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INTEGRATION OF ICT INTO EDUCATION

Sivakumar R

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Dr. R. Sivakumar

Abstract

ICTs for education refers to the development of information and communications technology specifically for teaching / learning purposes, while the ICTs in education involves the adoption of general components of information and communication technologies in the teaching learning process. This article has sought to explore the role of ICT in education as we progress into the 21st century. In particular ICTs have impacted on educational practice in education to date in quite small ways but that the impact will grow considerably in years to come and that ICT will become a strong agent for change among many educational practices. Extrapolating current activities and practices, the continued use and development of ICTs within education will have a strong impact on: ICT and teaching learning process; quality of education; learning motivation, learning environment and ICT usage and academic performance.

INTRODUCTION

Information and communication technologies (ICT) have become commonplace entities in all aspects of life. Across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business and governance. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centred learning settings. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century.

ICT and Quality of Education

ICT increases the flexibility of delivery of education so that learners can access knowledge anytime and anywhere. It can influence the way students are taught and how they learn as now the processes are learner driven and not by teachers. This in turn would better prepare the learners for lifelong learning as well as to improve the quality of learning. In concert with geographical flexibility, technology-facilitated educational programs also remove many of the temporal constraints that face learners with special needs. Students are starting to appreciate the capability to undertake education anywhere, anytime and anywhere. One of the most vital contributions of ICT in the field of education is easy access to learning. With the help of ICT, students can now browse through e-books, sample examination papers, previous year papers etc. and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers all over the world. This flexibility has heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments. Wider availability of best practices and best course material in education, which can be shared by means of ICT can foster better teaching. ICT also allows the academic institutions to reach disadvantaged groups and new international educational markets. As well as learning at anytime, teachers are also finding the capabilities of teaching at any time to be opportunistic and able to be used to advantage.

Mobile technologies and seamless communications technologies support 24x7 teaching and learning. Choosing how much time will be used within the 24x7 envelope and what periods of time are challenges that will face the educators of the future. Thus, ICT enabled education will ultimately lead to the democratization of education. Especially in developing countries like India, effective use of ICT for the purpose of education has the potential to bridge the digital divide. India has a billion-plus population and a high proportion of the young and hence it has a large formal education system. The demand for education in developing countries like India has skyrocketed as education is still regarded as an important bridge of social, economic and political mobility.

Innovative use of Information and Communication Technology can potentially solve all the problems in education. Internet usage in home and workplace has grown exponentially. ICT has the potential to remove the barriers that are causing the problems of low rate of education in any country. It can be used as a tool to

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1 Assistant Professor, Education Wing DDE, Annamalai University
overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers. People have to access knowledge via ICT to keep pace with the latest developments. ICT can be used to remove communication barriers such as that of space and time. ICT's also allow for the creation of digital resources like digital libraries where the students, teachers and professionals can access research material and course material from any place at any time. Such facilities allow the networking of academics and researchers and hence sharing of scholarly material. ICT eliminating time barriers in education for learners as well as teachers. It eliminates geographical barriers as learners can log on from any place. ICT provides new educational approaches. It can provide speedy dissemination of education to target disadvantaged groups. ICT enhances the international dimension of educational services. It can also be used for non-formal education like health campaigns and literacy campaigns.

Use of ICT in education develops higher order skills such as collaborating across time and place and solving complex real world problems. It improves the perception and understanding of the world of the student. Thus, ICT can be used to prepare the work force for the information society and the new global. The experience of many teachers, who are early innovators, is that the use of ICT is motivating for the students as well as for the teachers themselves. The use of ICT can improve performance, teaching, administration, and develop relevant skills in the disadvantaged communities. It also improves the quality of education by facilitating learning by doing, real time conversation, delayed time conversation, directed instruction, self-learning, problem solving, information seeking and analysis, and critical thinking, as well as the ability to communicate, collaborate and learn.

ICT AND TEACHING - LEARNING PROCESS

The field of education has been affected by ICTs, which have undoubtedly affected teaching, learning and research. 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. In a rapidly changing world, basic education is essential for an individual to access and apply information. Such ability must find include ICTs in the global village.

Conventional teaching has emphasized content. For many years course have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change. In a rapidly changing world, basic education is essential for an individual to access and apply information. Such ability must find include ICTs in the global village.

The integration of information and communication technologies can help revitalize teachers and students. This can help to improve and develop the quality of education by providing curricular support in difficult subject areas. To achieve these objectives, teachers need to be involved in collaborative projects and development of intervention change strategies, which would include teaching partnerships with ICT as a tool. Three conditions are necessary for teachers to introduce ICT into their classrooms: teachers should believe in the effectiveness of technology, teachers should believe that the use of technology will not cause any disturbances, and finally teachers should believe that they have control over technology. As a consequence, the use of ICT will not only enhance learning environments but also prepare next generation for future lives and careers. Changed pool of teachers will come changed responsibilities and skill sets for future teaching involving high levels of ICT and the need for more facilitative than didactic teaching roles.

The integration of ICT into teaching and learning processes contributes to increase the interaction and reception of information. Such possibilities suggest changes in the communication models and the teaching and learning methods used by teachers, giving way to new scenarios which favour both individual and collaborative learning”. The use of ICT in educational settings, by itself acts as a catalyst for change in this domain. 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, the influence of the technology on supporting how students learn will
continue to increase. In the past, the conventional process of teaching has revolved around teachers planning and leading students through a series of instructional sequences to achieve a desired learning outcome. Typically these forms of teaching have revolved around the planned transmission of a body of knowledge followed by some form of interaction with the content as a means to consolidate the knowledge acquisition.

The use of ICT in learning settings can act to support various aspects of knowledge construction and as more and more students employ ICTs in their learning processes, the more pronounced the impact of this will become. Teachers generate meaningful and engaging learning experiences for their students, strategically using ICT to enhance learning. Students enjoy learning, and the independent enquiry which innovative and appropriate use of ICT can foster. They begin to acquire the important 21st century skills which they will need in their future lives.

**ICT AND LEARNING ENVIRONMENT**

ICT environments offer particular media-based qualities that are singular and specific compared to other types of media. They change the handling of knowledge and information, the representation, the perception, the communication and the production of knowledge. In contexts of teaching and learning this development is observed as enriches of heuristics by means of embroidered techniques of retrieval, program-based solutions for presentation and visualisation, socio-technical systems of knowledge management or collaboration, modelling virtualisation. Next to "small" solutions of manipulative or interactive techniques for explorative learning, support of cooperative learning there arise completely new learning scenarios in the context of automatic man-machine interfaces of learning and adaptive knowledge management within telemetric and virtual environments. Cognitive tools add to and enhance the pedagogical perspectives on the subject of teaching and learning.

These cognitive tools and technical competences are arranged preliminary to the pedagogical competences relating to ICT. In a deeper sense they have to be integrated into the pedagogical strategies. These pedagogical strategies range from moderation respective guidance of learning and work processes and the preparation of course concepts like tutorials to pedagogical meta-models. The pedagogical meta-modelling offers tools for the orientation and the arrangement of pedagogical designs, e.g. situated learning, problem-based learning, case-oriented studies and so on.

ICT presents an entirely new learning environment for students, thus requiring a different skill set to be successful. Critical thinking, research, and evaluation skills are growing in importance as students have increasing volumes of information from a variety of sources to sort through. ICT is changing processes of teaching and learning by adding elements of vitality to learning environments including virtual environments for the purpose. ICT is a potentially powerful tool for offering educational opportunities. It is difficult and maybe even impossible to imagine future learning environments that are not supported, in one way or another, by Information and Communication Technologies (ICT). When looking at the current widespread diffusion and use of ICT in modern societies, especially by the young the so-called digital generation then it should be clear that ICT will affect the complete learning process today and in the future. Learning environments need to reflect the potential uses of knowledge that pupils are expected to master, in order to prevent the acquired knowledge. In addition, teachers should stimulate pupils to engage in active knowledge construction. This calls for open-ended learning environments instead of learning environments which focus on a mere transmission of facts. ICT may contribute to creating powerful learning environments in numerous ways.

ICT provides opportunities to access an abundance of information using multiple information resources and viewing information from multiple perspectives, thus fostering the authenticity of learning environments. ICT may also make complex processes easier to understand through simulations that, again, contribute to authentic learning environments. Thus, ICT may function as a facilitator of active learning and higher-order thinking. The use of ICT may foster co-operative learning and reflection about the content. Furthermore, ICT may serve as a tool to curriculum differentiation, providing opportunities for adapting the learning content and tasks to the needs and capabilities of each individual pupil and by providing tailored feedback. ICT may fit into a spectrum of instructional approaches, varying from traditional to innovative. Another aspect which may of course influence the use of ICT is access to technology. This refers not only to the number of computers, but also to the placement of the equipment, e.g. in the classroom or in a computer room. It is essential that computers be
placed in the classroom, in order to maximize the opportunities for curriculum activity. ICT environment improves the experience of the students and teachers and to use intensively the learning time for better results. The ICT environment has been developed by using different software and also the extended experience in developing web based and multimedia materials. ICTs have an important role to play in changing and modernizing educational systems and ways of learning.

ICT AND LEARNING MOTIVATION

ICTs can enhance the quality of education in several ways, by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner centered environment. 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. Along with a shift of curricula from “content-centered” to “competence-based”, the mode of curricula delivery has now shifted from “teacher centered” forms of delivery to “student-centered” forms of delivery. ICT provides Motivation to Learn. ICTs such as videos, television and multimedia computer software that combine text, sound, and colourful moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students to listen and become more involved in the lessons being delivered. Some of the parents of the respondents opined that their children were feeling more motivated than before in such type of teaching in the classroom rather than the stereotype 45 minutes lecture. They were of the view that this type of learning process is much more effective than the monotonous monologue classroom situation where the teacher just lectures from a raised platform and the students just listen to the teacher.

ICT changes the characteristics of problems and learning tasks, and hence play an important task as mediator of cognitive development, enhancing the acquisition of generic cognitive competencies as essential for life in our knowledge society. 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, the influence of the technology on supporting how students learn will continue to increase. Learning approaches using contemporary ICTs provide many opportunities for constructivist learning through their provision and support for resource-based, student centered settings and by enabling learning to be related to context and to practice. The teachers could make their lecture more attractive and lively by using multi-media and on the other hand the students were able to capture the lessons taught to them easily. As they found the class very interesting, the teachings also retained in their mind for a longer span which supported them during the time of examination. ICT-enhanced learning is student-directed and diagnostic. ICT can engage and inspire students, and this has been cited as a factor influencing ready adaptors of ICT.

ICT AND ACADEMIC PERFORMANCE

ICTs in education need appeared to unravel the myth that surrounds the use of information and communication technology (ICT) as an aid to teaching and learning, and the impact it has on students’ academic performance. ICTs are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality. However, the experience of introducing different ICTs in the classroom and other educational settings all over the world over the past several decades suggests that the full realization of the potential educational benefits of ICT. The direct link between ICT use and students’ academic performance has been the focus of extensive literature during the last two decades.

ICT helps students to their learning by improving the communication between them and the instructors. The analysis of the effects of the methodological and technological innovations on the students’ attitude towards the learning process and on students’ performance seems to be evolving towards a consensus, according to which an appropriate use of digital technologies in education can have significant positive effects both on students’ attitude and their achievement. The students also learned more in less time and liked their classes more when ICT-based instruction was included. ICT increases student engagement, which leads to an increased amount of time students spend working outside class. 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 helps in providing a catalyst for rethinking teaching practice, improving educational outcomes and improving the quality of teaching and learning. ICT can help deepen students’ content knowledge, engage them in constructing their own knowledge, and support the development of complex thinking skills. ICTs have the potential for increasing access to and improving the relevance and quality of education. The use of ICT in educational settings, by itself acts as a catalyst for change in this domain. 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. The influence of the technology on supporting how students learn will continue to increase.

CONCLUSION

The adoption and use of ICTs in education have a positive impact on teaching, learning, and research. ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers. These possibilities can have an impact on student performance and achievement. Similarly wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching and improved academic achievement of students.

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