

A Study On Application Of Ict In Higher Education

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Abstract:

Higher education in the country is experiencing a major transformation in terms of access, equity and quality. This transition is highly influenced by the swift developments in information and communication technologies (ICTs) all over the world. The optimal utilization of opportunities arising due to diffusion of ICTs in higher education system presents a profound challenge for higher education institutions. At the same time the introduction of ICTs in the higher education has profound implications for the whole education process ranging from investment to use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy and quality. In this regard the paper addresses the opportunities and challenges posed by integration of ICTs in various aspects of higher education in the present scenario. The paper argues for addressing the issues through formulation of policies and strategies to accrue following potential future developments in ICTs and to integrate them in education sector to transform Higher education.

Keywords: Information and Communication Technology (ICT), higher education.

Introduction

Higher education systems have grown exponentially in the last five decades to meet the demands of quality education for all. This aspect has further gained momentum due to swift advancements in Information and Communication Technology (ICT). Demand for skilled and competent labour is ever increasing in the contemporary globalised society. Competition in every sector ranging from access to quality in higher education has emerged as determining factor of economic growth and development. In order to increase the access to higher education and improving its reach to the remotest parts of the country contribution of open and distance learning facilities is on increase. In addition, it is catering to lifelong 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.

Most important question, which comes in mind, is what should be the role of ICT in higher education system. The unprecedented changes have taken place in the society due to the impact of rapidly growing technological interventions. The delivery mechanisms and content of education in general and higher education in particular have been highly influenced and are under transition. These changes are creating enormous opportunities for improving the quality and efficiency of education on the one hand and on the other present challenges before us to design and develop mechanisms to harness the great potential of information and communication

technologies for the first section presents briefly the policy initiatives to encourage use of ICTs in promoting education in the country. Role of ICTs in higher education and the areas in which they can be integrated to play prominent role are discussed in the second section. Third section explores the challenges in expanding the role of ICTs for future developments in higher education.

Policy Initiatives for ICT in Higher Education

The Indian policy for developing ICTs as a vehicle for promoting education is visible since the use of satellite in early 1970s. The long road traversed till now has led to launching of dedicated satellite for education (EDUSAT). Major emphasis of the Policy was on expansion of IT education at school and university level including all national level institutions. Recognizing the existing strong educational infrastructure particularly at higher education level consisting of 18064 colleges/institutions and 378 universities, promotion of use and integration of ICTs in education would immensely benefit the socio-economic development of the country. The Plan objective called for profound transformation of higher education to improve its relevance and develop closer links with the world of work and ensure quality in its teaching, research and business and community extension functions including lifelong learning. Subsequently, the UGC initiated scheme called “ICT for teaching and learning process” for achieving quality and excellence in higher education. Network facilities with the help of ERNET, Ministry of Information and Technology, Government of India were installed at UGC office to promote a healthy work culture. Along with this UGC launched a mega programme namely, ‘UGC INFONET’, a network of Indian Universities and Colleges, by integrating Information and Communication Technology (ICT) in the process of teaching, learning and education management. The network is managed by ERNET India and almost all the universities are its members. Information for Library Network (INFLIBNET), an autonomous Inter University Centre of UGC is the nodal agency for coordination and facilitation of the linkage between ERNET and Universities. Training programmes for the manpower were conducted to manage the ERNET facilities and other aspects of systems including electronic subscriptions. In addition, UGC is encouraging creation of e-content / learning material for teaching learning process and management of education in colleges and universities.

Nevertheless, introduction of ICTs in the higher education has profound implications for the whole education process ranging from investment to use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy, quality, research and innovation. Therefore, the next section attempts to delineate the role of ICTs in higher education sector.

Role of ICT in Higher Education

Swift growth of ICTs is taking place all over the world. They have emerged as powerful tools for diffusion of knowledge and information. Their introduction and unprecedented use in the higher education has generated varied response. On the one hand there is acceptance of its potential benefits to knowledge creation i.e. field of research and its dissemination and on the other extreme it is feared that their use will further the digital divide/ inequity. It is inevitable that their increasing use in education system will also raise issues regarding what kind of technologies, in what quantity, at what level and for what purpose they need to be introduced.

The concerns such as who will manage this process develop policy guidelines and strategies also require consideration.

Nevertheless, the opportunities and challenges raised at different platforms can be categorized as the aspects relating to role of ICT for access and equity in education, role in management and efficiency in education, their role in pedagogy for quality learning and teaching at higher education level and in inducing innovations in approaches and programmes.

Access and Equity in Higher Education

Presence of ICT in education sector is increasing steadily. In spite of the fact that education is a social enterprise and teachers are the traditionally mainstay of teaching learning process, ICTs are very powerful tool for diffusing knowledge and information, a fundamental aspect of the education process. ICTs can play enormous role for improving access and equity in education sector in general and higher education sector in particular. The demand for higher education is expected to rise steeply in the forthcoming years under these influences. ICTs lend themselves as an ideal mechanism to bridge this gap by complementing both formal education system as well as distance learning systems. Distance learning systems in India include one central university namely IGNOU and 13 State Open Universities and 119 Institutes of Correspondence Courses in the conventional universities. Open and distance learning systems are dynamic and therefore can accommodate and absorb changes in development and delivery of programmes. 11th Plan proposed that “Consortium for Educational Communication Centre (CEC) will set up a technology enabled system of mass higher education by taking advantage of Vyas 24-hours Education Channel for one way communication, EDUSAT network for two-way communication and Internet for ‘any time anywhere’ education. The thrust areas will include strengthening of the existing media centres, setting up of new media centres in those States where no centres exist, strengthening of the concepts of packaging knowledge in video and e-content form in need-based subject areas, transforming the CEC and media centre into a virtual university system”. This typically reflects the importance of ICTs in accessing higher education. Thus, e-learning is emerging as an important strategy to provide widespread and easy access to quality higher education. E-learning is a generic term referring to different uses and intensities of uses of ICTs, from wholly online education to campus-based education and through other forms of distance education supplemented with ICTs in some way. Despite the efforts, introduction of e-learning is facing tremendous challenges ranging from rigid mindset to limited capacities and perceived uncertainties of infrastructure networks.

Efficiency in Higher Education Institutions

ICTs can play significant role in bringing efficiency in the universities/organizations. Networking of various departments and sections within the university/colleges and interuniversity networks established would lead to streamlining of university functioning. The ongoing programmes namely ‘UGC INFONET’ and INFLIBNET needs to be expanded further with the help on necessary financial resources to all the universities and colleges.

Contribution of ICTs in developing Management Information System for the Universities/ colleges is vital to ensure collection of information, its analysis for identifying trends, keeping track of resources/funding and their monitoring. Establishment of online MIS system provides good predictive management information, for instance ICAR is covering all agricultural universities, and UGC is in the process of developing. Availability of data and information for research and other academic analyses is either limited or is constrained due to gaps in information. Most of the universities/institution compiles and provides the data manually. Development of MIS would result in efficiency and transparency, accurate and timely information, would provide support for decision making, easy access to information, would help in enforcement of standards, results in reduced data redundancy and call for associated efforts. MIS for universities may include student information system, examinations system, alumni information system, placement information, faculty and staff information system, stores management system, documents management system, legal and estate management system, finance & accounting information system and other need specific modules.

Websites of the institutions developed would help in information dissemination and e-management (Acts and Statutes, Ordinances, Regulations, Right to Information, notices & tenders, advertisements for admissions and vacant positions, forms and Performa's, Press releases, archives), provide research related information (abstracts of PhD theses, their full text, research activities in the departments/centres, research by individual faculty members etc.), information of academic interest (academic events such as seminars, conferences, workshops, symposia, open research archive, outreach programmes), information or students (admission related information, courses of study, fee structure, hostel facility, scholarship, examinations, academic calendar, games and sports, extracurricular activities, placement)

Role of ICTs in Pedagogy for Quality Teaching Learning

Another most important dimension of higher education sector influenced by ICT integration is improving quality of teaching-learning. Also, the changes taking place due to globalization and internationalization attach premium to knowledge and information. Therefore, the integration of ICTs would not only help in promoting personal growth but also in developing "knowledge societies". The call of the hour is the need to provide education for everyone, anywhere, and anytime. Lifelong learning has become the driving force to sustain in the contemporary competitive environment. Therefore to strengthen and/or advance this knowledge-driven growth, new technologies, skills and capabilities are needed. In this regards however the research available is scarce, though the efforts for improving pedagogical practices/approaches are being undertaken in many countries. The scope includes development of infrastructures, content ware and trained personnel. Adoption of ICTs in education requires establishment of infrastructural facilities, acquisition of technologies and their periodic updating, management and professional support services. However, initial investments for the process of developing interface between technology tools and delivery of education are exorbitant.

Conventional teaching-learning processes are undergoing a paradigm shift. Focus of instruction is now on education programs/ practices that promote competency and performance. Such curricula tends to require access to variety of information sources, information forms and types; student centered learning settings based on information access and inquiry; learning environments centred or problem-centred and inquiry-based

activities, authentic settings and examples; and teachers as coaches and mentors rather than content experts. The shift towards development of educational programs whose curricula is competency and performance-based is well supported by and encouraged by the emerging instructional technologies. In addition, ICTs lend themselves strongly to educational programmes offered by open and distance learning universities and provide a choice to students who are otherwise unable to attend the campuses. Integration of ICTs would thus lead to quality learning settings not only within the classrooms/ institutions but also through online distance learning modules.

Another important aspect is development and availability of learning modules/ and content material. The development of e-content for encouraging and supporting independent learning has to be based on processes of constructing knowledge as promoted by constructivist theories. The emergence of ICTs has enabled the availability of knowledge contained in books, documents, research literature and other sources online for instance the online libraries.

Apart from enhancing student's learning experience, role of ICTs in capacity building/training of educational personnel has very large potential. National level institutes can provide leadership role in enhancing technical and managerial manpower in different disciplines through ICT networks and collaborations. Technology facilitated learning would result in preparation of staff regarding innovative pedagogic methods, new ways of learning and interacting, easy sharing of new practices among teaching community and result in widening the opportunities for their participation. The capabilities of competent and trained teachers/academic experts can be made available to larger audiences/ students through flexible and virtual settings.

Innovative Approaches for Teaching

ICTs have the potential to drive innovative and effective ways of teaching learning and research. The inclusion of learning tools, easier use of multimedia or simulation tools, easy and almost instant access to data and information in a digital form which allows for computations and data processing generates possibilities which were otherwise not feasible. The possibility to diffuse these innovations and complement the learning content to improve quality in higher education through innovative pedagogic methods is high. The focus on ICTs to back quality research through utilization of rigorous research methodology and in-depth analysis is the call of the hour.

ICT Challenges for Higher Education

ICTs are powerful tools having potential to transform the educational systems and opportunities for all students including those who are normally excluded by virtue of their special circumstances and special educational needs. Use of ICTs can break down some of the barriers that lead to underachievement, student disaffection and educational exclusion. However, when one looks around, in most of the colleges and universities across the country lack of harnessing of this potential is visible. In spite of the fact that planning and implementation of initiatives for enhancing role of technology in education have received priority, analysis of the existing scenario reveals number of factors which have been impeding the integration of ICTs in educational sector.

Developing E-Content

The establishment of ICT infrastructures and technologies alone is not sufficient to achieve the goals of ICT integration in the education system holistically; development of innovative and effective e-content is a fundamental necessity. Locally relevant and learner centered e-content/ applications are a priority. This has implications for generating capacity to facilitate institutions/ industry for e-content development and its marketing. The best practices in creation of e-content, its dissemination, criteria for selection and evaluation requires large scale networking among e-content users and producers. Issues pertaining to intellectual property rights in this multi-stakeholder activity are a major concern.

Conclusion

Diffusion of ICTs in Indian universities and colleges would respond to the twenty-first century demands. The contemporary higher education systems are aiming for acquisition of ICT skills as part of the core education system, provision of infrastructure/ fully equipped labs, professional assistance and other support needed to enhance quality of education. Application of ICTs in managing higher education institutions and use of the technology to homogenize quality of education in the highly diverse scenario across the colleges and universities established in the country would benefit many students. The arguments against the introduction of ICTs have pointed out that ICTs would benefit the urban and already advantaged sections of society at the expense of rural communities. The situation of limited budget allocations, which were barely enough to meet the salary expenditure leading to developmental activities taking a back seat, is improving. The time is right to push the driving forces hard as it is expected that implementation of initiatives to integrate ICTs bring about improvement in higher education organization and quality education through ICT would be realized.

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