

Emerging Role Of Information And Communication Technologies In Modern Education: Issues & Concerns With Special Reference To Developing Economies

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Abstract

The advent of Information and Communication Technology (ICT) across all sectors of life has brought about a revolution in the modern age. The impact of ICT has also brought about a paradigm shift in the fields of teaching and learning. There has been a great deal of interest among policy makers and researchers about the applications, scope and challenges of ICT in education and subsequently a great deal of research has been carried out in this field over the last few decades. However, the research has been quite broad in scope across both national and international dimensions. This working research paper aims towards understanding the key issues related to the existing and emerging role of ICT in modern education with special reference to the developing economies like India, based on a thorough review of literature on the subject across dimensions which have acted as a barrier for developing economies to reap the full potential benefits of ICTs in education and development. It suggests the steps and initiatives that are crucially important for developing countries and their respective governments in this regard.

Keywords: Information and Communication Technology (ICT); Education; Emerging Technologies; Computer; Digital Media;

1. Introduction

Ever since its arrival into the domain of teaching and learning in a formal way more than five decades ago, the potential of IT for evolving the existing education system has been acknowledged by a major cross section of researchers, policy makers and practitioners across the globe (Khan, M. et al. 2012).

What essentially started with computers that were basically a tool for information processing to begin with, soon evolved to a new and potent tool for evolution of society with a prominent shift towards knowledge based dimensions (Bottino, R. M. 2004).

The same really accelerated with the ability of computing devices to support communications across the globe. The term IT in due course of time made way for ICT which encompasses all tools and technologies that may be used to process information and communicate it across the globe.

The subsequent sections address the role of ICT in education trying to analyse the various dimensions of the same.

1.1 ICT in Education: The Basics

At the very outset it should be very clearly understood that IT in its basic form does not directly support or accelerate the process of learning but it requires a thorough integration with the existing learning environment to realise its potential as a tool for enhancing learning and subsequently play a major role in education delivery, contents and assimilation (Tondeur, J et al. 2008).

The proper integration led to a new mode of education delivery through the use of ICT and it was initially referred to as Computer Aided Instructions (CAI). With the passage of time, the term CAI evolved in scope and in present times researchers refer to CAI as a generic term which includes the entire range of ways in which computers and other electronic devices are used in education (Wang, Q., & Woo, H. L. 2007).

With advancements in technology, various other terms came into being like electronic learning (E-Learning), mobile learning (M-Learning), Web based learning and multimedia learning to name a few.

With such exponential growth and innovations across various aspects concerning education it's very natural to expect ICT to enhance the learning process and change the existing concept of education. To some extent the same has been realised as well. However, whether the same has been satisfactory on a wider scale especially across developing economies like India or not, has been an issue of debates and discussions with varied view points on the subject among the research community.

The subsequent sections address the aforesaid issues.

1.2 ICT in Education: The envisaged benefits

Since inception and subsequently with future innovations and growth, it is widely agreed upon by the research community and policy makers alike that ICTs have emerged as a potent tool for extending educational services across the globe irrespective of geographical boundaries. In this context it is also expected that the spread of ICT would be inclusive across cultures, societies and regions (Haddad, W., & Jurich, S. 2002).

The major benefits resulting from greater use of ICT in education can be :

- i. Availability of resources 24x7 exploiting the various modes of delivery including radio, television and other mass media.
- ii. Access to resources being enhanced with the users no longer having to be reliant upon conventional media solely anymore like printed text etc.
- iii. Making learning a more interactive and engaging through the use of television, multimedia and other technologies to deliver contents which are more learner friendly.
- iv. Empowering the weaker students to acquire basic skills through practice facilitated by specialized software for the purpose.
- v. Enhancing the skill set of the instructors through customized programmes meant for them (Kozma, R. B. 2005; Williams, D., Coles, L., Wilson, K., Richardson, A., & Tuson, J. 2000).

1.3 Synthesis of ICTs in the Learning Environment: A paradigm shift

Research in the area has endorsed the fact that when ICTs are used appropriately in the conventional learning environment it not only brings about a pronounced enhancement in content delivery and user satisfaction but it also empowers the learners to appreciate and realise that using ICT it is possible to do what they did in a much better way (Lim, C. P. et al. 2003).

Using ICT tools the learning process definitely becomes more entertaining and interactive and further through revolutionary technologies like video conferencing, webinars and others, collaborative learning is the buzzword today with the teacher and the taught joining hands together to learn irrespective of geographical disturbances or barriers.

2. ICTs in Education: Issues in context of Developing Economies

Evaluation of spread, growth and success in terms of results of employing ICTs in education present a mixed picture when viewed in context of developed and developing economies (Kozma, R. B. 2005).

In the former the reach and impact has been greater as compared to the later. The various dimensions linked with the above scenario are discussed in the subsequent sections:

2.1 Ground Level contextual issues

There exists a great deal of disparity in context of the contents that are being delivered through ICT originating from the west in a majority of cases for the developing economies with issues like languages and levels of literacy not being given the importance that they merit (Avgerou, C. 2003).

The widespread differences in development levels are not paid attention and it is generally presumed by the masses that the interests of the west are not in tune with that of the developing economies. Further, the discrepancies in the economic, social and cultural dimensions are also not considered as far as contents originating from the west are concerned.

2.2 Other miscellaneous issues

Further, the diffusion of technology is much slower in developing economies as compared to their western counterparts. The education and learning model followed by the west is diametrically opposite from that of other regions and this gap is not being bridged in a customised way.

Despite the enormous benefits that ICTs offer the demarcations in terms of information-wealthy and information-deprived nations is a reality in today's times.

Among a multitude of factors responsible for the same, the following deserve special mention:

- i. Infrastructural issues that plague developing economies like inadequate supply of electricity, telecommunications networks etc.
- ii. Presence of a large majority of users having lesser degree of literacy than required to avail and exploit the ICT services for educational purposes.
- iii. Inability to cope up with the rapidly changing technological advancements
- iv. Inadequate information policies at the national levels (Avgerou, C. 2003; Bailey, A. 2009; Salmi, J. 2003).

3. ICTs in Education for Developing Economies: The way ahead

Taking into account the various aspects it is proposed that in context of developing economies the following measures if initiated will lead to better reach of ICTs across users in developing economies.

3.1 Greater emphasis on skill development

Countries having a greater number of technically well-equipped and skilled labour force have faster growth in reaping the benefits of technology. The skill levels at present of the work force in developing economies especially in India is not up to the mark (Indjikian, R., & Siegel, D. S. 2005).

A focus on skill development is much needed at this point of time with the rapid technological changes. Further, the low level of adaptation with technology in the present times also needs attention which has to be improved upon.

3.2 Greater and customised use of Multimedia

The levels of literacy being quite low in developing countries as compared to the developed counterparts, it is important that greater use of computer generated multimedia contents across schools may facilitate the enhancement of knowledge development and empower the recipients to raise their intellectual levels in tune with the incremental changes in technology.

3.3 Enactment of National ICT policy

Most developing countries lack the presence of an ICT policy for education and development and this aspect needs urgent attention. This is so because optimum progress in the field of utilizing ICTs for education and development will not be realized unless this is done. The governments in the respective developing countries have a visionary role to play in the process. The core areas for governments in developing countries to focus upon include:

- i. Making effective provisioning for providing access to ICT services across rural areas and marginalized sections of the society.
- ii. Working towards bringing about the appropriate regulations paying due emphasis to the necessary contextual issues to encourage private initiatives as well to provide the requisite communication infrastructure and services for ICTs diffusion across the respective nations and also expand the uses of new technologies.

- iii. Making necessary provisions to ensure that the incremental technological advancements are brought about to the access of remote areas and the poor.
- iv. Bring about an efficient monitoring mechanism and facilitate a two way information flow between the citizens and governments (Mutula, S. M., & Van Brakel, P. 2007; Wagner, D., Day, B., James, T., Kozma, R. B., Miller, J., &Unwin, T. 2005; Gichoya, D. 2005).

4. Conclusion

It is an inarguable fact that in the present scenario information and communication technologies have become an inseparable and indispensable component of education and development. However, in context of developing countries the present scenario with respect to the effective reach and utilization of the same is not satisfactory. It will not be an overstatement to mention that the gains from ICT driven education at present seems rather skewed in favour of the developed nations. To address the same developing countries need to affirm a strong sense of commitment towards research and pay required emphasis upon the development and enhancement of native languages or else the high degree of dependence upon developed nations for knowledge acquisition and development is bound to continue. There exists a need on part of the government leaders in the developing countries to adopt a strong and pro-active leadership approach and also bring about necessary policy interventions to empower the private sector at the local levels and facilitate smooth and effective implementation of ICT programmes at the grass-root levels.

It is expected that such measures will be instrumental in tackling the lack of ICT growth, penetration and resource utilization related issues in developing countries and also play a vital role in developing the needed trust and confidence to emerge as a serious stakeholder in the ICT revolution in the fields of education and development.

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