

## RESEARCH ARTICLE

# AN OVERVIEW ON ROLE OF ICT IN HIGHER EDUCATION

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### ABSTRACT

This paper deals with the focus on the role of ICT in higher education for the 21st century. Specifically the paper has contended that ICTs have affected on educational practice in education training to date in very little ways yet that the effect will develop impressively in years to come and that ICT will turn into a solid specialist for change among numerous instructive practices. It is obvious from the study that use of ICT in higher education is expanding quickly in different states of India. A standout amongst the most widely recognized issues of utilizing Information and Communication Technologies (ICTs) in education is to base decisions with respect to innovative conceivable outcomes instead of educational needs. In developing nations where higher education is laden with genuine difficulties at several levels, there is expanding strain to guarantee that innovative potential outcomes are seen with regards to instructive requirements. The utilization of ICT in training fits more understudy focused learning settings and regularly this makes somewhere in the range of pressures for a few educators and understudies. Be that as it may, with the world moving quickly into computerized media and data, the part of ICT in higher education is ending up increasingly imperative and this significance will proceed to develop and create in the 21st century.

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## INTRODUCTION

Education is one of the real supporters of financial prosperity and advance of humanity. Education is turning into a noteworthy wellspring of upper hand when worldwide financial rivalry is developing more honed. It encourages financial development and causes a country to attract jobs and investments. Education, in addition, is one of the prime factors that decide lifetime profit. Importance of education in all kinds of different backgrounds has expanded with the help of information and communication technologies (ICT). Amid the previous 20 years, the utilization of ICT has generally changed the working of education training. In the present condition conscious world, the significance of education and adequacy of ICT as a social need has been expanding. Social acceptability of information and communication tools is important to enhance the mobility in the general public and increment the pitch for value and social equity (1).

The emphasis on higher education in India can be understood by the number of universities currently present in India and the quality of education they provide. As of February 2017, there are 789 universities, 37,204 colleges and 11,443 stand-alone institutions in India, as per the latest statistics from the UGC website. These numbers would only have increased by now. The Government of India has taken ICT activities bigly and has set out a National ICT approach, which is reflected and executed through different Government Departments and Ministries. It is being executed through enthusiastic exercises of National Informatics Center (NIC) and encouragements from University Grants commission (UGC), All India council of Technical Education (AICTE) and Department of Science and Technology (DST) all through the nation. National Association of Services and Software Companies (NASSCOM) have likewise assumed an essential part in the detailing of these strategies. The last two decades have witnessed the inclusion of developments in ICTs in higher education systems around the world. Even then the challenge to develop a higher education system that is flexible and dynamic so as to holistically integrate the technology in the management and delivery of learning programmes is daunting. The first section presents briefly the present profile of higher education in India. The objectives represent in the second section.

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The third section explores the growth of higher education in India. In Last section, we present benefits and challenges of ICT (2).

## GROWTH OF ICT IN INDIA

Contribution of ICTs in various measurements of the Indian higher education framework is occurring at a quick pace. Utilization of audio visual aids, radio, TV to help education and broadcasting of information for nation development is not new. The utilization of satellite in higher education began as Satellite Instructional Television Experiment (SITE) in 1975-76. This prompted the foundation of Central Institute Of Educational Technology (CIET) and State Institute Of Educational Technology (SIET) studios for generation and transmission of school situated projects, start of the nation-wide classroom of the University Grants Commission (UGC) with Consortium for Educational Communication (CEC) as the nodal office by making educational media resource centers (EMRCs) and audio-visual resource centers (AVRCs) in several universities and colleges. Presently these programmers" are proceeding as Vyas Channel upheld by the CEC and different EMRCs, Gyandarshan II of the IGNOU, Open School and NCERT communicate and broadcast channel. Educational Satellite (EDUSAT ) was conceptualized to meet the communications requirements of the education sector. The Eleventh five year plan is further giving impetus to use of ICTs in education by setting up a National Mission in Education through ICT. In this regard, use of ICTs would contribute significantly to enhance the access and quality of education but at the same time it may generate situations, which warrant attention. For instance to promote technology driven education and open and distance learning the country launched a dedicated satellite EDUSAT on September 20, 2004. It was expected that EDUSAT would bring both quantitative and qualitative revolution in education. However, the quantitative expansion appears to have been achieved in being able to reach out to large numbers, yet the qualitative revolution envisioned due to introduction of new services and better quality teaching with learning materials, has not been quite visible (3). In higher education sector also, a National Mission in Education through ICTs is planned to be launched to increase ICT coverage in all 789 universities, 37,204 colleges and 11,443 stand-alone institutions in India. The Mission will focus on digitization and networking of all educational institutions, developing low cost and low power consuming access devices, and making available bandwidth for educational purposes. These initiatives would provide significant opportunities and pose new challenges as well for effective use of ICT in programmed delivery (11th FYP). Notable initiatives like various universities and colleges use of ICT in education in India include Indira Gandhi National Open University (IGNOU) uses radio, television, and internet technologies. National Program on Technology Enhanced Learning is a concept similar to the open courseware initiative of MIT. It uses Internet and television technologies. An Eklavya initiative uses Internet and television to promote distance learning. IIT-Kanpur has developed ,Brihaspati, an open source e-learning platform (Virtual Class Room). And Premier institutions like IIM-Calcutta have entered into a strategic alliance with NIIT for providing programmes through virtual classrooms. Jadavpur University is using a mobile-learning centre. IIT-Bombay has started the program of CDEEP (Centre for Distance Engineering Education Program)

as emulated classroom interaction through the use of real time interactive satellite technology. ERNET & EDUSAT (GSAT-3) systems provide support to Teleeducation system of Distance learning to reach the un-reached people of India in every nook and corner. INFONET and CEC (Consortium for Educational Communication) services of University Grants Commission supporting E-content, E-learning and E-course frameworks. Information and Library Network (INFLIBNET) Center is an Autonomous Inter-University Center (IUC) of University Grants Commission (UGC) associated with making framework for sharing of library and information and administrations among Academic and Research Institution (4).

## ROLE OF ICT IN HIGHER EDUCATION

Presentation of ICTs in the higher education has significant ramifications for the entire educational process extending from venture to utilization of technology in managing key issues of access, equity, administration, effectiveness, teaching method, quality, research and development. ICT applications give establishments an aggressive edge by offering improved services to students and staff, driving more prominent efficiencies and making enhanced learning encounters and experiences.

- **ICT in Teaching and Learning:** While for higher education sector is planned to build a knowledge repository of multidisciplinary subjects, as a strategy to counter the shortage of faculty in higher education, EDUSAT will be used to share the available expertise through modular programmes. This will be done by networking institutions, creation of virtual laboratories, creation of database, access to expert lectures and technological developments in industries and research organizations etc. Teaching and learning can further be improved by replacing of conventional teaching instead of the usual age old method of chalk and talk for teaching by innovative methods like power point presentations and animations, modelling and simulations, video clips and using AV aids, LCD projectors etc (5).

- **ICT in Administration :** ICT in administration of educational institutions play a major role in efficient utilization of existing resources and simplifies the administration tasks (e.g. in student administration, staff administration, general administration etc.) by reducing the paper work and replaces the manual maintenance of record keeping to electronic maintenance of records which helps in easy retrieval of any information of students, staff and general with in a fraction of seconds can access the required information (6).

- **ICT in Research:** Integration of ICT in higher education enhances the quality of research work and more number of individuals enrolled in the research work in various fields. ICT facilitates the links across the world in all subject matter and made social networking. It saves time, money and effort to the researchers in their research studies (6).

- **ICT as a Change Agent in Higher Education:** The evolution of higher education in India combined with the need to sustain and be competitive in a global scenario requires decisions to be taken quickly and effectively. This has enhanced the scope and complexity of administration, thus making it necessary to adopt different methods of higher education administration (6): 1. The expanding student

population in higher education quickened the requirement for ICTs to process, store and recover information in a quick, fundamental and precise form. The concentration of e-administration in higher education is on the formation of an effective electronic administration by taking care of existing resources economically (6). 2. The concept of moving the traditional classroom of desks, notebooks, pencils, and blackboard to an online forum of computers, software, and the internet intimidates many teachers who are accustomed to the face-to-face interaction of the traditional classroom (6). 3. ICT change the concept of teacher centered learning to student centered learning and teachers acts as coaches, mentors and knowledge facilitators and the learning environment focus on a real time problem solving methods (6). 4. Learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is the process by which this knowledge construction is supported rather than a process of knowledge transmission (6).

• **ICT as a Change agent in Society:** The last two decades have seen a critical examination of the role higher education institutions in economic growth and social development. In addition to teaching and research, contributing to regional economic growth through innovation is now perceived as the third role of universities. The university-industry-government linkage as a triple-helix model through which effective transfer of technologies leads to economic growth (7).

- The developmental role of higher education institutions can be seen from its initiatives and impacts in addressing social issues such as poverty, inequality, gender, environment and empowering the poor and marginalized sections of the society to play a major role in the developmental process.
- The government is proposing the creation of a high speed knowledge network providing connectivity across education institutions. The connectivity should be provided to supplement the current networking initiatives being undertaken, intra and inter-disciplinary networks to enhance research collaboration. This can also be supplemented by creation of online communities of practice
- ICT promotes the generation of new business and job opportunities for a large number of population. This will generate the economy, reduces unemployment and enhances the standard of living of society.
- ICT is a connecting agent as it connects the people across world through various devices like pager, faxes, mobiles, emails and social networks etc. This enables the people to utilize the resources as and when needed with the changing environment and develops new trends in the society.
- ICT adds value in the organization and management of learning institutions. The internet is a driving force for much development and innovation in individuals, business organizations, educational institutions and society at large.

## CHALLENGES OF ICT

Although the government is committed to implementing ICT in higher education, the process is hindered by a number of barriers and challenges (8) (9).

- **ICT Supported Infrastructure and Lack of Resources:** The effective use of ICT would require the availability of equipment's which are not available in all the educational institutions. Besides, ICT requires up-to-date hardware and software. High-speed internet connection is another prerequisite for integrating ICT into the teaching-learning situation. But unfortunately internet access is very poor (10).
- **Insufficient Funds:** Effective implementation of technology into education systems involves substantial funding. ICT-supported hardware, software, internet, audio visual aids, teaching aids and other accessories demand huge funds. Efficient and effective use of technology depends on the availability of hardware and software and the equity of access to resources by teachers, students and administrative staff. These costs are in most cases substantially high and cannot be provided by the stakeholders (11).
- **Political Factors:** The most notable of the barriers to the use of ICT in education in developing countries seems to be the political will of the people in the corridors of power. The allocation of sufficient funds for the educational sector and ICT does not seem to be very attractive to the leaders. If the political leaders favour the technology, it will bloom. It is observed that the vision and mission of the government changes after change of power at the centre as they fix priority to some other sectors in the form of fund allocation and its policy implementation (12).
- **Social and Cultural Factors :** The author has suggested that the emergence of English as a dominant language of science, technology, business and interactional relations, as well as education and training, would ensure the availability of globally useable knowledge products. This in turn will also offer more opportunities for a wide range of choices in educational and training courses. But currently language seems to be one of the major social barriers to the use of ICT, particularly; in rural areas found that lack of developmentally-appropriate software (DAS) is one of the difficulties faced by teachers and students (13).
- **Corruption:** Corruption is one of the strong barriers to the implementation of ICT in education. The misuse of government funds which could have been used to develop other sectors like the integration of ICT in education is channeled in other directions i.e. few people benefit from those funds by pocketing all the money. The budget for the newer technology is misused due to corruption at every level in the administration. Huge budgets are passed to buy modern teaching and learning materials for the improvement of the teaching and learning process, but in the end only minor improvements are found in the overall technical and vocational sector (14).
- **Teachers' Attitudes and Beliefs about ICT:** Teachers' attitudes have been found to be major predictors of the use of new technologies in instructional settings. Teacher's beliefs about teaching and learning with ICT are central to integration. To be successful in computer use and integration, teachers need "to engage in conceptual change regarding their beliefs about the nature of learning, the role of the student, and their role as teacher". Hence the successful use of ICT into classroom largely depends on teachers' attitudes and

belief relating to these. Therefore, if teachers want to successfully use technology in their classes, they need to possess positive attitudes to the use of technology (15).

- **Lack of Knowledge and Skill:** The success of educational innovations depends largely on the skills and knowledge of teachers. Teachers' lack of knowledge and skills is one of the main hindrances to the use of ICT in education both for the developed and underdeveloped countries. Integrating technology in the curriculum requires knowledge of the subject area, an understanding of how students learn and a level of technical expertise (16).
- **Lack of Time:** Teachers are burdened with heavy workload. Research studies reported lack of time as one of the biggest constraints to the integration of ICT into the teaching learning. Teachers need time to learn how to use the hardware and software, time to plan, and time to collaborate with other teachers. They also need time to develop and incorporate technology into their curriculum. Some teachers are unable to make appropriate use of technology in their own classrooms, while others are unwilling to try because of anxiety, lack of interest, or lack of motivation (16).

## BENEFIT OF ICT IN HIGHER EDUCATION

The adoption and integration of ICTs in education have a positive impact on teaching, learning, and research. In addition, it increases flexibility; provide the rich environment and motivation for teaching learning process which have a profound impact on the process of learning by offering new possibilities for learners and teachers. These possibilities can have an impact on student performance and achievement. The various benefits of ICT in education to various stakeholders are summarized as follows (17):

- To Student • Increased access, • Flexibility of content and delivery, • Combination of work and education, • Learner-centred approach, • Higher quality of education and new ways of interaction
- Employers • High quality, cost effective professional development in the workplace, • Upgrading of employee skills, increased productivity, • Development of a new learning culture, • Sharing of costs and of training time with the employees, • Increased portability of training.
- Governments • Increase the capacity and cost effectiveness of education and training systems, • To reach target groups with limited access to conventional education and training, • To support and enhance the quality and relevance of existing educational structures, • To ensure the connection of educational institutions and curricula to the emerging networks and information resources, • To promote innovation and opportunities for lifelong learning.

## CONCLUSION

In this research main focus on the role of ICT in higher education for the 21st century. The utilization of ICT has generally changed the working of higher education universities and Institutions. In the present condition conscious world, the significance of education and adequacy of ICT as a social need

has been expanding. Social acceptability of information and communication tools is important to enhance the mobility in the general public and increment the pitch for value and social equity. This paper discussed the evolution of ICT in India. ICT played very effective role for students, teachers, research and administrative staff in higher education. This research is also focus on ICT as a Change agent in Society and higher education. This paper discussed challenges and benefits of ICT in higher education. Based on all above discussion ICT is more applicable and effective platform for higher education.

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