ROLE OF ICT IN HIGHER EDUCATION IN INDIA

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Globalization and the widespread application of Internet are associated with the radical changes, which have taken place recently. The widespread use of IT has accelerated the generation and transmission of information, making communication more efficient than ever before, Information technology is revolutionizing the way we communicate, work and play. Computers and the Internet are paving the way for a sweeping reorganization of business, from online procurement of inputs to greater decentralization and outsourcing. By increasing access to information, IT has made the working of markets more efficient. Globalization has further accelerated competition and innovation. It also speeds up the diffusion of new technology through trade and investment (Mamkoottam, 2003). The most important aspect of managing change is the choice of an appropriate strategy and its implementation. According to Carnall (1995), the stakeholders must be made aware of any change in strategy. It must also be ensured that they accept the implications of the change and that they are capable of coping with it. It is important to ensure that the stakeholders understand and believe in the vision, the strategy and the plan for implementing the change. They should believe that they are capable of developing the necessary skills to cope with the change and to take full advantage of it. They must be capable of developing new attitudes and ways of working. Beer and Nonria (2000) are of the view that most traditional organizations have accepted that they must either change or die. The process of ushering in change remains one of the most difficult things to accomplish. Most initiatives in introducing new technology, restructuring, downsizing or transforming corporate culture have had a poor success rate. Cornall (1995) states – "To achieve change, we must first recognize that change is desirable and feasible. We must get people to recognize that changes are needed." Ghoshal *et al.* (2000) have observed that after almost a decade, since India took the first tentative steps to economic liberalization in 1991, most Indian managers who have survived the traumas of industry overcapacity and restructuring, the onslaught of foreign competition, and the growing sophistication of customers and technologies, will quickly agree that companies all over the country, in all kinds of businesses, are in the midst of radical change.

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ICT is technology that supports activities involving information. Such activities include gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and communication. Information and Communication Technologies consist of the hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services. ICTs can be divided into two components, Information and Communication Infrastructure which refers to physical telecommunications systems and networks (cellular, broadcast, cable, satellite, postal) and the services that utilize those (Internet, voice, mail, radio, and television), and Information Technology that refers to the hardware and software of information collection, storage, processing, and presentation.

Information and Communication Technologies are defined as all devices, tools, content, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realizing the goals of teaching learning, enhancing access to and reach of resources, building of capacities, as well as management of the educational system. These will not only include hardware devices connected to computers, and software applications, but also interactive digital content, internet and other satellite communication devices, radio and television services, web based content repositories, interactive forums, learning management systems, and management information systems. These will also include processes for digitization, deployment and management of content, development and deployment of platforms and processes for capacity development, and creation of forums for interaction and exchange.

ICT and communications technology are the infrastructure and components that enable modern computing. ICT encompasses both the internet-enabled sphere as well as the mobile one powered by wireless networks. It also includes antiquated technologies, such as landline telephones, radio and television broadcast — all of which are still widely used today alongside cutting-edge ICT pieces such as artificial intelligence and robotics. The term *ICT* is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. ICT has no universal definition, as "the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis. The broadness of ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form, e.g. personal computers, digital television, email, robots. Advancements, standards, specifications and subsequent adoptions have led to major growth in the extensibility, interoperability and scalability of e-learning technologies. E-learning is fast becoming a major form of learning. Computer multimedia offers ideal opportunities for creating and presenting visually enriched learning environments. The latest technologies associated with virtual reality will also play an important role in not too distance future. The rapid development of Information and Communication Technology, particularly the Internet, is one of the most fascinating phenomena characterizing the information age. ICT powers our access to information, enables

new forms of communication, and serves many on-line services in the spheres of commerce, culture, entertainment and education.

Integrating ICT in teaching and learning is high on the educational reform agenda. ICT can moreover be seen as a way to merge into a globalizing world. It is assumed that ICT brings revolutionary change in teaching methodologies. The innovation lies not per se in the introduction and use of ICT, but in its role as a contributor towards a student-centered form of teaching and learning. Enhancing and upgrading the quality of education and instruction is a vital concern. ICTs can improve the quality of education in a number of ways. ICTs are also tools which enable and bring about transformation. ICTs which can be in the form of videos, television and also computer multimedia software, that merges sound, transcripts and multicolored moving imagery, can be made use of so as to make available stimulating, thought provoking and reliable content that will keep the student interested in the learning process. The radio on the other hand through its interactive programs utilizes songs, sound effects, adaptations, satirical comedies and supplementary collections of performances so as to induce the students to listen and get drawn in to the training that is being provided. Academics have taken to the use of computer in teaching much more readily than they adopted earlier audio-visual media. This is because the strength of computers is their power to manipulate words and symbols - which is at the heart of the academic endeavor.

There is a trend to introduce e- learning or online learning both in courses taught on campus and in distance learning. Distance education and eLearning is not necessarily the same thing and can have very different cost structures. Whether e-learning improves quality or reduce cost depends on the particular circumstances. ICTs in general and e- learning in particular have reduced the barriers to entry to the higher education business. ICT according to a number of commentators, enhance teaching, learning, and research, both from the constructivist and instructive theories of learning. Behind this increasing faith in the role of technology in higher education however, lies implied acceptance of technology by various commentators, either as neutral and autonomous, neutral and human controlled, autonomous and value laden, or human controlled and value laden.

The National Policy on Education 1986, as modified in 1992, stressed the need to employ educational technology to improve the quality of education. The policy statement led to two major centrally sponsored schemes, namely, Educational Technology and Computer Literacy and Studies in Schools (CLASS) paving the way for a more comprehensive centrally sponsored scheme – Information and Communication Technology at schools. Educational technology also found a significant place in another scheme on upgradation of science education. The significant role ICT can play in school education has also been highlighted in the National Curriculum Framework. Use of ICT for quality improvement also figures in Government of India's flagship programme on education, Sarva Shiksha Abhiyan. Again, ICT has figured comprehensively in the norm of schooling recommended by the Central Advisory Board of Education, in its report on Universal Secondary

Education. With the convergence of technologies, it has become imperative to take a comprehensive look at all possible information and communication technologies for improving school education in the country. The comprehensive choice of ICT for holistic development of education can be built only on a sound policy. The initiative of ICT Policy in School Education is inspired by the tremendous potential of ICT for enhancing outreach and improving quality of education. This policy endeavors to provide guidelines to assist the States in optimizing the use of ICT in school education within a national policy framework.

The Information and Communication Technology is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. When such technologies are used for educational purposes, namely to support and improve the learning of students and to develop learning environments, ICT can be considered as a subfield of Educational Technology. ICTs in higher education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support, student enrolment etc The increasing use of information and communication technologies has brought changes to teaching and learning at all levels of higher education systems leading to quality enhancements. Traditional forms of teaching and learning are increasingly being converted to online and virtual environments. There are endless possibilities with the integration of ICT in the education system. The use of ICT in education not only improves classroom learning process, but also provides the facility of e-learning. ICT has enhanced distance learning. The teaching community is able to reach remote areas and learners are able to access qualitative learning environment from anywhere and at anytime. It is important that teachers or trainers should be made to adopt technology in their teaching styles to provide pedagogical and educational gains to the learners. Successful implementation of ICT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring computer skills and obtaining software and equipment. ICT enabled education will ultimately lead to the democratization of education.

Information and Communications Technologies (ICT) is society's efforts to teach computer education in current and emerging atmosphere of globalized era. It teaches computing and communication devices, software applications that run on them and systems that are built with them. Today, everyone needs basic understanding of ICT to lead a comfortable life. Teachers need to be competent basic users of ICT technologies to play an important role of ICT in education. In order to be successful in their academic careers, they need to efficiently participate in developing modern technical society. Demand for skilled and competent labor is ever increasing in the contemporary globalised society. In this backdrop, access to quality in higher

education for all has emerged as determining factor of economic growth and development. In order to increase the access to higher technical education and improving its reach to the remotest parts of the country contribution of open and distance learning facilities is on the increase. In addition, it is catering to life-long learning aspirations and that too at affordable cost. The last two decades have witnessed the inclusion of developments in ICTs in higher education systems around the world. For India to emerge as a knowledge super power of the world in the shortest possible time it is imperative to convert our demographic advantage into knowledge powerhouse by nurturing and honing our working population into knowledge or knowledge enabled working population. Human Resource Development would certainly be the key for it to happen. ICT has become within a very short time, one of the basic building blocks of modern society. Many countries now regard in understanding ICT and mastering the basic skills and concepts of ICT as a part of the core of education. Fortunately the need of ICT as' a tool in technical education is available at this juncture and we wish to fully utilize it. In the education sector the national mission on education is emphasizing on the role of ICT is more to enhance the current enrollment rate in Higher Education from 13.5% at present to 21 % by the end of the 12th Plan period. Through ICT provides enormous opportunity for all the teachers and experts to pool their collective wisdom for the benefit of every Indian learner. It is obvious that emphasis on ICT is a basic need as it acts as a multiplier for capacity building efforts of educational institutions without compromising the quality and is also necessary to sustain a high growth rate of our economy through the capacity building and knowledge empowerment of the people and for promoting new upcoming multi-disciplinary fields of knowledge. With all parameters ICT act as a change agent in education and society by promoting a proper balance between content generations, research in critical areas relating to imparting of education and connectivity for integrating our knowledge with the advancements in other countries is to be attempted.

The increasing use of information and communication technologies has brought changes to teaching and learning at all levels of higher education systems to improve the quality. Traditional forms of teaching and learning are increasingly being converted to online and virtual teaching and learning. There are endless possibilities with the integration of ICT in the higher education system. The use of ICT in higher education not only improves classroom teaching learning process, but also provides the facility of e-learning. ICT has enhanced distance learning too. The outreach of teachers has increased while learners are able to access qualitative learning environment from anywhere and at anytime. Successful implementation of ICT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring computer skills and obtaining software and equipment. The use of ICT can play a variety of roles in education by changing the teaching and learning process. However ICT integration is not easy task. There are significant challenges in integrating ICTs use in higher education system rising from environmental, cultural and educational

faced by policy makers, educators, educational administrators and students in higher education. Thus there is a need of government support and the higher education institutions commitment to making the integration of ICT in education a successful process. The challenges to ICT usage among academic staff ranges from, lack of funds, less opportunity for training, lack of sponsorship by the college management, inability to acquire personal ICT facilities, inadequate ICT facilities at workplace, poor electricity supply, lack of ICT knowledge, insufficient time due to workload, lack of interest in learning, and lack of time for practice.

The adoption and use of ICTs in higher 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 higher 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 can foster better teaching and improved academic achievement of students.

References

Beer M. & Norria, N., (2000), Cracking the code of change, Harvard Business Review, May-June.

Carnall, C. (1995), Managing change in organizations, PHI, London.

Ghosal, S. *et al.* (2000), Managing radical change, Viking, New Delhi.

Mamkoottam, K. (2003, Labour and Change, Response Books, Delhi.