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Role of ICT in Quality Education

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Abstract

Information Communication Technology is the power that has changed many aspects of human lives. The impact of the ICT on each sector of the life across the past two-three decades has been enormous. The way these fields act today is different as compared to the past. Across the past twenty years the use of ICT has basically changed all forms of endeavour within business, governance and off-course education. ICT has begun to have a presence but unfortunately we are lacking to achieve the desired impact. In fact, education is a socially oriented activity. It plays vital role in building the society.

Information and Communication Technology (ICT) is increasingly becoming indispensable part of the education system. This paper considers the rapid spread of ICT applications which have brought drastic technological, social and economic transformations. These changes have caused educational institutions, administrators, teachers to rethink their roles, teaching and vision for the future. In educational system, the inputs are teachers, students, classroom materials, equipments of teaching, methods of teaching and the outputs are quantity as well as quality of student learning. The proper integration of ICT with teaching/ learning environment increases the chance of gaining education along with increased productivity. ICT provides various opportunities to learners and make teachers aware of their new roles & responsibilities in educational set up. The growing use of ICT will change many of the strategies employed by both teachers and students in the learning process. The role of ICT in the educational administration is recurring and unavoidable. The paper discusses various functions discharged by ICT in the field of Education and its most new usages. In general, ICT is going to play a vital role in bringing about qualitative changes in every aspects of our life.

Introduction

Education has vital role in building the society. Education determines standard of society. The quality education helps to empowering the nation in all aspects by providing new

thoughts, the ways of implementation of various technologies and so many such things. The quality education is the basic need of society. There are number of effective teaching & learning methodologies in practice. Technology is the most effective way to increase students' knowledge. Here comes the role of ICT in the education sector! Being an academician I cannot imagine education without ICT. Nowadays ICT (specially 'internet') plays imminent role in the process of integrating technology into the educational activities.

What is ICT?

ICT is an acronym that stands for "Information Communication Technologies". Information and communication technologies are an umbrella term that includes all technologies for the manipulation and communication of information. ICT considers all the uses of digital technology that already exists to help individuals, business and organization. It is difficult to define ICT because it is difficult to keep up the changes they happen so fast. ICT is concerned with the storage, retrieval, manipulation, transmission or receipt of digital data. The definition taken from the guidance in the QCA schemes of work for ICT is, "ICTs are the computing and communication facilities and features that variously support teaching, learning and a range of activities in education."

ICT as Medium of Teaching and Learning

ICT as Medium of Teaching and Learning refers to the tool for the purpose of teaching and learning itself. More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purpose. It started with CAL/CBT/CAI, then moved to Multimedia courseware and finally to Web Based instruction & Computer Mediated Communication (CMC) system. Using CAI for drill and practice of basic skills can be highly effective according to a large body of data and a long history of use (Kulik, 1994). Students usually learn more, and learn rapidly, in courses that use computer assisted instruction (CAI). This has been shown to be the case across all subject areas, from preschool to higher education, and in both regular and special education classes. Effective instruction requires presenting information, guiding the learner, practice, and assessment of student learning. The use of a computer to provide any combination of these factors may be termed computer-assisted instruction. It should be noted that there is no requirement that the computer provides all of these elements. Rather, any combination of these can be an appropriate computer intervention in the learning process. Interactivity, flexibility and learner control is the hallmark of these technologies. The application of educational technologies to instruction has progressed beyond the use of basic drill and

practice software, and now includes the use of complex multimedia products and advanced networking technologies. Today, students use multimedia to learn interactively and work on class projects. They use the Internet to do research, engage in projects, and to communicate. The new technologies allow students to have more control over their own learning, to think analytically and critically, and to work collaboratively. An increasing body of evidence suggests positive results of the ICT integration with teaching and learning (Alessi and Trollip,1985).

Emerging Methods of ICT Integration

E-learning: - Is a learning program that makes use of an information network- such as the internet, an intranet (LAN) or extranet (WAN) whether wholly or in part, for course delivery, interaction and/or facilitation. Web-based learning is a subset of e learning and refers to learning using an internet browser such as the model, blackboard or internet explorer (Tinio, 2002).

Blended Learning: - Refers to learning models that combines the face-to-face classroom practice with e-learning solutions. For example, a teacher may facilitate student learning in class contact and uses the model (modular object-oriented dynamic learning environment) to facilitate out of class learning.

Active learning: - ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information in order to provide a platform for student inquiry, analysis and construction of new information. The learners therefore, learn as they do and, whenever appropriate work is needed on real-life problems in-depth. Moreover, ICT makes the learning less abstract and more relevant to their life situations. In contrast to memorization-based on rote learning, that is the feature of traditional pedagogy; ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning can also be 'just-intime' learning that the learners choose what to learn when they need.

Collaborative learning: - ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real world interactions, ICT-supported learning provides opportunity to work with students from different cultures, thereby helping to enhance learners teaming and communication skills as well as their global awareness. It models learning done throughout the learner's lifetime by expanding the learning pace to include not just peers but also mentors and experts from different fields.

Creative learning: - ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the duplication of received information

Integrative learning: - ICT-enhanced learning promotes a thematic integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice, which characterizes the traditional approach.

Evaluative learning: - ICT-enhanced learning is student-directed and diagnostic. Unlike static, text or print-based education, ICT-enhanced learning recognizes the presence of different learning pathways to explore and discover rather than merely listen and remember.

 U-Learning:- Ubiquitous learning, also known as u- learning, is based on ubiquitous technology. The most significant role of ubiquitous computing learning in u- learning is to construct a ubiquitous learning environment, which enables anyone to learn at any place at anytime. Some says that the evolution of ubiquitous learning has been accelerated by the improvement of wireless telecommunication capabilities, open network, continued increases in computing power, improved battery technology, and the emergence of flexible software architectures. This leads to u –learning that allow individual learning activities embedded in daily life. However it is clear that there is clear definition of u- learning due to rapid changes of learning environments.

Overview of Pedagogy in the Traditional versus Information Society as adapted by Voogt (2003) from (Voogt & Odenthal, 1997; Wijnen et.al., 1999)

Aspect	Traditional pedagogy	Emerging pedagogy for the information society
Active learning	Activities prescribed by teacher	Activities determined by learners
	Whole class instruction	Small group
	Little variation activities	Many different activities
	Pace determined by the programme	Pace determined by learners

Collaborative	Individual	Working in teams
	Homogenous groups	Heterogeneous groups
	Every one for him/herself	Supporting each other
Creative	Reproductive learning	Productive learning
	Apply known solutions to problems	Find new solutions to problems
Integrative	No link between theory and practice	Integrating theory and practice
	Separate subjects	integration between subjects
	Discipline based	Thematic
	Individual teachers	Teams of teachers
Evaluative	Traditional pedagogy	Emerging pedagogy for the information society

Tinio (2002) describes each of the pedagogic aspects in the table above in terms of implication for ICT use as follows.

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Limitations of ICT use in Education

ICT as a modern technology that simplifies and facilitates human activities is not only advantageous in many respects, but has many limitations too. Many people from inside and outside the education system, think of ICT as "Panacea" or the most important solution to school problems and improvements. However, many conditions can be considered as limitations of ICT use in education. The limitations can be categorized as teacher related, student related, and technology related. All of them potentially limit the benefits of ICT to education. Teachers' attitude plays an important role in the teaching-learning process that utilizes computers and internet connections. Although teachers' attitude towards use of these technologies is vital, many observations reveal that teachers do not have clarity about how far technology can be beneficial for the facilitation and enhancement of learning. Of course, some teachers may have positive attitudes to the technology, but refrain from using it in teaching due to low self-efficacy, tendency to consider themselves not qualified to teach with technology.

In this respect, Bandura (1986) describes self-efficacy as "individual's opinion of capabilities to organize and perform courses of actions to achieve particular types of performances." Moreover, as identified by Brosnan (2001), attitude, motivation, computer anxiety, and computer self-efficacy are factors affecting teachers' use of computers in their lessons. Teacher resistance and lack of enthusiasm to use ICT in education may also be another

limitation. Furthermore, many teachers may not have the required IT skills and feel uncomfortable, nor do they have training needed to use the technology in their teaching. Unless teachers develop some basic skills and willingness to experiment with students, ICT use in education is in a disadvantage state. (Brosnan, 2001).

Usages of ICT

Conventional teaching has emphasized on content. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate and rehearse the content. Contemporary settings are now favoring curricula that promote competency and performance. Curriculum is being concerned more about how the information will be used than on what the information is.

Competency and Performance- based Curriculum: - The moves to competency and performance based curriculum are well supported and encouraged by emerging instructional technologies. Such curriculum tends to require:-

Access to a variety of information sources.

Access to a variety of information forms and types.

Student centered learning settings based on information access and inquiry.

Learning environments centered on problem centered and inquiry based activities.

Authentic settings and examples and teaching as coaches and mentors rather than content experts.

Contemporary ICTs are able to provided strong support for all these requirements and there are now many outstanding examples of world class settings for competency and performance based curriculum that make sound use of the affordances of these technologies.

2. Information Literacy:- Another way in which emerging ICTs are impacting on the content of education curriculum, stems from the way in which ICTs are dominating so much of contemporary life and work. Already there has emerged a need for education institutions to ensure that graduates are able to display appropriate levels of information literacy, "the capacity to identify and issue and then to identify, locate and evaluate relevant information in order to engage with it or to solve a problem arising from it".

3. Constructivism: - Is a paradigm of learning that assumes learning as a process individuals ''construct'' meaning or new knowledge based on their prior knowledge and experience

(Johassen, 1991). Educators also call it the emerging pedagogy in contrast to the long existing behaviourism view of learning.

4. Learner- centered Learning environment: - Is a learning environment that pays attention to knowledge, skills, attitudes, and beliefs that learners bring with them to the learning process where its impetus is derived from a paradigm of learning called constructivism. In the context of this article, it means students personal engagement to the learning task using the computer and or the internet connection.

Conclusion

Information communication technologies are influencing all aspects of life including education. They are promoting changes in working conditions, handling and exchanging of information, teaching-learning approaches and so on. One area in which the impacts of ICT is significant, is education. ICTs are making major differences in the teaching approaches and the ways students are learning. ICT-enhanced learning environment facilitates active, collaborative, creative, integrative, and evaluative learning as an advantage over the traditional method. In other words, ICT is becoming more appropriate in the realization and implementation of the emerging pedagogy of constructivism that gives greater responsibility of learning for students. Several surveys are showing that ICT use in education systems of developed nations has comparatively advanced than ICT use in education systems of developing nations. In addition, the major promises of ICTs use in education systems of developing countries, focus on training teachers in new skills and introducing innovative pedagogies into the classroom, investing on ICT infrastructure for schools and creating networks among educational institutes, improving overall standard of education by reducing the gap in quality of education between schools in urban and rural areas, initiation of smart school with objectives to foster self-paced, self-assessed, and self-directed learning through the applications of ICTs, and developing ICT policy for education and training.

References

1. Kulik, J. A. (1994). Meta-analytic studies of findings on computer-based instruction. In E. L. Baker and H. f. O'Neil, Jr.(Eds.),Technology assessment in education and training" Hillsdale, NJ : Lawrence Erlbaum

2. Alessi, S. M., and Trollip, S. R. (1985). Computer-Based Instruction: Methods and Development. New Jersey: Prentice-Hall.

3. Majumdar, S. (2004). Integrating ICT in Teaching & Learning: A Functional Approach Presented at the UNESCO-APEID Writing Workshop for a Guideline and Competency Based Standards for Teachers' Pedagogy-Technology Integration, Hua Hin, Thailand. March 28-31.

4. Kaushal, S. and Patra, S. S. (2009). Elementary Education in Bihar: Some Reflection of DISED website:http://www.dise.in/Downloads/Use%20of%20Dise%20Data/Savita%20Kaushal%20&%20%20Sudhanshu%20S.%20Patra.pdf

5. M. Ali and D. A. Mission (2003). ICT Education: Case Study, Research on Information and Communication Technology.

6. Roy, N.K. (2012). ICT–Enabled Rural Education in India. International Journal of Information and Education Technology, 2 (5), 525-529.

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