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Barriers to Pre-Service Teacher's Utilization of Information and Communication Technology (ICT) in Higher Education: A Case Study of Various Colleges in the UT of J&K

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Abstract: The world is witnessing an extraordinary growth in Information and Communication Technology (ICT). With these rapid advances in ICT, almost every aspect of human life is being impacted directly or indirectly. It is because of these advances in technology that human life has become easier and luxurious. Integrating ICT into educational system has revolutionized the teaching learning process leading to overall transformation of educational systems. This case study uses data from Higher Educational Institutions in the UT of Jammu & Kashmir, where in Pre-service teachers were interviewed and the feedback provided by the said teachers gave an actual picture of how this technology is being used in our colleges. The results of this study indicate that the Higher Education Department still faces numerous challenges in incorporating Information and Communication Technology (ICT) and fails to provide ICT facilities both in and out of class activities. According to the feedback provided by the teachers, there is a lack of training that creates difficulties: many teachers do not have the necessary skills and feel uncomfortable in incorporating ICT into their classwork. They do not have the specific training needed to use the new technologies in the classroom.

1. Introduction:

Today's age is the age of technology. Due to the phenomenal advancement in the technologies related to telephone networks and computer networks, the human life is becoming easier and comfortable with every passing day. In a few decades, ICT has flourished and achieved great heights not only in the field of education but in all fields such as businesses, industries, medicine etc.

Most of the educational Institutions all over the world are now incorporating ICT in the teaching learning process in order to provide knowledge and skills to the learners, to meet the challenges of educational environment. As far as the UT of Jammu & Kashmir is concerned the ICT is available only on the students' curriculum and it is yet to be implemented in totality. During this pandemic, it was possible only because of ICT in educational system that the students could participate actively in teaching learning process. It was observed in the UT of Jammu & Kashmir that the students were not participating actively, as they were lacking the basic requirements of ICT.

However, many recent research studies on this theme shows that many institutions are failing to integrate technology into existing context. Bauer & Kenton [1] stated in their study that although teachers were having sufficient skills, were innovative and easily overcome obstacles, they did not integrate technology consistently both as a teaching and learning tool. Reynolds, Treharne & Tripp [2] also underlined continuing problems in the adoption of ICT by teachers and stated the need for further research on how ICT can improve education. Ruthven & Hennessy [3] also considered three major points for using ICT: the need for wider skills for effective use of tools, the need to focus on the power of technology and the need to shift familiar patterns of classroom interaction by introducing technology

Since ICTs provide greater opportunity for both teachers and students to adjust teaching and learning to individual needs, so it is necessary to integrate ICT applications in education. But introduction and integration of ICTs at different levels and various types of educational institutions in a developing country like India is a very challenging undertaking. Failure to meet the challenges would mean further widening of the knowledge gap and deepening of existing economic and social inequalities among the developed developing countries.

2. Meaning and Definition of ICT:

ICT means Information and Communication Technology. It comprises of three parts Information, Communication and Technology. Information is the summarization of data. Technically data are raw facts and figures that are processed in to information. Communication is a process that is used to disseminate information and Knowledge. And Technology is a mode or media through which information can be disseminated. So ICT is the technology required for information processing and spreading. ICTs are technologies such as telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage and audiovisual systems, that enable users to access, store, transmit, and manipulate information. ICTs are electronic collection, editing, storage, distribution and presentation of information. ICT is the means in which people interact with their colleagues around the world, exchange their ideas, information, messages and co-ordinate with each other through a variety of technological means.

3. Components of ICT:

ICT includes communication devices like computer, hardware networks, software, mobile technology, satellite communication, video conferencing, RFID Technology, WI-FI zone, pen drives, Internet, www, Web2.0 and Social media etc. Satellite communication: The age of satellite communication dawned in 1962 with the launching of Early Bird, the first communication satellite. The two big international satellite systems Intelsat and Intersputnik began operating in 1965 and 1971. India launched a satellite for communication called INSAT and for Education purpose EDUSAT was launched in the year 2004. INSAT -4CR was launched on 2 September 2007 by GSLV_F04. IT is a replacement satellite for INSAT -4C which was lost and destroyed.

4. Role of ICT in Education:

In current times of pandemic and political unrest the role of ICT in education is becoming more and more significant. The integration of technology in education has added value to the process of teaching and learning as it has enhanced the interpersonal communication. The use of ICT in teaching and learning process is more stimulating and engaging for students than the conventional classroom experience. Since the sources of learning are numerous, with the help of ICT students and teachers can use videos, podcasts, and speeches by subject experts, etc. and hence make use of these different sources. ICT is changing the way students are learning that can be observed from the systematic shift of content-centered curricula to competency-centered curricula. The use of ICT has also led to the fading of time dimension as students can participate in learning over the 24*7 envelope. Thus opportunities were created for those learners who had time constraints because of other commitments. The incorporation of ICT in education has also led to the concept of “anywhere learning”, helping the students who are unable to attend the classes physically because of numerous reasons.

Information Technology can provide a medium for teaching and learning as well as contribute flexibility to course provision. The valid uses of Information Communication Technologies are: Distance learning via electronic networks, open learning through students controlled learning pathways. The process of changing teaching and learning styles by using a narrow range of Information Technology based facilities. Presently there are four areas of education namely: Teaching, Learning, and Curriculum and Educational program. ICT has been added essentially in the 21st century as the fifth potent area of education. According to the revised Draft on National Policy Information Communication Technology in school education (prepared by the Department of School education literacy, MHRD in 2011) ICTs are all devices, tools, contents, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realizing the goals of teaching learning, enhancing access to and reach of resources, building capacities, as well as management of educational system. This will not only include hardware devices connected to computers and software application but also interactive digital content, Internet and other

satellite communication devices, teleconferencing, video conferencing, web - based content repositories, interactive forums, learning management system and management information system. ICT make education system more productive, interesting, give more powerful instruction and also able to extent the educational opportunities to masses and creating information -rich learning environment. ICT has made the class-room transaction more interesting. It has extended the teaching learning process beyond the boundaries of classroom. Students are now able to use laptop computers and wireless networks anywhere in campus. A computer allows high speed information exchanges to occur with individuals within the institution as well as around the world. ICT brings the outside world in to the classroom teaching learning process, makes the things more realistic and thus helps the learners to understand the abstract thought very clearly.

ICT can improve the quality of higher education by promoting experimentation, researches and innovations, adopting the new strategies in the teaching - learning process and integrating the new information with the best practices. UNESCO world Education [4] Report stressed the importance of ICT in higher education to generate quality education. Recently ICT has become significant tool in the field of education. ICT is an effective tool, which overcomes the issues of cost, less number of teachers and poor quality of education as well as to overcome time and distance barriers [5]. Wee and Bakar (2006) throws a light on obstacles towards the use of ICT tools in teaching and learning of information systems [6]. students, youth seeking career opportunities and working professionals [7][8]. The use of ICT is making key differences in the learning of students and teaching approaches [9].

ICT has also played a vital role in providing distance education very effectively. IT provides online delivery of courses, online assessment and online design courses to large no. of students at a time. The ICT -based system like digital libraries; online courses, audio and video conferencing contribute

significantly to the area of E-Learning and have opened a new era in the area of E Learning. Thus, the main purpose of this study was to examine the barriers to utilization of technology by pre-service teachers' and suggest recommendations regarding to the effective utilization of technology. This case study used data from different colleges in UT of J&K that are a part of Higher Education Department. Results of this study showed that teachers fail to provide appropriate instructional technologies and computer facilities for both in and out of class activities. Furthermore, the barriers that appear to have a significant influence on the effective use of technology were found to be:

The quantity and quality of addressing technology in the curriculum.

Lack of in-service training, and Insufficient technological infrastructure.

5. Challenges

The future of society is dependent on the way and manner its young citizens are educated today. According to the UN, 57 million children are out of school globally.

The use of ICTs in education has the propensity to improve the education sector and its outcomes by attracting those that are out of school, reaching those learners who are in remote and far to reach areas as well as improve educational content. However, it was found that developing country-contexts face impediments to achieving this feat and making use of ICTs for education because there are barriers to entry in adopting and rolling out ICTs in Higher Education. Such barriers to entry include:

The affordability of technologies in Colleges settings;

Access to continued electricity - given the extensive power cuts (and the expense of using generators);

Qualified teachers and training of instructors who will make adequate use of the ICTs Cultural shifts and practices;

Lack of funding to maintain such technologies if in use;

High costs of internet use and slow internet.

These are among some of the numerous challenges associated with using and effectively rolling out ICTs in education in Jammu and Kashmir UT teaching institutions. These “barriers to entry” and impediments to adopting ICTs in colleges ties in with the inequality debate because it prohibits some in society from being sufficiently equipped which will thereby widen the gap between those who have the opportunity to “jump on the bandwagon” of technological progress and those who are unable to do so.

Table1: Survey conducted on different colleges in the state of Jammu & Kashmir

Number of Colleges Surveyed	Percentage of Teachers using ICT	Percentage of IT Skilled Teachers	Percentage of Teachers Not using ICT	Percentage of Administrative support available in bigger Context
16	20%	26%	80%	15%

As shown in table above, during the survey conducted in different colleges in the UT of Jammu & Kashmir the colleges belong to backward areas in this respect. Also during the study, the employees of these colleges expressed that given the financial resources provided, to college administrators, they have to meet the basic needs of the students before they can begin to think about ICTs in the bigger context, because adopting ICTs is not cost friendly. Whereas at the same time, according to some of the teachers interviewed, ICTs usage in teaching also provides “much-needed support” and students also alluded to the enhanced learning experience and process when ICTs are incorporated. Whereas at the same time, according to some of the teachers this feature is only possible if the high speed internet services are available in the state. Results of this study indicated that Higher Education Department still faces this as a challenge in the present era of technology, to provide facilities for both in and out of

classroom activities. According to the feedback of teachers there is a lack of training that creates difficulties: many teachers do not have the necessary skills and feel uncomfortable, nor do they have the specific training needed to be able to use the new resources in the classroom

This is a rapidly advancing and technologically-driven global village and it is only rational to ensure that students are adequately prepared for the jobs of the future. However, the reality is that some college administrators have to make difficult decisions with modest budgets they are given on whether to build learning shelters (classroom buildings) or hire more teachers for some of their students versus equip a room with computers (that will also need financing to be maintained). Notwithstanding, there are positive gains to be harnessed from the potential of ICT usage in education, but the related challenges cannot be ignored.

Conclusion:

Integrating ICT in education system has revolutionized the teaching learning process and are now transforming education systems. The UT of Jammu & Kashmir is still facing a challenge to integrate ICT in colleges and fails to provide facilities for both in and out of classroom activities. There is a lack of training that creates difficulties: many teachers do not have the necessary skills and feel uncomfortable, nor do they have the specific training needed to be able to use the new resources in the classroom. The only thing to do is that the higher authorities need to put their efforts and take care of the future of students.

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