.

### **Technology in Distance Education**

Distance learning studies used mail technologies, printed or hand-written texts were used to be sent. Desire to improve and increase efficiency of learning has change through communication tools, and later-trying to secure feedback – using the internet, e-mail, File Transfer Protocol (FTP) server service for data storage and usage, virtual learning environment etc. Multichannel learning is the hallmark of Distance Education. It is in fact, in this multichannel mode where it is possible to partially or fully integrated more than one challenge of learning as much as keep them independent of one another than distance education takes a quantum jump in pedagogical effectiveness. The successive generation of distance education have actually built up upon only exception in the internet generation where all the various channels have been integrated into one. Even in the intermediate version, distance instruction adopts the following delivery modes:-

- Printed materials
- Radio and television
- Audio and video programmes
- Personal contact (PCP) or interactive and
- Formative (In text questions) and summative (End of module tests)

The integration of modern technologies with distance teaching-learning mechanism offers wide ranging opportunities to improve ACCESS and QUALITY of SERVICES to students and to overcome geographical barriers while preserving a learning environment and high academic standards. All these can be attained in very effective and economical manner. It is very essential to consider how technologies can be effectively used to achieve desired pedagogical goals. With evolution of distance education roles of students, teachers and institutions have also evolved. The pedagogy of synchronous remote class-room teaching resembles with that of traditional class room teaching. The amalgamation of advanced technology into higher education in general and open learning system in particular, presents tremendous opportunities to improve the services available to concerned people.

### **Suggestion for Future Prospect**

Information technology is the weapon in the field of education by which both the quality and quantity of educational objective is achieved. From primitive society to modern age technology based fourth wave of educational system depends on the teachers for promoting education according to the social needs. World Wide Organisation for promoting education both quality and quantity are keeping their eyes for the promotion of education in underdeveloped, developed and

developing countries. Time to time the policy matter and decisions for global educational development through ICT application unknowingly reached to the unreached people needs. Therefore technologies are making dynamic changes in society and are influencing all aspect of life. Some of the suggestions for using technology in education are discuss below:

1. Education policies have to reflect alternate and new teaching paradigms that technology can offer in terms of providing a more effective, relevant, and flexible mode of learning for the underprivileged and the general masses.

2. Policies must take into account the retraining of teachers incorporating use of technology in education. Teacher should skilfully redesign learning environments so that students can transfer their newly gained technology skills to other applications to use in a technology rich environment.

3. National policy which can positively impact on technologies adoption and expansion should focus on promoting access to IT skills and education for all, improving the network infrastructure in urban and rural areas and encouraging technological research in development.

4. In the present circumstances, technology should be integrated into the core curriculum of the main streamline education in India i.e. at primary and high school, colleges and universities in the country.

5. A national strategy should be developed and implemented to monitor and evaluate the impact of the current and future use of technology and other relevant projects in the country.

6. Training and orientation of teachers, administrators and students to the new learning technologies is an intimate requirement.

7. Teachers already in the profession should have the right to adequate time and resources for continual professional development to acquire and maintain ICT skills.

8. Teachers should have the adequate time to plan the introduction ICT into their pedagogical practices into high quality and appropriate learning.

9. Feasibility of broadband, Wi-Fi and other internet connection should be made available in every educational institution so that students and teachers can freely access.

10. To ensure that teachers, educational authorities and other stakeholders enjoy the maximum benefits from the used of these technologies, all should be involved in information sharing, consultation and negotiations, according to the issue involved.

11. The focus of developing countries should be on how they use technologies to compensate for the factors that are lacking in education, namely, well-trained teachers and the resources to pay for expensive equipment. The task is to concentrate on technological alternatives that, at low cost, bring students the imagination and creativity of a few excellent teachers.

12. Introducing children and young people to the internet at an early stage in schools and day care is necessary to achieve greater skills in using digital data and information and thus to enable responsibility, competent participation in the information society of the future.

13. Every individual should learn that accessing and using ICT in the future will be crucial for coping with all areas of life and will determine opportunities for participation in society.

## Conclusion

Enhancing and upgrading the quality of education and instruction is a vital concern, predominantly at the time of the spreading out and development of education. Technology can improve the quality of education in a number of ways: By augmenting student enthusiasm and commitment, by making possible the acquirement of fundamental skills and by improving teacher training. It provides a great deal of advantage in the delivery of equitable quality education thereby providing an opportunity to improve the lives of our people. The need to use new technologies to raise the quality and efficiency of education cannot be overemphasized. It is imperative that we expose our children, parents, and teachers to technologies to improve the quality of education and technical proficiency of our human resources, thus leading to increased productivity and

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accelerated development. We must also prepare our citizens to adapt to the global economy and participate in electronic commerce. In addition, we must provide our children with a greater understanding of other peoples and cultures, thus defending our renewed legacy of peace and tolerance.

### References

1. Chapman, D.W. & Mahlck, L.O. (2004) Adapting Technology for Improvement: a global perspective. Published by: International Institute for Educational Planning. UNESCO. [www.unesco.org/iiep](http://www.unesco.org/iiep)
2. Kharbiryumbai, B.B. (2013) ICT in Education. Vol. 1. EBH Publishers (India).
3. Mahapatra, B.C. (2013) ICT and Reforming Higher Education for Educational Transformation. An International Peer Reviewed Scholarly Research Journal For Interdisciplinary Studies. [www.srjis.com](http://www.srjis.com)
4. Mikre, Fisseha. (2011) The Role of Information Communication Technology in Education Review Article with Emphasis to the Computer and Internet. [www.ju.edu.et](http://www.ju.edu.et)
5. Prensky. Marc (2008) The Role of Technology in Teaching and the Classroom. Published in Educational Technology. [www.marcprensky.com](http://www.marcprensky.com)
6. Sarkar, S. (2012) The Role of Information and Communication Technology (ICT) in Higher Education for the 21<sup>st</sup> Century. [www.thesciprobr.com](http://www.thesciprobr.com)
7. Schmitz. E. Prescott, C. & Hunt, L. (1996) Learning Technology: The Effective Use of Technology in Education. A report on the status of technology in preparing students for the work place. [www.cord.org](http://www.cord.org)
8. Sinha, H.P Role of Modern Technologies in Open Learning Through Distance Education. [www.col.org](http://www.col.org)