

# ICT INTEGRATION IN TEACHER EDUCATION: A NEW DIMENSION

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## ABSTRACT

*One of the remarkable features of present era is the astounding progress of Information and Communication Technology (ICT). It has virtually influenced each and every walk of life. Due to globalization and privatization, the world has changed a lot. The requirements of society and its citizens are not the same. It is but quite obvious that education sector must change accordingly so that it can satisfy the needs of the digital natives. And to do that perfectly, the teachers must themselves be equipped with knowledge and competency to survive and flourish in the latest and advanced educational system that depends too much on technology. So, teacher education should undergo fitting reformation to adapt to the unprecedented growth in the field of science and technology. It is in this context that ICT integration in Teacher Education becomes very significant. On one hand, it enables the teachers to explore the vast treasure of knowledge and information and on the other discover, develop and apply new approaches and techniques to bring about a remarkable improvement in teaching – learning process. Even in the field of pedagogy, it has great possibilities. “The student teachers' adoption of ICT use in the classroom has strong positive correlation with the pedagogical training rather than technical skills. (Law, Pelgrum & Plomp, 2008)*

**Key Words:** ICT, Teacher Education, Trainee-teacher, Pedagogy.

## INTRODUCTION:

The world has undergone a sea change in the past few decades. The needs and aspirations of the present generation are not the same as before. It is but very obvious that role and requirements and aims and objectives of educational system have changed also. We require one which will give the present youth the training and skill to use technology and its inventions as a tool for teaching and self-improvement. Educationists hold a responsibility to create an environment that improves student outcome and support opportunities for all. Naturally the traditional ways of and approaches to teaching are failing to deliver. Over these years, technology too has made remarkable progress. Our life and affairs are too much dominated by gadgets like computers, internet, laptops, mobiles, i-pads. The penetration of technology in our day to day affairs of life is unavoidable.

The ICT or Information and Communication Technologies have become the catchword these days. It has cast its all pervasive impact on every sphere of life bringing about rapid and dynamic

changes to society. The field of education too has felt its profound influence. ICT enables both the teachers and students to adapt learning and teaching to individual needs. The institutions are under social compulsion to embrace the changes brought in by the technological boom for an improved transaction of knowledge.

In the changing world, the learning needs of the gen-Y are also new and novel. Their lives are digitised in every aspect. They are the digital natives, so to say. The traditional and conventional approaches and techniques fall flat to address the needs of these young learners. The Teachers need to be equipped with modern competencies to cater to the needs of the students. Consequently, the new realities and challenges to Teacher Education Institutions are coming up. Here comes the significance of ICT. The various innovations in the use of Information and Communication Technologies have important implications. The Teacher Education in India needs to be completely revamped to include the changes taking place across the world. The teachers of the present generation should arm themselves with the latest skills and competencies exploring the new

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avenues in the field of electronic and related applications to serve in the role of the super-teachers.

### **EDUCATION AND NEW CHALLENGES:**

Society with all its aspects is always in the state of flux. Society, both as the very factor that influence education and as the client of education exercise tremendous influence on education, knowledge and learning. Consequently, education too undergoes changes to justify its importance in the changing world. The various innovations in the field of information and communications technologies not only impacted society but also knowledge, teaching and learning. The present generation is characteristically different from the previous ones in their skill and competencies, needs and aspirations, mental and psychological set up. These digital natives face a complex existence, fraught with issues like competition, globalization, knowledge explosion, privatization etc. Naturally, the education system in general and the teachers in particular need to be more competent and skilled in rearing up the future generation of the world.

### **ICT: The Concept and Utility:**

According to UNESCO (2002) "ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters". ICT or the information and communication technology is the use of information technology to communication. It involves the use of technology in gathering, storing, retrieving, processing, analyzing and transmitting information. ICT incorporates the use of digital technologies like computers, satellite, mobile phones and the Internet. The developments in ICT have certainly made the task of managing information, introducing innovations in products, processes and organizational structures cheaper, easier and certainly efficient. ICT can be defined as the use of all conceivable digital media in managing and processing information. It provides access to knowledge anytime and anywhere. It helps us to construct knowledge and can universalise education in the truest sense.

ICT proves instrumental in knowledge construction by ensuring access to experience that is otherwise expensive, time-consuming or simply impossible to gather. It also increases motivation and makes the classroom attractive and dynamic. Teachers are also enabled to look beyond the conventional methods and engage the students more in the lessons through

multi-sensory teaching-learning.

The ICT integration in the classroom certainly supports the constructivist approach to learning by fulfilling the requirement conditions as identified by Driscoll (1994) i.e. providing complex learning environments, incorporating social negotiation, juxtaposing instructional content, using multiple mode of representation and making the instruction student centred. In addition to this, ICT integration also helps in the involvement of multiple senses, simulation of real environment holistic presentation of material and advocating independent learning. ICT incorporation in the class room can act at two levels:

- Collection and analysis of data, preparation of reports, submission of assignments etc.
- Supporting the teaching-learning process through the creation of appropriate environments.

### **Teacher Education and ICT:**

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and much of it is available to students as well as teachers at the same time (Perraton, Robinson and Creed, 2001). Education systems around the world are under increasing pressure to use the new information and communication technologies to teach students the knowledge and skills they need in the 21st century. In 1996, UNESCO took serious consideration of the situation of the teachers and termed it as 'silent emergency'. The situation demands the need for identification and development of contextualized teachers and teaching competencies and standards. The 1998 UNESCO World Education Report, *Teacher and Teaching in a Changing World* describe the radical implications ICT have for conventional teaching and learning. It predicts the transformation of the teaching-learning process and the way teachers and learners gain access to knowledge and information.

UNESCO in the World Education Report (1998) rightly observes that to meet the changing needs of the present society, teachers and students must have sufficient access to improve digital technology and the internet in their classroom, schools, and teacher-education institutions. Teachers must have the knowledge and competencies to make optimum use of the novel digital tools to ensure the students' standard academic achievement. The quality of the professional development of teacher education largely depends on the extent of the ICT integration in Teacher Education.

With the evolution of new concepts of learning,

teachers are under compulsion to act as facilitators of learning making it meaningful to individual learners rather than just disseminating knowledge and skills. Latest developments in the field of technology have brought new possibilities and promises to the profession of teaching, at same time, requiring the teachers to incorporate these technologies in their teachings.

### **PRE-CONDITIONS OF ICT INTEGRATION IN TEACHER EDUCATION**

To effectively harness the power of the new information and communications technologies to improve learning, the following essential conditions must be met.

- The mindset of the teachers must change to go beyond the traditional methods and abreast the new technologies for better results.
- Digital technologies and the Internet must be made accessible to the students and teachers alike in their classrooms, schools and the teacher education institutions,
- High quality, meaningful and culturally responsive digital content must be available for teachers and learners.
- Teachers must have the requisite knowledge and competencies to make use of the innovative tools and resources to ensure students' academic excellence.

A national policy outlining the role of ICT in advancing National goals and improving teaching-learning should be prepared through the collaboration of the policy-makers and educators. For successful integration of ICT in teacher education, the teachers should have a clear idea about

- 1 Use of ICT in teaching their subject.
- 1 Use of ICT for teaching the whole class.
- 1 Use of ICT for planning, preparing lesson and selection and organization of ICT resources
- 1 Use of ICT in the assessment of pupil's work when ICT has been used.
- 1 Use of ICT to keep up to date, share best practices and reduce bureaucracy.

Thus, true integration of ICT in teacher education implies not merely the development of ICT skill and competencies but equipping the students- teachers with the ability to constantly update themselves to ascertain the kind of ICT suitable for the learning experience to be provided and to use ICT to optimize the process of education.

### **Impact of ICT on Teacher Education:**

Given the multi-dimensional utility of the

Information and Communication Technologies, it can play multifaceted roles in the field of teacher education. Integration of ICT not only enhances the teacher professionalism at the same time equips the teachers with knowledge, skill and competencies to effectively carry out the teaching learning process ensuring the academic excellence of the students. The various roles ICT can play with respect to the teacher education are discussed in a nutshell below:

- ICT helps in the mutual interaction between the students and teachers. ICT facilitates both in pre-service and in-service teachers training.
- ICT helps the teachers in enhancing their quality of teaching and providing feedback.
- ICT helps in effective use of ICT software and hardware for teaching learning process.
- ICT can make teaching innovative and helps in improving the effectiveness of the classroom.
- ICT helps in improving professional development and educational management as well as enhances active learning of teacher trainees.
- ICT helps in increasing teachers' knowledge to survive in the knowledge based educational system.
- ICT helps teachers to execute their skills in the practical class room situation and prepare students for their social and vocational life.
- ICT as assistive tools for example while making assignments, communication, collection of data and documentation as well as conducting research.
- ICT can be used as medium for teaching and learning. The teachers can use it for teaching and the learners can use it for learning. Motion pictures, animation, simulation training help a lot in this regard.
- ICT is an effective tool for the organization and management of educational institutions.
- ICT helps teachers to teach effectively in large classroom, engaging the attention of all the students even of the most uninterested students.
- ICT helps to design a student centered environment, keeping the students interacted in the teaching-learning process.
- ICT is of immense importance in teacher training.

### **Changing Role of Teacher Educators in the Context of ICT Integration:**

With the changes coming into society in general and educational field in particular, the role of teachers has undergone sea-change. It is but obvious that role and responsibilities of teacher-educators should be redefined. The NCTE, Jaipur highlights three basic areas which require the mastery of the teacher educators. They are:

1. Five Performance Areas

### 2. Ten Competency Areas

### 3. Five Commitment Areas

Besides these basic requirements the teacher educators in the context of ICT integration in teacher education has to perform the following responsibilities:

1. Be engaged in planning and implementing ICT professional development training.
2. Act as a model for the trainees in the use of novel technologies in teaching- learning.
3. Inspire and encourage inclusion of technology among the trainees, colleagues, teachers and parents.
4. Update himself with the latest developments in the field of technology that have application in educational avenues.
5. Use internet as an instructional tool and e-mail, forum, communities and blogging for communication.
6. Encourage the trainees and teachers to use digital resources for finding answers to their questions.
7. Actively design and demonstrate the use of Multimedia applications.
8. Discuss the issues regarding student safety, ethics, security copyright etc.

### **ICT Orientation of Teacher Education to Increase Professionalism:**

One of the allegations against teaching as profession is that it lacks professionalism. The reasons being the attitude of the teachers as well as the nature and quality of pre-service training. Bose (2010) rightly observes that these programmes fail to prepare the would be teachers to adapt to the modern ICT based teaching-learning system to cater to the needs of the generation Y children who are digital natives. Hence, there arises the need to enhance professionalism for integrating ICT oriented educational system. There is an urgent need on the part of the teacher training institutes to integrate ICT into the curriculum to enable the future teachers to integrate ICT into the curriculum they would be dealing with. The requirements for this include.

### **Adoption of Collaborative Learning Approach**

Teachers and text books are not the only source of information. Learning is in fact an interactive and collaborative process. ICT integration facilitates this approach to a great extent. ICT can be used for sharing information and exchanging views that support learning. The teacher training institutions should adopt this collaborative approach during training with the help of ICT so that the trainee

teachers realize learning to be a social and integrative process.

### **Approach Reformation**

The modern day educational system advocates a learner centered constructivist approach for which the teachers have to create a conducive and stimulating environment for the students. The basic assumption behind this is that learning is spontaneous process facilitated by the collaboration with peers, teachers, parents etc. it certainly requires the use of ICT. Unfortunately, the teachers themselves have not encountered any such situation during their own training and therefore cannot create one for their students. So, it is of utmost importance that the teacher-training institutions should also use a similar approach.

### **Technology Orientation of Teachers**

To be able to adopt and implement an ICT based education system, the first requirement is of course the inculcation of technological skills in the teachers. They should be computer literate and able to browse over the internet. This is required for accessing, creating, storing and retrieving information as well as presenting it to the learners in a fruitful way. It will also help them to remain updated in this knowledge driven society.

### **Curricular Reformation**

Bose (2010) rightly observes that the realization of the potential of ICT for furthering the goals of education, its widening accessibility and its much needed integration in the educational process in the schools around the world are having a profound influence on all aspects of education. Teacher education curriculum needs to update this knowledge and skills as the school curriculum change. The aim of teacher training in this regard can be either teacher education in ICTs or teacher education through ICTs.

### **Exploring Educational Soft wares**

The teachers should be encouraged and trained to access, prepare and use various educational software in the teaching learning process. These not only break the monotony of the traditional teacher centered methods where the students remain for most of the time passive but also make learning multi sensory.

### **Apprising about the Ethical Issues**

The use of ICT facilitates learning greatly but at the

same time invites certain inadvertent dangers. The teachers should be encouraged to use these modern technologies but should also be apprised about the code of conduct and the risks involved in violation. They should be made aware of the rules governing access and use of information, copyright laws etc during the training.

### Conclusion

In the wake of the unprecedented growth of technology and science and its profound impact on society and education, teacher education is under new challenges. The role and responsibilities of teachers in the present era have changed drastically and certainly become varied and multi-dimensional. To prepare future teachers with necessary skills and competencies, attitude and aptitude, there is an urgent need to incorporate the up to date developments and innovations in the field of ICT. It helps to enhance the pedagogic skills of the teachers with the help of the modern technologies available on one hand and trains them in the use of ICT so that they can access the infinite resource of knowledge available and impart their lessons to the students in much more interesting and effective way. Thus ICT not only improves the quality of teacher training but also the quality of teaching-learning process in the classroom. What is of utmost importance is that the govt. comes out with right policies and planning for the integration of ICT in teacher education to make it adapt to the

changes of the time and enable it cater to the needs and aspirations of the present generations.

### Reference

- 1) Bhattacharjee, B. & Deb, K. (2016). Role of ICT in 21st Century Teacher Education. International Journal of Education and Information Studies. pp 1-6.
- 2) DAHIA, S.S.(2005). ICT-Enabled Teacher Educator, University News, pp109-114. May 2-8.
- 3) Kour, (2011). Application of ICT in Teacher Education. In Sahoo, P.K Yahoo, D, Das. Professionalism in Teacher Education.
- 4) Mondal, Ajit & Mete, Jayanta (2012). ICT integration in Teacher Education for Enhancing Professionalism. International Journal of Multidisciplinary Research. pp 297-301
- 5) NCTE (2002). ICT Initiatives of the NCTE Discussion Document. New Delhi: National council for Teacher Education.
- 6) UNESCO (2002). Information and Communication Technologies in Teacher Education, A Planning Guide. Paris:UNESCO.
- 7) UNESCO (2010).ICT in Teacher Education: Policy, Open Educational Resources and Partnership. Proceedings.
- 8) NCTE (1998) Curriculum Framework for Quality Teacher Education, NCTE, New Delhi).