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ICT Integration in teacher education: Problems and concerns

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Abstract
Teachers play an important role in shaping the future of the country. Teacher education is important as efficient teachers can shape an efficient future society. It is well recognized that Teaching is an art which can be inculcated through a series of well-designed activities in respect of education and training of teachers and is equally valid for professional preparation of teacher educators. For improving quality of teacher education, we should have quality inputs and processes then automatically we have quality products which our nation desires. The Information and Communication Technology (ICT) have become common in all aspects of our life. ICT also plays an important role in education and this importance will continue to grow and develop in 21st century. The field of education has been affected by ICT, which have undoubtedly affected teaching learning and research. The integration of information and communication technologies can help revitalize teachers and students. This can help to improve and develop the quality of education by providing curricular support in difficult subject areas. Bringing ICT into the education system has a considerable impact on the practice of teachers, students, administration, curriculum framers. The main concern of this paper is to study integration of ICT in teacher education with regard to various problems and challenges and provide suggestive measures in this direction.

Keywords: Teacher Education, ICT Integration

Introduction
Today's world is a world of information explosion. Globalization and technological changes have accelerated pace of life over the past years; have created a new global economy. This information explosion is taking place in such a fast speed that it becomes difficult to cope up with such an information explosion. The emergence of this new global economy which has emerged due to rapid knowledge explosion has serious implications for the nature and purpose of educational institutions and posed a great challenge before education at all levels-primary, secondary, higher and teacher education level. Teacher education is very essential level of education as it prepares future teachers which in turn prepare future teachers. The great need of the hour is to improve quality of teacher education which greatly influences the quality of school education. Now the question arises how to improve quality of teacher education? For improving quality of teacher education, we should have quality inputs and processes then automatically we have quality products which our nation desires. For improving quality of teacher education, we have to improve quality of teaching- learning process, methods of teaching, curriculum, and evaluation. The information technology (IT) can help us in improving the quality of teacher education. Information Technology is nothing It is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronics - based combination of computing and tele-communication.

The use of ICT in teaching-learning process is a relatively new phenomenon and it has been the educational researchers' focus. The effective integration of this technology into classroom practices poses a challenge to teachers and administrators'. Conventional teaching has emphasized content. For many years course have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate and rehearse the content. Contemporary settings are now favouring curricula that promote competency and performance.

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ICT is an electronic means of capturing, processing, storing, communicating information. The use of ICT in the classroom teaching-learning is very important as it provides opportunities for teachers and students to operate, store, manipulate, retrieve information, and encourage independent and active learning. Information and communication technologies (ICT) have become commonplace entities in all aspects of life. Across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business and governance. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centred learning settings and self-responsibility for learning such as distance learning, motivate teachers and students to continue using learning outside school hours, plan and prepare lessons and design materials such as course content delivery and facilitate sharing of resources, expertise and advice. This versatile instrument has the capability not only of engaging students in instructional activities to increase their learning but of helping them to solve complex problems to enhance their cognitive skills. ICT is used in order to communicate create, manage and distribute information. ICTs include computers, the internet, telephone, television, radio and audio-visual equipment ICT includes any device and application used to access, manage, integrate, evaluate, create and communicate information and knowledge. Digital technology is included in this definition as services and applications used for communication and information processing functions associated with these devices.

Technology is the science of the application of knowledge to practical purposes. Information means any communication or representation of knowledge in any form. Communication is an integral part of human existence. Modern society is turning into an information society and communication is the exchange of information. It is the process & transferring information form a Sender to a receiver with the use of a medium in which the communication information is understood by both sender and receiver. Therefore Communication Technology implies the knowledge, skills and understanding needed to exchange information verbally or non-verbally. It is processing of information in terms of accessing information, decoding information and sending it via a medium and changer to the receivers. Medium or channel can be written or oral or gesture form of information through speech, action or any electronic machine. Systems such as telephone, telex, Fax, radio, T.V. and Video are included, as well as more recent computer based technologies, including electronic data interchange and e-mail.

Teacher education
Teacher education is an integral component of the educational system. It is intimately connected with society and is conditioned by the ethics, culture, and character of a nation. The curriculum framework 2005 as proposed by NCERT (National Council of Educational Research and Training), India focuses on the issues of;
- Connecting knowledge to life outside
- Shifting from rote learning to constructing knowledge

- Providing a wide range experiences for the overall development of a child Bringing flexibility in the examinations

Aim of Teacher education
The aim of teacher education is *to develop skills and appropriate knowledge* among teacher trainees for using and integrating the correct technology in an appropriate manner. Every teacher should know:
- how to use technology,
- pedagogy and
- subject area content effectively

In techno-pedagogy, there are three areas of knowledge, namely: content, pedagogy, and technology.
- Content (C) is the subject matter that is to be taught.
- Technology (T) encompasses modern technologies such as computer, Internet, digital video and commonplace technologies including overhead projectors, blackboards, and books.
- Pedagogy (P) describes the collected practices, processes, strategies, procedures, and methods of teaching and learning. It also includes knowledge about the aims of instruction, assessment, and student learning.

Use of ICT in teaching learning environment can bring a rapid change in society. It has the potential to transform the nature of education i.e., where and how learning takes place and role of learners and teacher in the process of learning. It is essential that teachers must have basic ICT skills and competencies. It is for the teacher to determine how ICT can best be used in the context of culture, needs and economic conditions. Good teaching is not simply adding technology to the existing teaching and content domain rather it should cause the representation of new concepts and requires developing sensitivity to the dynamic, transactional relationship between the three components of knowledge: Content, Technology and Pedagogy.

ICT integration in Education
- ICT is a generic term referring to technologies, which are being used for collecting, storing, editing and passing on information in various forms
- ICT literacy basically involves use of digital technology, communication tools and/or access, manage, integrate, evaluate and create information in order to function in a knowledge society.

Steps taken to Integrate ICT
- Eleventh Five- Year Plan (2007-2012) importance of ICT in education has been emphasized.
- "National Curriculum Framework"(2005) emphasized the judicious use of technology to increase the reach of educational program, facilitate management of the system as well as address specific learning needs and requirements.
- Government of India has set up a national task force on information technology and software development to universalize computer literacy.
- Intel Teach to future program is a world wide effort to integrate technology in classroom.

Needs of ICT
- Rapid broadcasting of knowledge.
- Getting recent knowledge.
- To get deep knowledge about any concept related to content.
- To save time and energy.
- Information sharing.
- To get knowledge any time (24×7).
- Broadcasting information through multimedia.
- Applicable by many people.
- Telecasting more knowledge with less cost.

The main use of ICT in teacher education is for acquiring knowledge, for disseminating knowledge and for assessing knowledge.

Importance of ICT in Teacher education:
- It makes learning more interesting especially for hard to understand content.
- It bridges distances by using emails, phone, video conferencing, etc.
- It breaks literacy barriers in communications by using video and radio.
- It enhances interaction with peer over long distances.
- It creates entertainment opportunities by games, music, video, etc.
- It provides educational information through distance learning.
- It provides health information including on sensitive issues.
- ICT tools build capacity in teachers to upgrade their learning and teaching skills.

Why ICT Integration in Teacher Education?
- Browsing the Internet and locating useful information from the Internet for the development of lesson plans.
- Developing lessons plans incorporating student use of technology in the learning process.
- Evaluating and selecting appropriate software for a particular subject and per student needs.
- Generating printed documents like student assignments, newsletters, communication, etc. utilizing a variety of applications software like word processing and desktop publishing.
- Managing student data; using data management tools for efficiently managing learning.
- Using technology to gather, organizes, and report information about student performance like Excel and Access for database management.
- Developing tools to evaluate technology-based student projects including multi-media, word processing, database, spreadsheet, PowerPoint, desktop publishing, and Internet/telecommunications.

The ICT being latest, it can be used both at school and higher education levels in the following areas:
- Teaching–learning process
- Quality and accessibility of education(24×7)
- Learning environment (Critical thinking, research, and evaluation skills)
- Learning motivation
- Scholastic performance

- Diagnostic testing
- Remedial teaching
- Evaluation
- Psychological testing
- Development of Virtual Laboratory
- Online Tutoring
- Development of Reasoning & Thinking
- Instructional Material Development

Problems of ICT integration in teacher education
- Only at the awareness development level are objectives being achieved, but higher order thinking skills regarding the use of ICT tend not to be occurring.
- Technology, pedagogy and content area integration is a rare feature. All components are dealt with separately which creates confusion for students.
- There is a serious discrepancy among syllabi of teacher training institutions and secondary schools. Syllabi at various institutions are not on a par with school level curriculum.
- Time duration of the courses related to ICT education is too short to develop knowledge and necessary skills among students to achieve higher order thinking skills.
- There is a lack of availability of proper infrastructural facilities at most of the institutions.
- There is a mismatch between available hardware and software to develop required learning resources.
- Support from technical staff for maintenance is dismal.
- Lack of teacher confidence
- Lack of teacher competence
- Resistant to change and negative attitudes
- Lack of time
- Lack of effective training
- Lack of accessibility
- Lack of technical support

Suggestions
There are some suggestions here for improving the condition of teacher education:
- All teacher educational institutions must have essential ICT infrastructure.
- All teacher educational institutions must have a computer laboratory.
- All teacher educational institutions must have a digital library.
- Libraries should be folly equipped with necessary hardware and its maintenance, software, electronic resources like e-books, online journals etc.
- All institutions must have necessary computer instructors.
- Paper on computer literacy skills must be made compulsory instead of optional basis.
- Researches on impact of ICT on teachers and students should be conducted.
- Refresher courses, Orientation programs, Seminars, Conferences, Workshop, Symposium should be encouraged. All the educationists can be oriented with new developments, changes, innovations in the field of education.

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