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ROLE OF ICT IN EDUCATION

Research paper in Education

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Abstract

Globalization and technological change- processes that have geared up in tandem over the past years have shaped a new global economy and affected each and one —powered by technology, fueled by information and driven by knowledge. Especially Information and communication technologies (ICT) presently are influencing every aspect of human life. The impact of the ICT on each sector of the life across the past two-three decades has been commendable. The impact and the way to act is different as compared to their pasts. Across the past twenty years the use of ICT has basically changed all forms of endeavors within business, governance and off-course education. Information and communication technologies (ICTs)—which include radio and television, as well as newer digital technologies such as computers and the Internet have been flaunted as potentially powerful enabling tools for educational change and reform. The effective integration of ICTs into the educational system is a complex process that involves not just technology—indeed, given enough initial capital, getting the technology is the easiest part but also curriculum and pedagogy, institutional readiness, teacher competencies, and long-term financing. As world is moving rapidly towards digital information, the role of ICTs in education becoming more and more important and this importance will continue to grow and develop in this century. The ICTs are yet to be instituted on wide scale in education and many milestones are still to be

touched to envision the absolute practice in education. This paper highlights how ICT is influencing the education and making teaching-learning easy and effective, the role in upgrading contemporary higher education and discusses potential future developments.

Introduction

ICT (information and communication technologies) in education enjoys a life at the crossroads between evidence based policymaking, learning and the fast-changing world of technology. They are influencing all facet of life. If one was to compare such fields as medicine, travel business, law, banking, engineering and architecture, the impact of ICT across the past two or three decades has been enormous. The way these fields operate today is vastly different from the ways they operated in the past. But when one looks at education, there seems to have been an uncanny lack of influence and far less change than other fields have experienced. However, ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies, scattered and rural populations, groups traditionally excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time constraints are unable to enroll on campus. Tinio (2002), posited the potentials of ICTs in increasing access and improving relevance and quality of education in developing countries. Although it is generally assumed that ICT has high potential for improving education, research consistently has had difficulty in providing convincing evidence on the impact of ICT on student's performance. This is mainly due to the fact that the use of ICT often contributes to the mastery of complex cognitive skills. These types of skills cannot be determined by means of simple standard tests.

Definition and Meaning of ICT

ICT, which is the acronym for information and communication technology can be defined as: "combination of computer, video and telecommunication technologies, as observed in the use of multimedia computers and networks and also services which are based on them" (Van Damme, 2003). ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor. ICT in education is any Information Technology that focuses on the acquisition,

storage, manipulation, management, transmission or reception of data required for the educational purpose. For example, the information about students' records, their admissions, updates of their curricular and co-curricular activities.

How can ICTs help increase access to education?

"ICTs are the computing and communication facilities and features that variously support teaching, learning and a range of activities in education." Anytime, anywhere**,** one defining feature of ICTs is their ability to transcend time and space. In Watson's (2001) description, ICTs have revolutionized the way people work today and are now transforming education systems. ICTs make possible asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its reception by learners. Online course materials, for example, may be accessed anytime and anywhere. ICT-based educational delivery (e.g., educational programming broadcast over radio or television) also mete out with the need for all learners and the instructor to be in one physical location. Additionally, certain types of ICTs, such as tele conferencing technologies, enable instruction to be received simultaneously by multiple, geographically dispersed learners.

Kozma (2008) has identified important reasons for investing in ICT for education, mentioned as under:

- To maintain economic growth mainly by increasing human capital and escalating the productivity of the workforce.
- To uphold social development by sharing knowledge, nurturing cultural creativity, increasing democratic participation, improving access to government services and enhancing social cohesion.
- To develop educational transformation, i.e. major curriculum revisions, shifts in pedagogy or assessment changes.
- To sustain educational management and accountability, with an emphasis on computer-based testing and the use of digital data and management systems.

Education decides the standard of society. The quality education helps to empower the nation in all aspects by providing new thoughts, the ways of implementation of various technologies and so many such things. Lafferiere stated that "ICT in schools and classrooms tends to attract

school learner's interest and motivation". Achievement of universal primary education, which is one of the basic Millennium Development Goals, can be facilitated by emerging technologies, as well as the old ICTs such as radio and television. The main barrier in achieving universal primary education are issues such as lack of proper transportation facilities, poor school meal programmes, lack of sufficient teachers and gender sensitive education, but the introduction of ICTs can make education provisions better. The usage and impact of ICTs needs to be carefully monitored to ensure that they are used effectively. ICTs can be used in education to:

- recover administrative efficiency
- distribute teaching and learning materials to teachers and students
- develop the ICT skills of teachers and students
- allocate teachers and students access to sources of information available all over world
- share ideas on education and learning
- act as a team on joint projects
- conduct lessons from a remote location

The increasing use of ICTs as means of every day life have seen the collection of generic skills expanded in recent years to include information literacy and it is highly plausible that future developments and technology applications will see this set of skills growing even more.

ICT in Higher Education

1. To enlarge variety of educational services & medium

2. To advance equal opportunities to obtain education & information.

3. To increase a system of collecting & disseminating educational information.

4. To offer technology literacy.

ICT Brought Change in the Way of Learning

Inclusion of ICTs in education has brought a shift from a teacher centered learning to competency based learning. The transfer and the dissemination of information and knowledge has become swift and easy using ICTs. The learning types available through the use of ICTs in various fields are particularly categorized as under:

Active learning. ICT-enhanced learning organize tools for examination, calculation and analysis of information, thus provide a platform for student in inquiry, analysis and production of new information. Learners therefore gain knowledge as they do and, whenever possible, work on real-life problems in-depth, making learning less abstract and more relevant and concrete to the learner's life situation. In this way, in contrast to memorization-based or rote learning, ICT-enhanced learning increases the learner's involvement.

Collaborative learning. ICT-supported learning enhances interaction and cooperation among students, teachers, and experts regardless of where they are. It provides learners the opportunity to work with people from different cultures, thereby helping to develop learners' learning and communicative skills as well as their global attentiveness. It reflects the learning done throughout the learner's lifetime by increasing the learning space and modes to include not just peers but also mentors and experts from different fields.

Creative Learning. ICT-supported learning promotes the handling of existing information and the creation of real world, practical and three dimensional knowledge rather than the mere regurgitation of received information through traditional classroom.

Integrative learning. ICT-enhanced learning encourages an integrative approach to teaching and learning which eliminates the artificial division between disciplines and also between theory and practice.

Evaluative learning. ICT-enhanced learning is student-directed and problem-solving. Unlike static, text- or print-based educational technologies, ICT-enhanced learning identifies the different learning pathways and many articulations of knowledge. ICTs allow learners to explore and determine rather than merely listening and remembering.

Use of Radio and Television in Education

Radio and television have been used extensively as educational tools since long. Categorically there are three general approaches to the use of radio and TV broadcasting in education i.e., direct class teaching, school broadcasting, general educational programming over community

Teleconferencing and Education

Teleconferencing refers 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: 1) audio conferencing; 2) audio-graphic conferencing, 3) video conferencing; and 4) Web-based conferencing.

Audio conferencing involves the live exchange of voice messages over a telephone network.

Videoconferencing allows the exchange not just of voice and graphics but also of moving images. Videoconferencing technology broadcast using satellite link or television network.

Web-based conferencing implies the transmission of text, graphic, audio and visual media via the Internet; and requires the computer .

Teleconferencing is used in both formal and non-formal learning frameworks to facilitate teacher-learner and learner-learner discussions, as well as to contact experts and other resource persons remotely. In open and distance learning modes of learning, teleconferencing is a valuable tool for disseminating direct instruction, learner support thereby minimizing learner isolation.

How ICTs Replace the Teacher

With the advent and spiraled development of ICTs, and especially the introduction in classroom, the teacher's role in learning process have become more critical. The role played by teacher is greatly affected and expanded in several terms. Traditional classroom owes the basic teaching skills on the part of teacher whereas ICTs based learning shoulders a great responsibility on teachers apart from the basic teaching learning process. Reciprocal whereof the role of students requires expansion. As learning shifts from the "teacher-centered model" to a "learner-centered model", the teacher becomes less the sole voice of authority and more the facilitator, mentor and coach—from "sage on stage" to "guide on the side". The teacher's primary task becomes to teach the students how to ask questions and pose problems, formulate hypotheses, locate information and then critically assess the information established in relation to the problems posed. And since ICT-enhanced learning is a new experience even for the teachers, the teachers become co-learners and discover new things along with their students. Yet many teachers are reluctant to the use of ICTs, especially computers and the Internet. Hence, at the in-

service level, ICT teacher professional development (TPD) should be long-term, teacher-directed, and as flexible as possible. Institutionalized incentives and support for teachers to pursue ICT TPD are also critical. This may be brought in the form of promotions for teachers who innovate with ICTs in the classroom or who gain adequate technology and skill after receiving appropriate training.

Educational Management and ICT

In the field of educational management, ICTs are more relevant and effective these days. Computer software programs are being used in time tabling and school management to efficiently utilize the time available with staff, students' time and space, thus reducing costs and managing the human resources significantly. Very few computers are required for accomplishing the process of managing the data and records, hence reducing the net costs and work related burden on the various educational institutions.

Conclusion

The role of ICTs in the education is recurring and unavoidable. Rapid changes in the technologies are indicating that the role of ICT in future will grow vastly in the field of education. The immense current activities and practices in the field of education, we can say the development of ICTs within education has greatly influenced and affected the every aspect of education particularly: the vast information available worldwide on single click, the ways of learning including video conferencing, teleconferencing, online learning, and minimized the workload of teachers thereby utilizing their energies in more efficient and progressive tasks. More precisely, ICTs role in education is increasing exhaustively creating a new knowledge world with a vision of digitalizing the whole education in future and making it more innovative, progressive and economical.

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