The Role of ICT (Information & Communication Technology) in Higher Education

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Abstract

Since time immemorial, education has been an important instrument for social and economic transformation. Currently, higher education in India is undergoing a great transformation in terms of access, equity and quality. This transition is strongly influenced by the rapid evolution of information and communication technologies (ICT) around the world. The introduction of ICT in higher education has profound implications for the whole educational process, especially when it comes to solving key problems of access, equity, management, efficiency, pedagogy and quality. At the same time, the optimal use of opportunities arising from the diffusion of ICT in the higher education system is a major challenge for higher education institutions. In this context, the paper addresses the opportunities and challenges of integrating ICTs into various aspects of higher education in the current scenario and will seek to determine the concept, uses and benefits of ICTs in higher education. as well as identifying the role of ICT in higher education. The paper will attempt to situate the different challenges / obstacles to the implementation of ICT in higher education.

Keywords: ICT, Higher Education, Role, Barriers

Introduction

Today, technology has become an integral part of human life, and as a result, the world is rapidly moving towards the digital age. In recent years, the procedures and practices of almost all forms of business or service or government have changed due to the exploitation of the latest technologies and media. In the same vein, the Indian educational landscape has rapidly adopted information and communication technologies (ICT). This transformation moves the teaching-learning process in universities and universities to the next level. Today, technological tools are becoming increasingly important in providing students with education by helping them learn, communicate, collaborate and study on and off campus. The use of information and communication technologies (ICTs) leads to student-centered learning and has transformed the method of dissemination of knowledge. ICT has not only changed the way universities / faculties play their role in teaching, learning and research. In addition, they have modified the knowledge creation model for knowledge dissemination to the application of this knowledge.

Information and communication technologies (ICTs) are a cornerstone of modern society because they provide students with a very solid learning environment that can help them use their acquired knowledge in an autonomous and constructive way.
Therefore, only through education and the integration of ICT in education can students learn to participate in the growth process in this era of rapid change.

Information and Communications Technology (ICT)

An information and communication technology (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).

Objectives of the Study

As per present study on The Role of ICT (Information & Communication Technology) In Higher Education. Researcher has framed the following objectives:

1. To determine the Concept, Uses and benefits of ICT in Higher Education.
2. To identify the role of ICT in Higher education.
3. To study the Various Challenges/ Barriers to the Implementation of ICT in Higher Education.

Research Methodology

The present study is an empirical study based on Secondary data. The secondary data have been collected from various websites, published books, Journals, Periodicals etc.,

Use of Information & Communication Technology (ICT) in Education

In the Process of Education the Information and Communication Technology (ICT) can be used in the following ways:

- **Informative Role:**

In an Informative role ICT provides huge amount of data in various forms such as audio, video, documents.

- **Situational Role:**
ICT makes simulation and virtual reality possible as a result creating situations that the students has to face in real life.

- **Constructive Role:**
  
  In a Constructive role ICT acts as a tool to manipulate the data and generate analysis.

- **Communicative Role:**
  
  As a Communicative tool ICT helps to clear the Communication Barriers namely, space and time.

**Benefits Information and Communication technology (ICT) in Education sector**

Information technology is changing the concept of the traditional method of research and has led researchers to conduct more feasibility and reliability studies. Information technology is changing the concept of the traditional method of research and has led researchers to conduct more feasibility and reliability studies. Information technology is changing the concept of the traditional method of research and has led researchers to conduct more feasibility and reliability studies. Information technology is changing the concept of the traditional method of research and has led researchers to conduct more feasibility and reliability studies. In today's information society, people need to access knowledge through ICT to keep up with the latest advances.

In such a scenario, education, which still plays a critical role in a country's economic and social growth, becomes even more important. Education not only increases the productive capacities of the individual, but also their power to earn a living. It gives them a sense of well-being and the ability to absorb new ideas, increase social interaction, access better health, and offer many other intangible benefits. The different types of ICT products available and relevant to education, such as teleconferences, e-mail, audio conferences, TV lessons, radio broadcasts, interactive radio boards, interactive voice response system, tapes audio and CD-ROMs have been used in education for different purposes (Bhattacharya and Sharma, 2007).

**The Four Rationales for Introducing ICT in Education**

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<th>Rationale</th>
<th>Basis</th>
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<td>Social</td>
<td>Perceived role that technology now plays in society and the need for familiarizing students with technology.</td>
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<tr>
<td>Vocational</td>
<td>Preparing students for jobs that require skills in technology.</td>
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<td>Catalytic</td>
<td>Utility of technology to improve performance and effectiveness in teaching, management and many other social activities.</td>
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<tr>
<td>Pedagogical</td>
<td>To utilize technology in enhancing learning, flexibility and efficiency in curriculum delivery.</td>
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Source: Cross and Adam (2007)

According to UNESCO (2002) the application of ICT could benefit the following:
Information technology changes the concept of traditional method of research work and made the researchers to do more feasibility and reliability studies. Information technology changes the concept of traditional method of research work and made the researchers to do more feasibility and reliability studies. Information technology changes the concept of traditional method of research work and made the researchers to do more feasibility and reliability studies.

<table>
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<th>Benefits Of Information And Communication Technology (ICT)</th>
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<td><strong>Students</strong></td>
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<td>Increased access</td>
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<td>Flexibility of content delivery.</td>
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<td>Combination of work and education.</td>
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<td>Learner-centred approach.</td>
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<td>Higher quality of education and new ways of interaction.</td>
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**Role of ICT In Higher Education**

The role of ICT in higher education has a profound impact on the whole educational process, from investment to the use of technologies to solve problems of access, equity, management, efficiency, pedagogy, quality, research and innovation. As a result, by providing improved services to faculties and students, and by enriching the learning process, the application of ICT offers competitive advantages to colleges / universities. Rapid ICT growth is taking place around the world. They have emerged as powerful tools for the dissemination of knowledge and information. Its
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unprecedented introduction and use in higher education has generated mixed responses. Opportunities can be categorized as aspects related to the role of ICTs in access and equity in education, its role in learning pedagogy and quality education at the level of higher education and in education. induction of innovations. in approaches and programs

The main role of ICT in higher education is as follows

1. Role in the teaching and learning process: In order to compensate for the shortage of teachers in higher education, the education sector has planned to develop a knowledge repository for multidisciplinary topics where experts can share their knowledge of modular programs. This can be done through networks of institutions, the creation of virtual laboratories, the creation of databases, access to expert conferences and technological developments in industries and research organizations, etc. In addition, to improve the teaching and learning method, conventional teaching methods must be replaced by innovative methods, ie the use of old teaching methods and chalk will be replaced by technological teaching methods, animations, video clips, LCD projectors, etc. improve students' learning skills and also cover concepts in a shorter period of time.

2. Role in administration: for effective use of existing resources and to simplify administrative tasks (eg student administration, personnel administration, general administration, etc.), ICT plays a vital role in the administration institutions. education by reducing red tape and replacing manual maintenance of record keeping with electronic record keeping, making it easy to retrieve information for students, staff and, in general, in a fraction of a second.

3. Role in research: To improve the quality of higher education in India, there is a need to integrate ICT into education, as more and more people enroll in research related to various fields become necessary. an hour ago. assimilate the use of ICT in research work to improve the quality of research by demonstrating links across the world in all subjects with social networks. In addition, it saves the time, money and effort of researchers. Collection and analysis is also facilitated by ICT as it provides a number of related programs that can quickly perform complex calculations to obtain accurate and reliable data. Information technology is changing the concept of the traditional method of research and has led researchers to conduct more feasibility and reliability studies.

4. Change Agent in Higher Education: In the role of change agent in higher education. As an agent of change, ICTs are transforming the image of the traditional classroom defined by desktops, laptops, pencils and blackboard into an online forum of computers, software and the Internet that intimidates many people. teachers who are accustomed to face-to-face in traditional classroom. The concept of learning also modified by the use of ICT, learning is now focusing more on students focused on learning teaching, where teachers act as coaches, mentors and knowledge facilitators any learning environment focuses on real-time problem-solving methods. Learning is an active process of building knowledge instead of acquiring knowledge and this
instruction is the process by which this construction of knowledge is supported instead of a process of knowledge transfer (Duffy & Cunningham, 1996).

**Barriers to the implementation of ICT in higher education:**

There are several obstacles or factors that hinder the growth of ICTs in education. Some of these obstacles are:

1) **Infrastructure factors:** Underdeveloped countries have a significantly lower level of ICT diffusion and use than in developed countries. In addition, underdeveloped countries are also limited by scarcity of resources, slow systems and Internet connectivity, as many countries with large rural populations still have to significantly modernize their communication infrastructure.

2) **Government policies:** The successful adoption of ICTs for education depends to a large extent on policies aimed at popularizing ICTs in the education sector. Several governments have placed importance on radio, television and computer science, networking and online education.

3) **Political Factors:** The political power of any nation greatly affects the introduction of any new technology. If political leaders favor technology, it will flourish. It is also important that democratic countries wishing to share information have made progress in ICT adoption, while in regions dominated by dictatorship or the autocratic form of government, ICT may not be of their importance, and the state can have more control over the environment.

4) **Economic Factors:** Cost is another important issue that determines the guidelines for the adoption and growth of communication technology. Thomas (1987) highlighted four important economic considerations that could affect the adoption of ICTs in a country:

   - The financial strength of the company.
   - Attitude of politicians.
   - Budget allocation for technology.

   Profitability of the technology. Underdeveloped countries often lack the funds to make reasonable investments in ICT. Barton and Bear (1999) found that one of the limitations was access to capital for equipment or raw materials, a shortage of adequately qualified staff; and lack of experience in effective business management or business model, regardless of whether or not ICT is being used. Underdeveloped countries depend on substantial foreign aid for ICT development. Therefore, the profitability of an ICT is another major problem that determines its growth. Developed countries must ensure that they adopt technology that is easily accessible to them and meets the needs that are expected of them.

5) **Cultural factors:** Specific contextual and socio-cultural variables such as gender, age, caste, social class, ethnicity, and educational attainment affect access to and use of ICT. These factors need to be recognized and analyzed to ensure that ICT-based initiatives are properly implemented. Entrepreneur, Fulk et al. (1986) stated that
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culture is a complex set of knowledge, beliefs, arts, morals, laws, customs, and any other abilities and habits acquired by a human being as a member of society. In addition, Thomas (1987) identified the cultural element of languages as one of the most important factors in the implementation of ICTs in underdeveloped countries. Elements of human factors, such as language barriers, cultural differences, gender issues and the nature of society, need to be addressed to meet the challenge. Radio and television programs, computer programs and printed texts are created in different countries with different cultural backgrounds. As such, these programs may not succeed in impressing students from another country.

6) Other factors: The most notable obstacle to the use of ICT in education in underdeveloped countries seems to be the political will of the people in the corridors of power. The allocation of sufficient funds for the education and ICT sector does not seem very attractive to leaders. The priority of budget allocations in Third World countries has been attributed primarily to defense forces rather than education. The level of knowledge of the teacher about the use of technology is another concern. Then there is a gap between different sectors of society such as rural and urban, working in the computer industry or other services and easily accessing computer products, social and cultural factors where women are excluded from the revolution and Expect them to attend the domestic culture is considered one of the essential obstacles to social and economic development.

Limitations/ Drawbacks-cum-Challenges to Using ICT in Education :

While the use of ICTs in education has clear benefits, ICTs also pose challenges. First, the high cost of acquiring, installing, operating, maintaining and replacing ICTs. Although potentially of great importance, the integration of ICT in education is still in its infancy. The introduction of ICT systems for education in developing countries has a particularly high opportunity cost because their installation is generally more expensive in absolute terms than in industrialized countries, while on the contrary, alternative investments (by for example, buildings) are relatively cheaper (UNESCO, 2009).

The four most common mistakes in the introduction of ICT in education are: i) the installation of a learning technology without reviewing the needs of students and the availability of content; ii) impose top-down technology systems without involving teachers and students; (iii) use inappropriate content from other parts of the world without customizing it appropriately; and (iv) produce content of poor quality and poorly adapted to the technology used (UNESCO, 2009). Although ICTs offer a number of benefits, the use of ICTs in education entails certain risks that need to be mitigated through appropriate mechanisms. They are:

- This can create a digital divide within the classroom as students who are more familiar with ICT will get more benefits and learn faster than those who are not technologically savvy.
- It can divert attention away from the main objective of the learning process towards the development of ICT skills, which is the secondary objective.
• This can affect the teacher-student liaison process, as ICTs become a communication tool instead of a face-to-face conversation and, as a result, increase the transactional distance.
• Also, because not all teachers are ICT experts, they can be inflexible in updating course content online, which can slow student learning.
• The risk of plagiarism is high because students can copy information instead of learning and developing their own skills.
• There is a need to train all ICT stakeholders.
• The cost of hardware and software can be very high.

Conclusion

The increasing use of information and communication technologies (ICTs) has introduced changes in teaching and learning at all levels of higher education systems (HES), leading to improvements in quality. Traditional forms of teaching and learning are becoming more and more virtual and online environments. The possibilities of integrating ICT into the education system are endless. The use of ICTs in education not only improves the learning process of teachers in the classroom, but also offers the ease of online learning. ICT has improved distance learning. The teaching community can reach remote areas and students can access the qualitative learning environment from anywhere and at any time. It is important that teachers or trainers adopt technology in their teaching styles to provide educational and educational achievements to students.

The successful implementation of ICTs to drive change has more to do with influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring IT skills and getting software and equipment. The education made possible by ICTs will eventually lead to the democratization of education. Barriers affecting the use of ICT in higher education are partly financial and technological, but to a greater extent result from the lack of political training, implementation and the definition and collaboration of inter-institutional functions. Restrictions also exist because of the difference between the need for access and effective access, and between the market demand for trained staff and the actual courses offered. ICT penetration in higher education institutions is very limited, with a limited number of universities having ICT facilities for education. Initiatives to increase penetration are generally hampered by shortages of funds. There is a big difference between market demand and ICT training courses offered. On-the-job training is provided to a limited extent, but given the limited presence of software companies in the country, it is difficult to provide long-term training.

Due to the many limitations of the system, there is an alarming trend towards out-migration of ICT specialists. It would be an advantage for the country that these institutions can meet the demand for ICT training, but they focus their efforts on software development. In addition to the lack of qualified personnel, there are predictable limits that most developing countries face. These include lack of adequate infrastructure, cost of access to existing infrastructure, lack of content, especially in the local language and, perhaps most importantly, lack of capital to invest in ICT development.
References