IMPLEMENTATION OF ICT IN HIGHER EDUCATION: ISSUES AND CHALLENGES

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Abstract-The world is moving rapidly into the domain of digital media and information. The role of Information and Communication technology (ICT) in education is becoming more and more important for the growth and development of the country. ICT is the integration of many communication technologies namely computers, network, software's, internet, mobile, storage, audio-visual systems, etc. These enable users not only to access the information but also to store, transmit, and manipulate it as per their requirement. ICT is very useful tool for imparting easily accessible, affordable and quality education to all. The new teaching methodologies involve the use of audio-visual utilities, computers, presentations and internet to deliver lectures. The students using ICT can access resources anytime and anywhere. The future of education methodology is Real Time Interactive education. ICT also enables access to the opinion of professionals, experts and researchers all over the world and allow one to be in direct communication with them. It is now possible to gain access to an unlimited amount of data and educational materials. Moreover, the Government has also taken many initiatives to implement ICT in higher education. The paper review the importance implementation of ICT in education, discusses issues and challenges of implementing ICT in education. It also discusses the present scenario of ICT in degree colleges of J&K state and strongly recommends the full implementation of ICT in higher educational institutions to enhance quality in teaching, learning and accessibility.
Keywords: Accessibility; Education; ICT; Multimedia; Resources; Technology

1. INTRODUCTION

Technology is always developing and changes with time. The more it develops, the more our life is changed. The change has impact on our daily life and people around us including employers, organizations and teachers as well. The term information technology includes computers, servers, internet, web servers, tablets, etc. The term communication includes mobile phones, land line, internet, etc. ICT acts both as an aid and support for technological advancement. ICT is a component of information technology which involves the use of resources and tools to create, organize, store, manage and communicate information among users. Various software, hardware, middleware, storage devices, internet along with human man power are the base of ICT. Every person uses technology in some way or the other. ICT is changing the world at a fast pace. Knowledge, communication and collaborative methods are being advanced every day. Blogs, twitter, mobile, iPod, Google, Wikipedia, Facebook, You Tube provide virtually limitless information anywhere and anytime.

ICT is an important resource in education. Children use computer from an early age and continue to use it to university level studies. ICT is a tool used by students for active learning. Traditional classroom teaching has many limitations which needed to be overcome with the use of technology. As the number of student grow in school education and higher education, the need of some effective teaching tools was felt to provide effective teaching to the students. Teacher not only provides information but also teach how to handle and use ICT related tools and resources. With the steady growth in the field of technology, a gap has been created between the students and their ability to use technology. There is a strong need to educate the students with the latest technology. ICT helps in establishing an increasingly technologically orientated world. ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies—scattered and rural populations, groups traditionally excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time constraints are unable to enroll on campus.

2. BACKGROUND

The growth of e-governance(1) first began in 1977 with establishment of National Informatics Centre (NIC). In 1997, the Prasar Bharti collaboration with Indira Gandhi National Open University (IGNOU) started a DD Gyan Darshan1 channel(2), was the first exclusive telecast for schools, teacher enrichment education, open and distance learning, vocational courses and courses for disadvantaged sections of India. The motive was to implement and provide education through electronic media as per the facility of the learner.

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In 2004 GSAT-3, known as EDUSAT(9) is meant for distant class room education from school level to higher education. This was the first dedicated "satellite dedicated exclusively for educational services.

Further in 2006, the national level e-Governance programme called National e-Governance Plan (3) was initiated. There were 31 Mission Mode Projects under National e-Governance Plan covering a wide range of domains, like agriculture, land records, health, education, passports, police, etc. On 1st July 2015, Digital India (4) was launched by the Prime Minister of India with the mission of creating digital infrastructure, connecting every institution with high-speed Internet networks and improving digital literacy in rural India. On 25 Feb. 2017, the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)(5) was being initiated under Digital India Programme. This initiative is expected to cover 6 crore households in rural areas with an intent to make them digitally literate. Ministry of Human Resource Development on July 9, 2017 launched the seventeen point action (6) plan on Digital initiatives for higher education. The National Convention was held at Vigyan Bhawan in New Delhi and Under this scheme MHRD instructed the state government institutions to star

online courses, build digital library, create smart campus. It also includes the installation of DTHSWAYAM Prabha(8),a group of 32 DTH channels devoted to telecasting of high-quality educational programs on 24X7 basis using the GSAT-15 satellite for distance learning.

Importance of using ICT in Higher Education: In the current digital age, we cannot imagine education without using technology. The technology enabled tools makes the bridge between the education and current digital era. Today ICT is indispensable to education. It helps in improving the quality and advancement in the field of education. The implications of implementing ICT are:

 ICT makes the learners more independent. The learners have facility to attend their lectures in the class room but they can also access the wide range of study material made available through ICT enabled services. ICT is indeed a powerful tool for covering education both through formal and non-formal mode.

ICT can enhance learning environment for learners. The ICT enabled class room teaching supports the learner centred approach.The teacher acts as a facilitator not a leader. The use of ICT tools (ppt, audio, video, etc) inculcate the skills and interest in the learners. Thehigher order thinking and creativity can be facilitated by ICT through drill and live practice.It also allows tasks to be done as per the individual skills.

ICT provides multimedia tools for demonstrations to the students in a way which might not be possible with traditional methods.

The use ICT tools of provides equal opportunity to all the students irrespective of their gender, region, language, location, etc.ICT makes available lectures from subject experts and course related study material to the students across the globe. This is not possible with the traditional teaching aids. Students with special needs can easily learn using ICT tools.

ICT allow teachers to integrate new technology into their teaching which is essential to enhance the quality and standard of education. Using the ICT gadgets teachers can easily represent their lectures in a better and organized way. It requires the competency in handling ICT tools.

The teaching using ICT tools may enhance professional development and skills among the students through collaboration with peers. ICTs make it possible for the students to perform wide range of queries from subject experts through online portal and explore wide range of study material online.

ICT supports the concepts of asynchronous learning i.e. learning by the time lag between delivery of lecture by subject experts and its reception by learners. Online course materials, for example, may be accessed 24 hours a day, 7 days a week from anywhere at any time and by an unlimited number of people.

2.1 ICT in J&K Higher Education Institutions:

A study of about twenty colleges of Jammu division of J and K State was conducted regarding the availability of ICT infrastructure in the Government Degree Colleges running undergraduate courses. This survey is conducted by selecting at least one college from each district including the rural areas of the state. The source of collected data are the College websites and staff of the concerning college, official communications etc. The following Table 1shows the data regarding the ICT infrastructure of ten colleges one from each district of Jammu Division. The analysis of data shows that only about 17% classrooms are ICT equipped having facilities of smart class, EDUSAT, etc which is very low. Moreover there are some colleges in the state where ICT infrastructure is almost negligible. The above data shows that ICT infrastructure like library automation, digital library, DTH Channels is very poor.

Sr. No.	Name of the College	District of the College	No. of Class Room	No. of Smart class Room	Edusat	Library automation	Digital Library	WiFi Campus	Free DTH Education Channel
1	GGM Sc College	Jammu	21	3	√	X	X	√	X
2	GCW Udhampur	Udhampur	12	1	√	X	X	√	X
3	GDC Boys	Kathua	26	3	√	X	X	√	X
4	GDC Poonch	Poonch	16	2	√	X	X	X	X
5	GDC Bhadarwah	Bhadarwa	14	2	√	√	X	√	X
6	GDC Samba	Samba	6	0	X	X	X	√	X
7	GDC Ramban	Ramban	7	1	X	X	X	X	X
8	GDC Kishatwar	Doda	8	2	√	X	X	X	X
9	GDC Nowshera	Rajouri	9	1	X	X	X	√	X
10	GDC Reasi	Reasi	13	0	√	X	X	X	X

Table 1: ICT Data of Different colleges

The following bar chart in fig 2 shows the current status of ICT graphically i.e the number of total class rooms and the number of class rooms equipped with ICT infrastructure in of above mentioned colleges of Jammu Division.
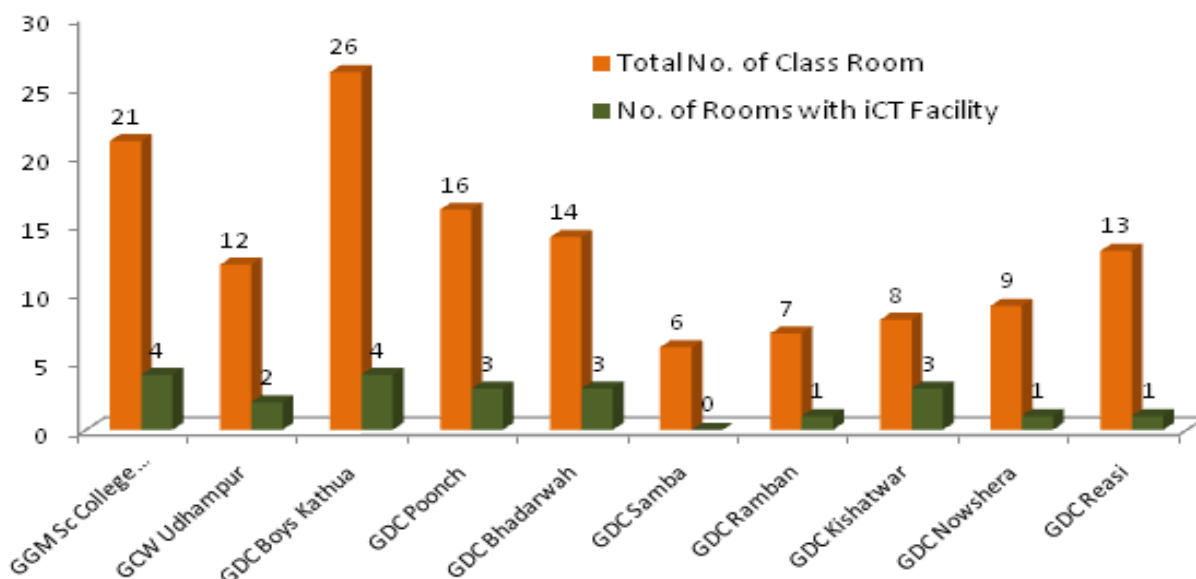

Fig 2

The study indicated that a lot more has to be done to create ICT infrastructure to implement ICT in the colleges and impart education to meet the technology challenge. Moreover, if we talk about the type of the ICT infrastructure available in the colleges, the study shows that only 12% class rooms are equipped with smart class room facilities and EDUSAT facility is available in approx. 53% colleges. Library automation is done only in 13% of the colleges. The Wi-Fi connectivity is available in 59% colleges. Only 6.7% institutions have free DTH channels for imparting ICT education. It shows that not even a single library in state has been digitalized. The following table in Table 2 and pie chart in fig 3 shows the percentage of type of infrastructure available in Jammu Division colleges.

Name of ICT Infrastructure	%age in the colleges
Smart class Room	12.18
EDUSAT	52.94
Library automation	13.33
Digital Library	0.00
WiFi Campus	58.60

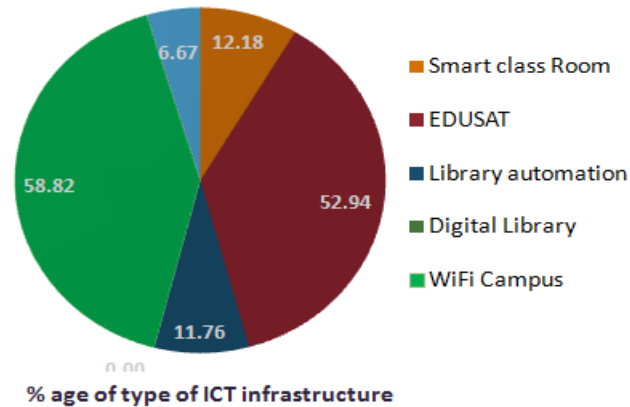| DTH Free Educational Channel	6.67

Fig 3

In the last few years state government is very serious about creating ICT infrastructure and implementing it in the state colleges on priority basis. In the last year Department of higher education sanctioned and released sufficient funds to create smart class rooms facility and for library automation in the colleges.

Challenges of using ICT in Higher Education. ICT plays very important role in higher education in present digital era. ICT has become the backbone of whole education system worldwide. ICT has become a powerful tool to impart quality and skill based education. The analysis of above data of higher education institutions and study of various researchers indicate that the implementation of ICT in the advancement of higher education is facing the following challenges.

3. INSUFFICIENT INFRASTRUCTURE

The study indicated that there is no proper ICT infrastructure in the institutions for imparting quality and technology oriented education. It is not only due to non availability of required hardware and software but also due to old or poor hardware, in appropriate software and poor management of ICT resources, non availability of digital resources etc.

4. POOR INTERNET CONNECTIVITY

ICT requires strong high speed secure internet connectivity for implementation and proper functioning. The research shows that many institutions lack proper net connectivity, some institutions have poor or unstable net connectivity but that could not be used for ICT implementation. In our state about sixty percent college campus are WIFI connected. Many institutions suffer due to lack of broadband connectivity.

Lack of Teacher Training: The technological development continually opens up new possibilities and methods of learning. The educational system is constantly being upgraded to offer better education to the students. For this, the teachers need proper training and awareness to implement ICT in their day to day lectures. Studies show that there are no proper policies and procedures to re-orient the teachers in handling ICT equipments and digital resources. Teachers are incompetent to handle ICT equipments.

5. LACK OF GOVERNMENT POLICY

The Government has taken many initiatives and policies for implementing ICT in the class room at University and College level. But still many institutions lack ICT infrastructure, network connectivity, competent teacher's particular in rural areas.

6. DIGITAL ILLITERACY

The computer literacy rate in India is around 10%. Computer illiteracy is a retarding factor in adoption of ICT in education in India. Lack of knowledge about digital resources and communication technology is another factor that hinders the implementation of ICT in Education. The Government of India has initiated various steps like National Digital Literacy Mission (NDLM) to enhance the digital literacy in India.

7. SOCIAL CHALLENGE

Other factors responsible for slow implementation of ICT in India are social and cultural factors. These factors include poverty, low rate of literacy, different levels or different languages of primary education, poor public service etc. Most of the digital contents are available in English and basic education of most of the students is in regional languages.

8. CONCLUSION

The implementation of ICT in higher education has not only improved quality of teaching and learning but also increased the accessibility of information. Moreover, it also lead to the promotion of distance mode of learning. One of the objectives of the present paper is to provide better understanding of ICT and its role in teaching and learning system. The adoption and use of ICT in education has shown a positive impact on teaching, learning, and research. The paper has discussed the present scenario of ICT in higher education system and challenges faced in implementing ICT in class rooms of the colleges of the state. The data collected from different colleges have showed that the ICT infrastructure in the state in not in a very good condition which is the biggest challenge to accomplish. By overcoming the certain challenges involved in the process of implementation of ICT in higher education, the whole education system can be revamped to digital and quality oriented education system. This paper strongly recommends the creation and extensive usage of ICT infrastructure in the class rooms, organizing teacher training programs, installing high speed internet, etc. Apart from this, the Government and higher education institutions need to develop strategies for effective implementation, maintenance and monitoring of ICT in education to improve quality, accessibility and advancement of education system.

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