INFORMATION AND COMMUNICATION TECHNOLOGY IN HIGHER EDUCATION: - REVIEW OF LITRATURE

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Abstract
Information and Communication Technology (ICT) is a vehicle to enhance the quality of the education. As the world is moving rapidly into digital media and information, the role of ICT in education is becoming more important in the 21st century. 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. ICT allows the academic Institutions to reach disadvantaged groups and new international educational markets. Within the past decade, the new ICT tools have fundamentally produced significant transformations in industry, agriculture, medicine, business, engineering and other fields. The new teaching methodologies involve the use of audiovisual, computer and telemetric tools on the part of lecturers.

Information and communication technologies (ICT) have become commonplace entities in all aspects of life. If we look to the scenario of the business world and its governance for last two decades, we will came to know that the use of ICT has basically transformed almost all the practices and procedures at all its spheres. Education is a socially oriented and concerned with the human development activity; the quality education has traditionally been concerned with strong and model teachers having high degrees of personal contact with the students. The use of ICT in education lends itself to more student-centred learning settings. As the whole world is moving fast into digital media, and information and communication, ICTs role in the process of education is becoming very vital and it will continue to increase and develop in the 21st century. In this paper, a literature review regarding the use of ICTs in education is provided. Influencing and efficient use of information and communication technology for the teaching and learning process with the use of ICT brings quality and accessibility of teaching and learning. Application of ICT in education process also motivates and adds the scholarly performance.

I. INTRODUCTION

Information and Communication Technologies (ICTs) 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 is potentially a powerful tool for extending educational opportunities and can provide remote learning resources. ICT encourage students to take responsibility for their own learning and offers problem centred and inquiry based learning which provides easy access and information based resources. It is very essential to possess the ability to use technology as a tool for research, to organize, to evaluate and to communicate information and acquiring of the fundamental

understanding of the ethical or legal and ethical matters and the use of information. Today, knowledge of networking, communication and retrieval technologies has become core to the profession. 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. The main role of teachers will not be to transmit information and culture, but rather to act as experts and leaders to motivate learning. This paper highlights the implementation of ICT policy in higher education and further explores the impact of ICT in teaching learning process in higher education, followed with benefits and challenges of ICT in higher education.

II.   REVIEW OF LITERATURE

1. According to Daniels (2002) ICTs have become within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. However, there appears to be a misconception that ICTs generally refers to 'computers and computing related activities'. It is important to note that the computers and its application plays a vital and crucial role in today's information management, however other technologies and /or systems consists of the phenomenon of communication and information are generally regarded as information and communication technology.

2. S. Pelgrum and Law (2003) the studies conducted b**y** Pelgrum and Law, at the end of 1980s revealed that, the term 'computers' was replaced by 'IT' (Information Technology) by underlying the importance from computing technology for chartering to accumulate and recover information. This was followed by the introduction of the term 'ICT' (information and communication technology) around 1992, when e-mail started to become available to the general public (Pelgrum, W.J., Law, N., 2003).

3. United Nations Report (1999) clearly states that ICTs involve the provision of internet service, information technology equipment and services, commercial information providers telecommunication services and equipments, , libraries and documentation centres, media and broadcasting, , network-based information services, as well as other related information and communication activities.

4. UNESCO (2002) report stated that, information and communication technology (ICT) may be considered as the special combination communication technology and informatics technology with other such concerned technology. The different types of ICT products which are available and having pertinent to the teaching – learning process, such as teleconferencing, email, interactive voice response system audio conferencing, interactive radio counselling, television lessons, radio broadcasts, as well as audio cassettes and CD ROMs etc have been used in the education process for various purposes.

5. As Jhurree (2005) states much has been said and reported about the impact of technology, especially computers, in education. At the beginning the computers were especially used to teach computer programming However, due to the development of the microprocessors in the decade of 1970s, it made affordable to use micro computers into the educational institutions at a rapid rate. Application of information technology and use of has become extensive in the various sections of the society which have led to have a care regarding the need for computing skills in day to day life.

 6. Hepp, Hinostroza, Laval and Rehbein (2004) claim in their paper "Technology in Schools: Education, ICT and the Knowledge Society" that ICTs have been utilized in education ever since their inception, but they have not always been massively present. When the computers were not completely used in the learning

of conventional subject matter, there was a generally accepted learning –teaching process would need to make the people to learn lifelong a society based on the increased interest in ICT (Pelgrum, W.J., Law, N., 2003). The accessibility of internet based services and the exchange of information through electronic mail and World Wide Web are the milestones of the 1990s decade that is an era of computer communication. At the same time the CD-ROM became the standard for distributing packaged software (replacing the floppy disk). As a result educators became more focused on the use of the technology to improve student learning as a rationale for investment. Thinking in connection with the use of ICT for teaching learning process is based upon the relation between computer technology, learning and educational institutions. When the actual use of computers in schools was first suggested, the more effective plan was that students would be 'taught' by computers (Mevarech & Light, 1992).Accordingly it was regarded that the computer would 'acquire ' the teacher's job as how the robots may acquire the welders job.

7. Collis (1989) refers to this as "a rather grim image" where "a small child sits alone with a computer". However, the use of information and communication technologies in the educative process has been divided into two broad categories: ICTs for teaching – learning process is concerned with the development of information and communications technology especially for education purposes, yet the ICTs in teaching – learning process consists of the general factors of information and communication technologies in the education process.

III.   ICT IN HIGHER EDUCATION

The goal of ICT Policy in teaching and learning in higher education is preparing youngsters to involve actively and innovatively in the establishment, maintenance and growth of a knowledge society marching to all round economical and social development of the country and bringing global competitiveness. The introduction of ICT in the higher education has profound implications for the whole education process ranging from investment to the use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy and quality.

1) Student-centred Learning: The technology that has been provided by ICT has a capacity to encourage and promote the change in the nature of teaching learning process from teacher directed teaching to student-centric learning. When many students use computers as source of information and cognitive tools, the application of ICT will be on the wide scale and will help to support their studies.

2) To Support Constructive Knowledge: Approaches of learning which use the technique of ICTs during the same period provide various opportunities to support constructive learning and teaching. This helps for providing resource based and learner centred platform by making it possible to learn which is related to more practical and which have a concerned with the   context.

3) Anyplace Learning: With the help of ICT, educational institutions can offer programs at a distance mode. Today many students can use this facility through technology-facilitated learning settings.

4) Anytime Learning: Technology-facilitated educational programs remove the geographical barriers. Students are able to undertake education anywhere, anytime and at any place. The learners in large scale who were suppressed by the other responsibilities have been provided with much elasticity for learning opportunities.

5) Information Literacy: The growing use of ICT as tools of everyday life have seen the pool of generic skills expanded in recent years to include information literacy. It is highly probable that due to the future

developments and growth in technology, it will help further for information literacy.

IV. BENEFITS AND CHALLENGES OF ICT

Important benefit of use of ICT in teaching and learning process that it provides vital and different services such as live lectures, teaching video clips, lecture notes, laboratory manuals and laboratory assignments , the classroom material which is digitally recorded, links to course specific websites, lectures for later viewing, and re-viewing , online tutorials, virtual office hours for teacher-student consultations supplementary readings. Virtual libraries are especially a great gift to students as they brings down the costs of purchasing too costly reference books, periodicals on research and reference material. Tools are available on the Internet to assist both teachers and students to manage writing assignments to detect and avoid the pitfalls of plagiarism and copyright violations. ICT improve the quality and the quantity of educational provision. To Introduce ICT system in the teaching learning process in the less developed and developing countries , it must be considered that there should not be more cost of installation and , investment in hardware and software's as well as in training human skills. Technology-facilitated learning has proven to be quite expensive in all areas of consideration, infrastructure, course development and course delivery.

V. FINDINGS

From the above discussion, it is clear that the use of ICT in teaching and learning process is a horizontal activity that necessitates elements from different verticals to come together to enable meaningful educational experiences for the students. Following are some of the important factors which may require to be covered in the policy for ICT in education:

1. Capacity Building Content/Digital Resources
2. Content of ICT Digital Resources
3. Regulatory and monitory Framework
4. ICT for managing education
5. Execution of Plans
6. Arrangement of finance and its allocation
7. Support from the State
8. Demand from the people for the use of ICT
9. Incorporating the change in learning Processes
10. Faculty Development and Training Programmes.
11. Digital Resources

VI. CONCLUSION

Integration of ICT 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 opens and distance learning. The sector-wide and institutional higher education ICT policy must recognise the specific role of ICT in increasing the research capabilities and supply enough physical resources of ICT for strengthening the capacity. Digital libraries, access to online databases; networking etc. can be enhanced through inter-institutional collaboration to ensure optimal usage of ICT expertise and resources. EDUSAT and DTH will be promoted, wherever feasible, to enhance access

to information and resources. A broadcast Server for digital storage, retrieval and transmission of broadcast quality educational audio-video programmes will be deployed. 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 ICT calls for mindsets and skill sets that are adaptive to change. In spite of the generative role framed through the policy regarding higher institutions in the developed countries, there are controversies regarding how to have a balance between long term academic research and with the short term technology transfer projects. The ICT policy and planning must recognise the deliberate role of ICT in increasing research capabilities and supply the adequate infrastructure supported by the capacity building about institutional and sector wide higher education. Teacher has to adapt continuous professional development in the educational uses of technology. Accordingly, it is important on the part of the teachers that they should be very careful to use the ICT in leaching and learning process especially for the students to make them to learn different context. The education process coupled with ICT must focus on the students , make them to learn with interactive by using ICT, offer various degrees of control, make them to adapt with their personal interests, preparing them for promoting collaborative learning and developing freedom in their study and work.

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