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## ICT IN THE 21<sup>ST</sup> CENTURY: ROLE, IMPORTANCE AND CHALLENGES

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### Abstract

*This paper discusses the role, importance and challenges of ICT in teaching learning process in the 21<sup>st</sup> century. Information and communication technologies at present are influencing every aspect of human life. ICT is described as the whole range of process of generation, storage, transmission, retrieval and processing of information. It helps in breaking the walls of time distance and speed in the educational set up. ICT as the technology used to manage information and aid communication. It offers learners more complete and individual control over their learning. Moreover, many people recognize ICTs as catalysts for change, handling and exchanging information, teaching strategies, teaching methods, learning approaches, scientific research, and in accessing information. The effective integration of this technology into classroom practices poses a challenge to teachers and administrators. Improving the quality of education and training particularly at a time of educational expansion, ICT enhance to quality of education by increasing learners motivation and engagement, by facilitating the acquisition of basic skills, and enhancing teacher training. The papers examine the importance, role and challenges of ICT in the contemporary society.*

*Key Words: ICT, Role, Importance and Challenges.*

### Introduction

ICT describes the whole range of process of generation, storage, transmission, retrieval and processing of information. It helps in breaking the walls of time distance and speed in the educational set up. This versatile instrument has the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive ability. ICT provides clear and well-defined instructional objectives, through preparation of content and offers support for both learners and staff. Improving the quality of education and training particularly at a time of educational expansion, ICT enhance to quality of education by increasing learners motivation and engagement, by facilitating the acquisition of basic skills, and enhancing teacher training. ICT are transformational tools which, when used appropriately, can promote the shift to a learner- centered environment. In the present scenario assessment of learners, their testing, scoring giving feedback, processing the data obtained through assessment and preparing grade cards are computerized. There are provisions for online tests, online submission and portfolio. ICT as technologies used to communicate in order to create, manage and distribute information. It is considered as a powerful tool various studies have find out that an appropriate use of ICT can raise educational quality and connect learning to real life situation (Lowther 2008 and Tatnall 2005).

## Role and Importance of ICT

ICTs have developed as powerful tools for diffusion of knowledge and information. The quality education traditionally was associated with strong and dedicated teachers having high calibre but education was teacher centered. Using ICTs in education it moved student centered learning. ICT provides more creative solutions to different types of learning inquiries. ICT involves purpose- designed applications that provide innovative ways to meet a variety of learning needs. **Koc (2005)** mentioned that using ICT enables students to communicate, share, and work collaboratively anywhere, any time. For instance, a teleconferencing classroom could invite students around the world to gather simultaneously for a topic discussion. They may have the opportunity to analyse problems and explore ideas as well as to develop concepts. ICT changes the traditional teacher centered approach and requires teachers to be more creative in customising and adapting their own material. Students are now more frequently engaged in the meaningful use of computers (**Castro Sánchez and Alemán 2011**). They build new knowledge through accessing, selecting, organizing, and interpreting information and data. Based on learning through ICT, students are more capable of using information and data from various sources, and critically assessing the quality of the learning materials. Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. (**Bransford, J. D., Brown, A. L., & Cocking, R. R 2000**) reported that ,what is now known about learning provides important guidelines for uses of technology that can help students and teachers develop the competencies needed for the twenty-first century. **Forcheri, P. &Molfino(2000)** suggested that ICT can be used to promote collaborative learning, including role playing, group problem solving activities and articulated projects. ICT extend teachers and student's efficiency and capabilities, and their well determined use can transform roles and rules in the classroom. **Miller, J., W., Martineau, L., P. & Clark, R., C.(2000)** recognize that technology-based teaching may not be essential in all classes but generally it is most facilitative as a result of providing relevant examples and demonstrations; changing the orientation of the classroom; preparing students for employment; increasing flexibility of delivery; increasing access; and satisfying public demands for efficiency. The whole purpose of using technology in teaching is to give better value to students. Researchers found out that the use of ICTs in education could promote deep learning and allow educators to respond better and efficiently to different needs of different learners. ICTs, especially computers and Internet technologies, enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. ICT has an impact not only on what students should learn, but it also plays a major role on how the students should learn.

## ICT and Teaching Learning Process

**Yusuf, (2005)** said that the field of education has been affected by ICTs, which have undoubtedly affected teaching and learning. He also find out that ICTs have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change. **Zhao and Cziko (2001)** suggested that three conditions are necessary for the teachers to introduce ICTs into their classrooms: (a) teachers should believe in the effectiveness and need of technology, (b) teachers should believe and have a faith that the use of technology will not cause any disturbances, and (c) finally teachers should believe that they have control over technology. **Harris (2002)** concludes that the advantages of ICT will be gained when confident and competent teachers are willing to explore new opportunities for changing their classroom practices by using ICT. The use of ICT will not only enhance learning and teaching environments but also prepare next generation for future lives and careers (**Wheeler, 2001**). The use of ICT in teaching learning, by itself acts as a catalyst for change. ICTs by their very nature are tools that encourage and support independent learning. Students using ICTs for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools (**Reeves & Jonassen, 1996**), the influence of the technology on supporting how students learn will continue to increase.

Thus we can say that ICT is a potentially powerful and useful tool for offering educational opportunities. It is difficult and maybe even impossible to imagine future learning environments that are not supported or endorse in one way or another, by Information and Communication Technologies (ICT). During the last three decades, the changes in educational environment (teaching and learning process) have been phenomenal. The model

given by **Majumdar S.(2006)**, focus, role of the learner and technology has been changed drastically from traditional instruction to virtual learning environment as depicted below.

#### **Changes in Teaching-Learning Environment**

| <b>Model</b>       | <b>Focus</b>    | <b>Role of Teacher</b> | <b>Technology</b>        |
|--------------------|-----------------|------------------------|--------------------------|
| <i>Traditional</i> | <i>Teachers</i> | <i>Passive</i>         | <i>Chalk And Talk</i>    |
| <i>Information</i> | <i>Learners</i> | <i>Active</i>          | <i>Personal Computer</i> |
| <i>Knowledge</i>   | <i>Group</i>    | <i>Adaptive</i>        | <i>PC+ Network</i>       |

New technology that is ICT provides powerful tools and techniques to support the shift from teacher centred learning to learner centred learning paradigm and new roles of teacher, learner, curricula and new media. The major shift of changes in learners roles given by **Majumdar S. (2006)** have been described in a tabular form below.

#### **Changes in Learners' Roles**

| <b>From</b>                    | <b>To</b>                                               |
|--------------------------------|---------------------------------------------------------|
| <i>Passive Learner</i>         | <i>Active Learner</i>                                   |
| <i>Reproducer of Knowledge</i> | <i>Producer of Knowledge</i>                            |
| <i>Dependent Learner</i>       | <i>Autonomous Learner</i>                               |
| <i>Solitary Learner</i>        | <i>Collaborative Learner</i>                            |
| <i>Solely Learning Content</i> | <i>Learning to Learn/Think/Create &amp; Communicate</i> |

There are advance forms of ICT tools that have entered into the teaching-learning process in the present education system. Many schools, colleges, private and government recognised institutions are on a swift path to integrate new learning technologies into classroom practices and are increasingly making ICT tools & technology as learning a priority. There are varieties of ICT tools being integrated and adopted diversely into the 21<sup>st</sup> century education system which have been described in a tabular form below.

#### **Emerging ICT Tools for Teaching-Learning process in 21<sup>st</sup> century**

*Blogs, Wikis, Emails, Digital video, Computers ,Internet, iPad,  
e-books, MOOCS, e-le arning, Multi-link headphones,  
Digital cameras, Webcams, Audio recording software, Web based learning,  
Walkietalkies, Interactive whiteboards and Smartboards,  
Word processing, Presentation software 's, Social Networking, Blended learning*

#### **Challenges of Introducing ICT in Education**

Contemporary age is the age of information and communication technology. In this age teacher and learner must gain access to advanced technology for improving teaching learning outcomes and quality of education. Use of advanced technology in teaching learning environment can bring a rapid change in education system. But using ICT in teaching and learning some challenges are there which creates problem for implementing the ICT in teaching learning process. Lack of support from the community and school administration is a big challenge. For the effectiveness of ICT in teaching and learning process, administrators and heads of the institutes must be competent and qualitative and have a broad understanding of the technical, curricular, administrative, financial, and social dimensions of ICT use in education. Lack of time for professional development to learn about the advanced technologies and lack of time and effort to explore technologies such as the internet and social networking services were repeatedly reported by teachers as the significant challenge for using ICT in the teaching learning process. Teachers working in schools which are in rural areas were more likely to report lack of computers as a challenge and teachers in schools with high minority student populations were more likely to report out dated, unreliable computers as a big problem. Almost large proportion of educational software produced in the world market is in English also. In most countries where English is not the first language this represents a serious barrier in integrating ICTs use in education system. This situation limits the information access for some people who has lack or no ability in English language. Balancing educational goals with economic realities is a big challenge for integration of ICT in teaching

learning process because for integration of ICTs in education require large capital investments. According to **Yelland, N (2001)** integrating of ICTs in education requires establishment of infrastructural facilities, acquisition of technologies and their periodic updating, management and professional support services. Diversities of culture in different places in our country are also challenges in introducing ICT in education. In the words of **(Tinio, 2002)** said that one impeding factor of ICTs integration in education systems is the skill gap of people implementing it. The major promises of ICTs use in education systems of developing countries focus on training teachers in new skills and introducing innovative methods into the classrooms, 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 rural areas, initiation of smart classrooms with objectives to foster self-paced, easy assessed and self-directed learning through the applications of ICTs, and developing ICT policy for education and training.

## Conclusion

Information and communication technologies are influencing all aspects of life including education. The role of ICTs in the education is recurring and unavoidable. The rapid growth in ICT has brought remarkable changes in the contemporary society, as well as affected its adoption and integration by teachers in teaching-learning process. Making ICT integration programs effective and useful, administrators themselves must be competent and qualitative in the use of the technology, and they must have a broad understanding of the technical, curricular, administrative, financial, and social dimensions of ICT use in education. Thus there is a need of administrators and government authority support to making the integration of ICT in education a successful process. This paper will inspire some new thinking into ICT integration and the pedagogical practices expected from practicing teachers.

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