Role of ICT in Higher Education in Global Era

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Abstract— Information and communication technologies (ICT) have become commonplace entities in all aspects of life. In the 21st century world is moving rapidly into digital media and information, so the role of ICT in education is very important .Higher education in the country is experiencing a major transformation in terms of access, equity and quality. ICT helps to share availability of best practices and best course material in education. ICT based education causes changes in the educational objectives in the conception of the teaching and learning process. In this regard the paper addresses the integration of ICTs in various aspects of higher education in the present scenario.

Keywords- Information and communication technologies (ICT), Higher Education, ICT Tools, Technologies, Policies and strategies.

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I. INTRODUCTION

Higher education in the country is experiencing a major transformation in terms of access, equity and quality in 21st century. Information and communication technologies (ICT) is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information. This broad definition of ICT includes technologies as radio, television, video, DVD, telephone, satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail (UNESCO, 2002). ICT encourage students to take responsibility for their own learning and offers problem centered and inquiry based learning which provides easy access and information based resources. It is necessary to acquire the ability to use technology as a tool to research, organize, evaluate and communicate information and the possession of the fundamental understanding of the ethical or legal issues and use of information [1] [4] [6].

II. ICT AND HIGHER EDUCATION

Success of ICT-based education depends upon the teacher's ability to keep pace with the developments since teachers are responsible for quality control, improvement of

learning and the aggregate effectiveness of the learning process [2]. The main role of teachers will not be to transmit information and culture, but rather to act as experts and leaders to motivate learning. An analysis of the integration of ICT in higher education involves the consideration of three important dimensions of innovation that have repercussions on university institutional culture and the professional development of lecturers such as changes in the educational objectives and in the conception of the teaching and learning process, changes in students' and lecturers' roles and changes in university organization [4] . The main role of teacher will not be to

transmit information and culture but rather to act as experts and leaders and motivating learning. In this sense teacher acts as a knowledge transmitter to a learning facilitator, collaborator, coach and knowledge navigator. Communication technologies to a great extent, replaced both the teacher and the text books by placing the learners at their own in the learning process [7].

ICT based learning is also called as e-learning. It is the acquisition and use of knowledge distributed and facilitated primarily by electronic means. It may include the use of web-based teaching materials and hypermedia in general, multimedia CD-ROMs, websites, discussion boards, collaborative software, e-mail, blogs, wikis, test chat, computer aided assessment, educational animation, simulations, games, learning management software, electronic voting systems and more, with possibly a combination of different methods being used. E-learning is an approach to facilitate and enhance learning through and based on both computer and communication Technology. It is used to support distance learning through the use of WANS (Wide Area Net Workers), and may also be considered to be a form of flexible learning where learning is possible in no time.

In web based education , there are different types of learning i.e. asynchronous and synchronous learning:

I) Asynchronous Learning : In asynchronous learning there is no mutual interaction of student with teacher. The educational module is to be installed from a particular web site and then you can unpack it offline on your machine. Online discussion forums, webcasting and collaborative document editing are a form of asynchronous learning.

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II)   Synchronous Learning : In Synchronous Learning there is synchronization among the students and teacher on-line. This synchronous web based education provides the most emerging concept of E-learning. It includes group interactive video, desktop interactive video, desktop applications and collaborative groupware.

III.   ICT TOOLS AND ONLINE RESOURCES

Appropriate use of ICT can catalyze the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21st century. When used appropriately, ICT enable new ways in teaching and learning. These new ways of teaching and learning constitute a shift from a teacher-centred pedagogy to one that is learner-centred. If designed and implemented properly, ICT-supported education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning. In India print media, audio media, audio-visual media, telecommunication and multimedia communication are the different medias which are used in educational transaction in higher educational institutes. Commonly used ICT tools and online resources are discussed below [5][6] :

I. Increasing access to Online Resources :
- Subscription to journals & e-books
- e-Learning Content and Mobile Learning Content
- Creating Portals
- EDU-SAT through Distance Mode
- Management of Library Automation
- Use of Blogs
- Wiki and Discussion Board to exchange idea asynchronously.
- Use of online chat session, virtual classroom or meeting to exchange idea synchronously.

II. Increasing access to ICT Facilities :
- Wireless Networks, Local Area Networks (LANs), campus backbone
- Acquisition of access equipment (computers, laptops, mobile phones)
- Video conferencing facilities

III. Teaching and Learning Activities with ICT tools :
- Lecture Presentation using PPT
- Instructional Designer
- Use of bulletin Boards
- Use of Web 2.0 technologies with tools like Blogs, Wikis, Rich Site summary
- Student feedback using ICT

- Collaborate with other faculty members of their speciality by means of ICT to prepare activities and learning resources.

IV.   MEASURES TO BE TAKEN FOR ICT-BASED EDUCATION :[4] [9] [10]

I. Quality of content development for ICT based educational material need to be checked. For this training should be conducted for educational content development specialist such as instructional designers, scriptwriters, audio and video production specialist, programmers & web developers.

II. Various courses should be launched by using ICT to utilize available resources in the college in a productive form.

III.There is a need of networking through Local Area Network(LAN), Wide Area Network (WAN) , Information and Library Network(INFLIBNET) which would lead to increased academic activities and research.

IV. ICT policy and master plan is a pre-requisite to successful mobilisation of funds, both internally and externally for implementation.

V. Recurrent cost of software licenses like applications for the main information systems, specialised applications, database platforms and desk top applications need to be considered.

V.   CONCLUSION :

Integration of ICTs in higher education is inevitable. In the coming years the thrust will be on the use of ICT to strengthen the system in the mode of open and distance learning . Higher education has to do a careful analysis of long term costs and benefits. Teacher has to adapt continuous professional development in the educational uses of technology. Digital libraries, access to online databases, networking, etc., can be enhanced through inter-institutional collaboration to ensure optimal usage of ICT expertise and resources. The wide adoption of ICTs calls for mindsets and skill sets that are adaptive to change. As the government increases its investments in ICT for education, continued efforts must be to ensure that investments in technology positively impact all aspects of education. ICT enabled education will definitely lead to the democratization of education.

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