# ROLE OF ICT FOR TEACHER EDUCATION IN THE 21$^{ST}$ CENTURY

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**ABSTRACT**

*The all round development of children largely rely on the professional competency of the teachers and effective teaching. Qualitative education is positively associated with effective teaching and learning outcomes. Information and Communication Technologies (ICT) play an important role to attain the objectives of quality education in the 21$^{st}$ century. The process of education highlights on the communication between teacher and learner in various ways of formal and informal settings. In teacher education, student-teachers should be inclined towards learning, exploration of knowledge, experimenting with innovative teaching approaches and use of ICT like computer-assisted instruction, multimedia etc. Development of ICT competency framework for teachers focuses that new initiatives could be adopted to increase teachers profession standards in the application of ICT teaching and teaching activities in schools. In this backdrop, the present study has attempted to study thematically on the role ICT for teacher education in the 21$^{st}$ Century.*

***Key words:*** *Development, Professional, Competency, Qualitative, ICT, Teacher Education, Skills, Innovative*

## INTRODUCTION:

The all round development of children depends much upon the professional competency and efficiency of teachers. According to the International Commission on the Development of Education UNESCO (1972) viewed that the teachers duty is less and less to inculcate knowledge and more and more to encourage thinking; his formal functions apart, he will have to become more and more adviser, a partner to talk to; someone who helps seek out conflicting arguments rather than handling out readymade thoughts. He will have to devote more time and energy to productive and creative activities, interaction, discussion, stimulation, understanding and encouragement. The process of education highlights on the communication between teacher and learner in various ways of formal and informal settings. The status of the teacher reflects the society cultural ethos of society (NPE, 1986). Teacher education attempts to improve social welfare and development of society in the sense that the qualitative development of a society depends primarily on qualitative teachers and teaching. In teacher education, student-teachers should be inclined towards learning, exploration of knowledge, experimenting with innovative teaching approaches and use of ICT like computer-assisted instruction, multimedia etc. It is conceived that advances in information and communication technologies necessitate becoming a part of the knowledge and skills imparted to students in an increasing complex world. The professional development of beginning and experienced teachers has been widely accepted as a key component in the integration of information and communication technologies into teaching and learning activities in Australian Schools (Pearson, 2003). Teacher education thus makes an effective environment where the warmth of human knowledge with skills and experience, wisdom and prudence, poignancy and excellence are involved always. In this backdrop, the present study has attempted thematically to focus on the role of ICT in teacher education in the 21$^{st}$ century.

## NEED OF TEACHER EDUCATION AND USE OF ICT:

It is the technology required for information processing. It involves use of computers, computer software and other devices to convert, store and process, transmit and retrieve information and includes the services and applications associated with them (Malik, 2005). Various evolution studies show a decline in learning levels among school students. Recent development includes a new impetus to skill development through vocational education in the context of the emergence of new technologies in a rapidly expanding economy in a globalised environment (NPE, 2016). Technology

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alone cannot be the solution to the problem of poor quality of education, the human factor is equally, if not more, important. The teacher is the pivot around which the education system revolves; sadly we have not succeeded in attracting good student to the teaching profession The most teacher education courses have a little substance .The focus of the proposed New National Policy (2016) is on improving the quality education and restoring its credibility. It seeks to create conditions to improve the quality of teaching, learning and assessment, promote transparently in the management of education. The need for use of ICT in teacher education programme may be indicates as (i) supporting new pedagogical methods, (ii) accessing remote resources, (iii) enabling collaboration, (iv) extending educational programmes , (v) developing skills for workplace, (vi) application of word processors for teaching and learning, (vii)application of spread sheets for teaching and learning. (viii) application of multimedia for teaching and learning, (ix) application of database for educational objectives and application of Internet as a research and communication tool.

## OBJECTIVES OF TEACHER EDUCATION AT HIGHER SECONDARY STAGE AS RECOMMENDED BY NCTE:

l To develop among teachers an acceptable desired perspective about academic stream and understanding of its nature, purpose and philosophy.

l To make them aware of the philosophy, purpose, and teaching learning strategies of the subjects they have to teach.

l To empower them to make in-depth pedagogical analysis of the subjects they have to teach and understand their relevance to tertiary education.

l To empower prospective teachers to comprehend the characteristics of students for making suitable educational provisions for them.

l To enable them to guide learners and prepare them for self-study, independent learning ,to develop reference skills, undertake group learning, critical thinking , conceptualization, self evaluation of their own performance and derive knowledge/ information from ICT , mass media and MCLs.

l To promote among them the competencies to communicate abstract and complex ideas and concepts in simple terms.

l To make them understand the objectives , transactional strategies, evaluation techniques and curriculum designing techniques and curriculum

designing in different areas of study at this stage.

l To empower the perspective student teacher to understand the regional specifies and educational demands and establish correlation with the main stream of national life and to suggest suitable solutions there off.

l To enable the prospective teachers to evolve need based and culture specific pedagogy.

l To make them aware of national problems, environmental crisis and Indian cultural ethos .To enable them to orient and sensitize the students about HIVAIDs, preventive education and to bring attitudinal change in undertaking numerous problems relating to healthy life, life skill development, stigma and discrimination etc.

## APPROACHES OF ICT AND TEACHER EDUCATION PROGRAMMES:

UNESCO identified four broad approaches which would be conducive for development of teacher education, educational system and school practices through proper use of ICT.  These four approaches can be dubbed as emerging, applying, infusing and transforming which focuses on a model for continuum of approaches to ICT development in Schools.
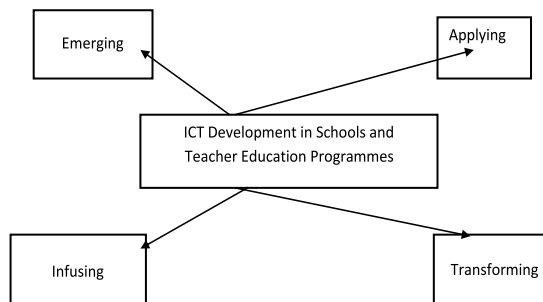


Figure-1: A model for Professional Development of Teachers and Use of ICT

**The emerging approach:**

 Emerging approach is connected with the education system and schools at the beginning stages of ICT development. In this initial stages, administers and teachers attempt to find out the possibilities and consequences of applying ICT for school management  and including ICT to curriculum with making awareness of the uses of ICT.

**The applying approach**:

In this approach, teachers attempt to use ICT for professional purposes in order to carry out effective teaching with a range of ICT tools. In this approach teachers use ICT to teach specific subject skills and knowledge to change their teaching methodology. It

also assists to the teachers for their personal training and professional development and develops a new understanding of the contribution of ICT to teaching and learning .Teachers largely dominates the teaching learning environment.

### The Infusing approach:
ı It involves integrating ICT across the curriculum.
ı  Schools now deploy a range of computer-based technologies in laboratories, classrooms, and administrative offices.
ı  Teachers attempt to explore innovative ways in which ICT changes their personal productivity and professional practices.
ı  The curriculum starts to merge subjects areas to reflect into real-world utilization.
ı  Teachers may select to include to web-based professional development groups to promote their practices.
ı  Teachers may test with different methodologies in order to carry out maximum impact of ICT on student learning and the management of learning.

### The Transforming Approach:
ı  Teachers and others school staff need to be convinced of the value of ICT personally and professionally.
ı  Schools that use ICT to rethink and renew school organization in creative ways are the transformation approach.
ı  ICT becomes an integral through invisible part of daily personal productivity and professional practices.
ı  The curriculum is now considered as learner-centered.
ı  It incorporates subject areas in real -world applications.
ı  ICT is taught as separate subjects at the professional level and is included into all vocational areas.

### Approaches for Integrating ICT in Teacher Education:
There are three approaches to integrate ICT in teacher education based on human capacity development (i) technology literacy, (ii) knowledge deepening and (iii) knowledge Creation with six components of educational system i.e.(i) policy, (ii) curriculum, (iii) pedagogy, (iv) ICT, (v) Organization and (vi) teacher training(UNESCO ICT Competency Standards for Teacher, 2008)

Technological development leads to change in work and changes in the organization of work, and required competencies are therefore changing. The following competencies are gained as(i)Critical thinking, (ii) General competencies, (iii) ICT competencies enabling expert work, (iv)Decision –making,(v) Handling of dynamic situations, (vi) Working as a member of team and (vii) Communicating effectively.

### Integration of ICT into Teacher Education Courses:
Knowledge, Skills and competencies in ICT have been integrated into teacher education courses. Students

ı  Participate in a needs analysis to estimate ICT competencies.
ı  Develop an awareness of personal professional needs.
ı  Prepare a 5-10 week teaching programme which integrates learning technologies.
ı  Develop on line skills and course materials.
ı  Analyze social, cultural and equity issues and trends in ICT.
ı  Take a leadership role in ICT projects

### Competency Framework for Teachers:
Competency framework for teacher focuses the following
ı  Implements learning experiences to improve the development of students' skills in the use of educational technology to access, present and manage information.
ı  Links use of technology with attainment of planned learning outcomes.
ı  Renders opportunities for students to use technologies for a variety of purposes; for example to assist inquiry, advance communication, extend access to resources and encourage expression of ideas.
ı  Assures students have equitable access to educational technology.
ı  Adjusts use  of technologies to serve diversity of learning styles and need( Martin, 2001)

### NCERT and Intel Teach program focuses the following aspects of use of ICT in  education in order to make quality teacher education:
ı  Application ICT in teaching and learning activities.
ı  Micro-teaching/Simulated teaching through Computer.
ı  Computer-Assisted Learning(CAL)
ı  Computer-Assisted Instruction (CAI).
ı  Various software for educational research
ı  Application of SPSS for Educational research.

ı Computer-Based Testing.

ı Application of technology in teaching and learning of languages, sciences, Social-sciences. Power Point Presentation is used in this connection.

ı Application of technology for improvement of project-based learning (PBL).

ı Using technology to attain 21st century educational skills like communication, collaboration and crititical thinking.

ı Promoting reflective level thinking skills through application of technology.

ı Incorporation of technology in teacher education.

ı Application of technology for making changes of educational institutions.

ı Making student autonomy and student centric learning environment through application of technology.

## CONCLUSION:

Objectives of education can be achieved though application of ICT in Education system .Major developments in Communication and Information Technology in recent decades have brought in new dimensions in the fields of transmission of data, and use of IT as vehicle for monitoring and management, among others. In the educational sector, this is one of the fundamental changes since the previous Education policy of 1986-1992. Computer literacy in human services is the ability to use or develop computer applications competently within the context of human service theory or practice (Richard and Thomas, 1990). Development of ICT competency framework for teachers focuses that new initiatives could be adopt to increase teachers profession standards in the application of ICT teaching and teaching activities in schools. The teacher effectiveness could be achieved through the important factors like qualitative position of students, classroom environment, teacher involvement, and use of ICT, student response and development of individuality. The NCTE recommended various objectives of teacher education programme at secondary level such as (i) maintaining the continuity of elementary education and to prepare students for the study of diversified courses and appropriate selection of subjects at the senior secondary stage, (ii) empowering the

perspectives teachers to adopt disciplinary approach in teaching and to develop among students interest in such studies. Teacher education programme also promotes the professional development of teachers such that the teachers should have clear knowledge about the theoretical and practical aspects of subjects which he attempts to teach. Knowledge, skills and competencies in ICT have been integrated into teacher education courses. Practicum of ICT based teaching and learning has been incorporated the components like (i) application of word processors for teaching and learning, (ii)application of spread sheets for teaching and learning. (iii) application of multimedia for teaching and learning, (iv) application of database for educational objectives, application of power point presentation and (v) application of Internet as a research and communication tool.

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