

# Information and Communication Technology in Teacher Education in India: Benefits and Barriers

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**Abstract:** *Teacher education plays a vital role in developing quality education which is the present requirement in the modern information & communication era. Teacher educators are the basis producing the future teachers who are the pillars of nations. The quality of teacher education programmes depend on the quality of teacher educators who are the teachers of teachers. They should be well equipped with the latest knowledge's in their subject by undergoing orientation & refresher courses, seminar etc., management skills, communication skills, good qualities to inculcate among the teachers trainees. The introduction of ICTs in the education has profound implications for the whole education process especially in dealing with key issues of access, equity, management, efficiency, pedagogy and quality. In this paper, an attempt was made to discuss the problems, importance and benefits of Information and communication technology in teacher education in India. This paper is prepared using secondary data collected from various source. And found that ICT focuses modification of the role of teachers. It forces the teacher to look beyond the text books and traditional methods. In addition to classroom teaching, they will have other skills and responsibilities. Teachers will act as virtual guides for students who use electronic media. Ultimately, the use of ICT will enhance the learning experiences of students. Also it will help them to think independently and communicate creatively. It will also help students for building successful careers and lives, in an increasingly technological world.*

**Key Words:** *Teacher education, Information and Communication Technology, Knowledge, Technological world.*

## 1. INTRODUCTION:

Information and communication technology (ICT) has opened up new challenges for teacher education. ICT if used properly has the potential to radically alter the manner in which students learn and teachers teach. Our educational institutions cannot afford to ignore the accelerating pace of technological advancement and their role in building an enlightened society of ICT empowered citizens. However, the education sector, particularly the area of teacher education, has lagged behind other sectors of the Indian economy in benefiting from the fruits of technological development. Today's education system faces the challenge to prepare individuals for the information society in which one of the most important aims is to handle information. No amount of technological up-gradation of educational institution will change the performance of our students without the active involvement and support of teachers who are capable of exploiting the profound possibilities the ICT can offer for the teaching- learning process.

For this purpose it is necessary to create in the teacher an awareness of the possibilities of ICT which will lead to their willingness to learn it and resulting in the commitment and confidence to use it. Thus, teacher education institutions in the country must rise to the occasion to turn out ICT competent through in-service and pre-service courses.

## 2. OBJECTIVES OF THE STUDY:

- To access the scope and importance of ICT in Teacher Education.
- To explore the benefits of using ICT in Teaching/ Learning.
- To identify the barriers that hinders the teacher's educator in the use of ICT.

## 3. RESEARCH METHODOLOGY:

This paper is prepared using secondary data collected from various sources like Publications of books, monthly journals, article and news-papers produced by the government, comprising literature review and websites like Ministry of Information technology of India.

## 4. SCOPE OF ICT IN EDUCATION:

Information and Communication Technology (ICT) is basically an umbrella term that encompasses all communication technologies such as internet, wireless networks, cell phones, satellite communications, digital television etc. that provide access to information. During the past few decades, ICT has provided society with a vast array of new communication capabilities and has fundamentally changed the way we live now. We find a world of

difference in the practices and procedures of various fields such as medicine, tourism, banking, business, engineering, etc. as they operate now in comparison to how they operated two decades ago. In contrast, the impact of ICT on education in India, however, has been far less and slow.

The most fundamental cause seems to have been the deep-seated belief that teaching is an art or at best an imperfect science with no role of technology in the design or delivery of instruction. But now times have changed and the paradigm of education and learning has changed from art or science to technology-mediated instruction and learning. ICT can, therefore, be perceived as a big change agent for education.

ICT, if used creatively, can make a big difference in the way teachers teach and students learn and can help students acquire 21st century skills like digital literacy, innovative thinking, creativity, sound reasoning and effective communication. ICT can help in enhancing the quality of education through blended learning by supplementing the traditional talk and chalk method of teaching. ICT-enabled education can also be a solution to the growing demands for enrolments in higher education in India and thus help to increase the gross enrolment ratio (GER) which at present is very low ( about 12%) as compared to the world average of 23%. In case of open and distance education (ODE) system where “Anyone, Anywhere and Anytime” that is, 3A’s is the main philosophy, ICT- enabled education can do wonders that no one can imagine and help pave way for the creation of virtual universities in the long run. ICT can also significantly contribute in efficiently managing the governance in the universities and colleges. ICT in education is the need of the hour. It has the potential to provide solution to many of the challenges of higher education faces today. The common fear that ICT shall replace a teacher is totally unfounded. Realization now seems to be slowly dawning on the teaching community that ICT is primarily to empower them and not to replace them. ICT is, therefore, not to be feared but to be embraced so as to empower our future generations by providing them high quality ICT-enabled education.

##### **5. IMPORTANCE OF ICT IN TEACHER EDUCATION:**

Training a teacher in using ICT is more crucial than acquiring a large number of computers. Teachers have to be trained to facilitate the learning process, make the process real, achievable, challenging, yet exciting and not intimidating. Reducing teacher talk and encouraging student discussion is extremely important. Everything need not be written on the blackboard to be considered as taught. Many teachers think the computer is used only to make the content look attractive! They need to know that in 21st century, information is not difficult access, instead organizing, sharing, and collaborating become essential skills. Hence, ICT is not merely to portray information but to interact, share, and thus learn. ICT provides meaningful, absorbing media that makes teaching-learning more productive.

Although ICT offers the opportunity to construct powerful learning experiences, it is pedagogically neutral. That is, ICT can be used in support of traditional teaching methodologies like the large group lecture, student note taking, and examinations. Teachers can use a computer and projector to show slides to illustrate a lecture, students can use laptops to take notes during the lecture, and multiple choice quizzes about the content of the lecture can be put on a website. How these new ICT tools and resources will be used is a human decision, not inherent in the technologies themselves.

(a) ICT has the potential to be used as a supportive educational tool enabling students’ learning by doing. ICT can make it possible for teachers to engage students in self-paced, self-directed problem-based or constructivist learning experiences; and also test student learning in new, interactive, and engaging ways that may better assess their understanding of the content.

(b) A second way to assess the merit of ICT use in education is to consider what it enables students and teachers to do that they would not otherwise be able to do.

##### **6. BENEFITS OF USING ICT IN TEACHING / LEARNING:**

ICT can help teachers and learners in the following ways:

- ICT enables to enhance the initial preparation by giving good teaching or training materials, use simulators, other training institution experiences and, working, introducing trainees with resources and support on cyber space, Example the use of technologies teaching training situation.
- With the help of ICT, teachers can access with universities and colleges or education, teacher education institutions and national organizations like UGC, NCTE, NCERT and NAAC (National Assessment and Accreditation council) etc.
- ICT enables to access online libraries journal and research enable individuals learning.
- ICT provides lifelong and professional development by providing courses at virtual situation, training on demand: orientation and new courses through video conferencing or online.
- It provides opportunities to learners to meet in a virtual space with other users, members and practitioner experts to discuss issues, answer questions and even participate in simulations and management games without having to leave their office or home.
- It supports independent learning and unknowingly insists to think on alternative theories for learning.
- ICT applications provide many options & choices in the same case. It is the good opportunity for students to undertake education anywhere, anytime & any place.

- ICTs also facilitate access to resource persons-mentors, experts, researchers, professionals, business leaders and peers-all over the world.
- It increases the variety of educational services & medium and promotes equal opportunities to obtain education & information. It will be helpful in developing a system of collecting & disseminating educational information by promoting technology literacy.

## 7. BARRIERS THAT HINDER TEACHER EDUCATOR IN THE USE OF ICT:

- **Lack of teacher confidence:** Several researchers indicate that one barrier that prevents teachers from using ICT in their teaching is lack of confidence. Dewas (2001) sees this as a contextual factor which can act as a barrier. According to Becta (2004), much of the research proposes that this is the major barrier to the uptake of ICT by teachers in the classroom. Some studies have investigated the reasons for teacher's lack of confidence with the use of ICT.
- **Lack of teacher competence:** Another barrier, which is directly related to teacher confidence, is teachers' competence in integrating ICT into pedagogical practice (Becta 2004). Newhouse (2002) found that many teachers lacked the knowledge and skills to use the computers and were not enthusiastic about the change and integration of supplementary learning associated with bringing computers into their teacher practices.
- **Resistance to change and negative attitude:** Many researchers are into the barriers to the integration of ICT into education found that teacher' attitude and an inherent resistance to change were a significant barrier Becta (2004). Watson (1999) argued that integrating the new technologies into educational settings require change and different teachers will handle this change differently. According to him considering different teachers' attitudes to change is important because teachers' beliefs influence what they do in classrooms.
- **Lack of time:** Several studies indicate that many teachers have competence and confidence in using computers in the classroom, but they still make little use of technologies because they do not have enough time. According to Sicilia (2005), the most common challenge reported by all the teachers was the lack of time they had to plan technology lessons, explore the different Internet sites, or look at various aspects of educational software.
- **Lack of effective training:** The barrier the most frequently referred to in the literature is lack of effective training. Pelgrum (2001) found that there were not enough training opportunities for teachers in the use of ICT in a classroom environment. According to Becta (2004), the issue of training is certainly complex because it is important to consider several components to ensure the effectiveness of the training. There were time for training, pedagogical training, skill training and an ICT use in initial teacher training. Cox et al (1999) argue that if teacher are to be convinced of the value of using ICT in their teaching, their training should focus on the pedagogical issues.
- **Lack of accessibility:** Several research studies indicate that lack of access to resources, including home access, is another complex barrier that discourages teachers from integrating new technologies into education. Empirica (2006) found that lack of access is the largest barrier and the different barriers to using ICT in teaching were reported by teacher, for example a lack of computers and a lack of adequate material. Toprakci (2006) found that low numbers of computers, oldness and slowness of ICT systems and scarcity of educational software in the school were barriers to the successful implementation of ICT into education.
- **Lack of technical support:** Without both good technical support in the classroom and whole - school resources, teachers cannot be expected to overcome the barriers preventing them from using ICT (Lewis, 2003). Pelgrum (2001) found that in the view of primary and secondary teachers, one of the top barriers to ICT use in education was lack of technical assistance. Sicilia (2005) argue that technical problems were the major barriers for teachers. These technical barriers included waiting for website to open, failing to connect to the Internet, printers not printing, malfunctioning computers and teacher having to work on old computers.

## 8. SUGGESTIONS:

- It should be mandatory for every teacher to undergo training for how to use of computers/ networking etc.
- Each teacher education institutions should provide computer and other adequate infrastructure for this purpose.
- Providing and advanced level course for interested students who can develop more advanced ICT based pedagogical skills.
- Integrate ICT components in curriculum and so on so that students have a role model for ICT integrated teaching and learning. When planning ICT curriculum, ensure that it is congruent with the educational vision the culture and the context of each region both locally and globally.
- ICT should be used to teach all subject matter areas at the pre- service level so that the pre-service teachers are above to get hands on experience.

- The curriculum of the teacher education programme needs to provide flexibility in curriculum so as to provide opportunity for student teachers to develop various ICT infused instructional material.

## 9. CONCLUSION & FINDINGS:

The paper has sought to explore the use of ICT in teacher education as we progress into the 21st century. Education determines standard of society. The quality education helps to empowering the nation in all aspects by providing new thoughts and the ways of implementation of various technologies. There are number of effective teaching & learning methodologies in practice. Technology is the most effective way to increase the student's knowledge. ICT facilitates construction of knowledge by providing students with experience that are otherwise expensive, time consuming or simply impossible to provide. The use of ICTs in education is recurring and unavoidable. Rapid changes in the technologies are indicating that the use of ICT in future will grow tremendously in the education. It energizes the classroom and enables students to develop good study habits and spirit of knowledge sharing. The need of the day is to create partnership in the learning process itself that is between teachers and learners. Teacher education is criticized often as too content oriented, providing knowledge, which is narrow and limited. There has been no shortage of advice and guidance on what effective teaching entails. ICT also focuses modification of the role of teachers. It forces the teacher to look beyond the text book and traditional methods. In addition to classroom teaching, they will have other skills and responsibilities. Teachers will act as virtual guides for students who use electronic media. Ultimately, the use of ICT will enhance the learning experiences of students. Also it helps them to think independently and communicate creatively. It also helps students for building successful careers and lives, in an increasingly technological world.

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