



INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) AND TEACHER EDUCATION

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ABSTRACT

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and modern technologies are demanding teachers to learn how to use these technologies in their teaching. A teacher plays a pivotal role in the process of teaching learning. Hence, knowledge of ICT and skills to use ICT in teaching-learning has gained enormous importance for today's teachers. Teachers are expected to know how to successfully integrate ICT into his/her subject areas to make learning more meaningful. This knowledge development has gained much importance with the notion that exposure to ICT during this time is helpful in increasing student teachers' willingness to integrate technology with classroom teaching. While new technologies increase teachers' training needs, they also offer part of the solution. ICT can provide more flexible and effective ways for professional development for teachers, improve teacher training, and connect teachers to the global teacher community.

Key words: *glory, new technology, mason, technological society, horizons*



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Introduction

Information and communication technologies (ICTs) are a major factor in shaping the new global economy and producing rapid changes in society. Within the past decade, the new ICT tools have fundamentally changed the way people communicate and do business. They have produced significant transformations in industry, agriculture, medicine, business, engineering and other fields. They also have the potential to transform the nature of education-where and how learning takes place and the roles of students and teachers in the learning process.

Teacher education institutions may either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological change. For education to reap the full benefits of ICTs in learning, it is essential that pre-service and in-service teachers have basic ICT skills and competencies. Teacher education institutions and programs must provide the leadership for pre-service and in-service teachers and model the new pedagogies and tools for learning. They must also provide leadership in determining how the new technologies can best be used in the context of the culture, needs and economic conditions within their country. To accomplish these goals, teacher education institutions must work closely and effectively with K-12 teachers and administrators, national organizations, politicians and other important stakeholders in the educational system. Teacher education institutions also need to develop strategies and plans to enhance the teaching-learning process within teacher education programs and to assure that all future teachers are well prepared to use the new tools for learning.

A framework for ICTs in Teacher Education

In planning for the infusion of ICTs into teacher preparation programs, several factors important to a program's success must be considered. This section provides a holistic framework to assist in designing the integration of information and communication technologies (ICTs) into teacher education. The framework is coherent with the context provided by today's society and reflects more recent understandings of the nature of learning, including aspects of learning communities during the school years and beyond into life-long learning. The holistic framework will help teacher educators and administrators consider the cultural and educational system context, technology resources, and other factors that are important in planning the integration of technology into the pre-service curriculum. Limited technology, resources and conditions of rapid change in educational, economic and political systems challenge many contexts of this curriculum. In some regions, the shortage of teachers, teacher educators, facilities and standards has been chronic for years and has reached crisis proportions. Access to ICTs resources may also be quite limited. Within this document, ICTs should be broadly defined as including 'interactive radio' and multiple media including TV, as well as computers and hand-held electronic devices.

The curriculum framework is comprised of four clusters of competencies encircled by four supportive themes. The curriculum framework also suggests that each teacher is allowed to interpret the framework within his or her context and personal approach to pedagogy, which is always related to the subject discipline or content area, rather than to the technology itself. The four themes that bind the curriculum as a whole are described briefly below, followed by descriptions of the four core competencies.

Four Themes

1. **Context and Culture:** It identifies the culture and other contextual factors that must be considered in infusing technology into teacher education curriculum. It includes the use of technology in culturally appropriate ways and the development of respect for multiple cultures and contexts, which need to be taught and modeled by teachers.
2. **Leadership and Vision:** Essential for the successful planning and implementation of technology into teacher education institution.
3. **Lifelong Learning:** Acknowledges that learning does not stop after school. In common with the other themes, it is important that teachers and teacher preparation faculty model lifelong learning as a key part of implementation, and as an ongoing commitment to ICTs in teacher education.
4. **Planning and Management of Change:** Final theme, born of today's context and accelerated by technology itself. It signifies the importance of careful planning and effective management of the change process.

Four Competencies

The ICT competencies are organized into four groups.

1. **Pedagogy:** It is focused on teacher's instructional practices and knowledge of the curriculum and requires that they develop applications within their disciplines that make effective use of ICTs to support and extend teaching and learning.

2. **Collaboration and Networking:** It acknowledges that communicative potential of ICTs to extend learning beyond the classroom walls and the implications for teachers' development of new knowledge and skills.
3. **Social Issues:** Technology brings with it new rights and responsibilities, including equitable access to technology resources, care for individual health, and respect for intellectual property included within the Social Issues aspect of ICT competence.
4. **Technical Issues:** It is an aspect of the Lifelong Learning theme through which teachers update skills with hardware and software as new generations of technology emerge.

Rationale for Integration of ICT in Teaching-Learning Process

The schools are to transform the curriculum and teaching learning process to provide students with the skills to function effectively in this dynamic information rich and continuously changing environment. This environment involves a change in the roles of both teachers and students. The role of the teacher will change from knowledge transmitter to that of learning facilitator, knowledge guide, knowledge navigator and co-learner with the student. Students will have great responsibility for their own learning in this environment as they see out, find, synthesize and share their knowledge with others. ICT provides powerful tools to support the shift to student-centered learning and the new role of teachers and students. Thus, a new learning environment can be created with the use of technology.

The most critical factors in the successful infusion of ICT into schools and Teacher Education is the extent to which the teachers and teacher educators have the knowledge and skills for use of ICT in their teaching activities. But for the successful integration of ICT in Teacher Education, the teacher educators have to demonstrate their ICT competencies along with already identified competencies. These competencies, which are developed, based on 'National Education Technology Standard for Teachers', published by International Society for technology in Education (ISTE) are listed below:

- Demonstrate introductory, knowledge, skills and understanding of concepts related to ICT.
- Involve in planning and implementing ICT professional development training.

- Plan, design and demonstrate the use of multimedia application for instructional use.
- Use technology to support learning-centered strategies.
- Use technology to assess student learning in difficult subject matters.
- Internet through e-mail/forum with trainees, practicing schools and parents.

Approaches to ICT integration in Teacher Education

Use of ICT within teacher training programs around the world is being approached in a number of ways

with varying degrees of success. These approaches can be subsequently described, refined and merged into four primary approaches viz:

1. **ICT skills development approach:** Here importance is given to providing training in use of ICTs in general. Student-teachers are expected to be skilled users of ICT in their day to day activities. Knowledge about software, hardware and their use in educational process is provided.
2. **ICT pedagogy approach:** This approach emphasizes on integrating ICT skills in respective subjects, drawing on the principle of constructivism; pre-service teachers design lessons and activities that centre on the use of ICT tools that will foster the attainment of learning outcomes. This approach is useful to the extent that the skills enhance ICT literacy skills and the pedagogy allows student to further develop and maintain these skills in the context of designing classroom based resource.
3. **Subject-specified approach:** ICT is embedded into one's own subject areas. By this method teachers not only expose students to new and innovative ways of learning, but also provide them with a practical understanding of what learning and teaching with ICT looks and feels like. In this way, ICT is not an 'add on', but an integral tool that is accessed by teachers and students across a wide range of the curricula.
4. **Practice- Driven approach:** Here, the emphasis is on providing exposure to use ICT in practical aspects of teacher-training also. By emphasizing on developing lessons, assignments etc., using ICT and implementing these in their practical work experience at various levels, the students are provided with an opportunity to assess the facilities

available at workplace and effectively use their own skills to manipulate these facilities.

Based on the concept that the pre-service teacher is a learner, manager, designer and researcher, s/he is expected to design ICT activities with their tutor-teacher, manage those

5. activities in the classroom, and evaluate their effectiveness in terms of student learning.

Ideally, an integrated approach is to be followed for developing ICT skills in teachers.

Changing Role of Teacher Education

For the successful integration of ICTs in teacher education, the teacher must shoulder the following responsibilities:

1. Act as a role model for pre-service trainees and in-service teachers, demonstrating the use of technology across the curriculum.
2. Encourage technology integration among the trainees, colleagues, teachers and parents.
3. Be up-to- date with the latest technological developments and advise the institutions concerning technology advancements and up-gradation.
4. Aid in the implementation of technology plans of the institutions.
5. Plan, design, and demonstrate the use of multimedia applications for instructional use through multimedia projects.
6. Examine a variety of evaluation and assessment tools.
7. Become active, competent online users of telecommunication services and act as model in the use of internet as an instructional tool.
8. Direct trainees and teachers to digital resources that will be able to answer their questions.
9. Address issues related to acceptable user policies, student safety, ethics, security, copyright, etc.
10. Use information literacy to access, evaluate, and use information from a variety of sources.
11. Have the competencies in software evaluations and advise the instruction in making the right choices.

Computer Technology in Teaching and Learning

The computer is now regarded as a super-teaching machine. Its use in education has been tried as an innovation and it has proved its teaching efficiency in many developed countries. Teaching about computer makes students understand what computers do, what computers cannot do, and how computers could be used to facilitate learning.

Computers can be employed in schools in three generic ways. They can be used as a learning tool, as the object of the study and as a planning and management tool for teachers or school administrators. Nowadays computers are used in the classroom as a support system to improve the teaching-learning process. It is also possible to use the computers to teach new skills or concepts, to provide remedial teaching, to facilitate development of creative thinking and problem solving. Its other uses are evaluation of students performance and classification of children according to the ability, preparation of timetables and schedules, allocation of learning materials according to individual needs and interests, maintenance of progress cards efficiently and confidently, providing information data for guidance and reference, provision for direct interaction between pupils and subjects in tutorial work, engaging students in tutorial work and providing immediate feedback to students for better interaction and motivation.

Teachers' work can be made easier and faster with computers. Computer-Enhanced Instruction (CEI) refers to using computers to bring additional dimensions to traditional teaching methods. This includes using computers to create instructional materials, slide shows, videotapes, worksheets, tests, bulletin board materials, rewards, incentives, games, and displays. It also includes using computers to increase personal productivity through grade-book programs and word processing programs. Teachers who use computers in these ways find that instruction is indeed enhanced. They are more productive, more organized because of the thought and planning required, and more efficient because of better record keeping. The learning environment is more appealing when materials are neatly and professionally generated. Finally, students generally have more positive impressions of teachers when they use computer in the classroom.

Computer can be used as enabling tools for all students including students with special needs. Students who have difficulty with writing, spelling, mathematics, organization, and sequencing find that computers make these tasks easier. We can use applications such as word processing programs, database programs, spreadsheets and graphics programs as instructional tools. Such applications may help students overcome programs that interfere with learning.

Information and Communication Technology (ICT) in Education

The emergence of technology has been further applied to information, which has revolutionized the process of the transmission of information.

Information Technology refers to,

- Sharing and interchanging information such as knowledge, mental skills, motor skills and attitudes through the use of mass media especially electronics.
- Achieving success in this sharing and interchanging through communication which consists of receiving, i.e., hearing or seeing; accepting as nothing can change unless information is accepted and getting some action, i.e., changing performance or behavior.
- Data processors which are a key component in information technology in the processing of data.

ICT is the scientific and technologies discipline, which deals with collection, storing, dissemination of information to the individual or group. ICT involves primarily the storage and communication of information. The world is converted into minute global capsule and anyone desirous of information would find it only a click way. ICT is a technology that aids in storage of data, retrieval as and when required, telecommunication, browsing for information and saves time, effort, paper, money and resources.

ICT represents one of the current applications of technology in Teacher Education. “Information and Communication Technology (ICT) is the scientific, technological and engineering discipline and management techniques use in information handling and processing, their application; computers and their interaction with men and machines and associated social, economical and cultural matters” (UNESCO).

The application of ICT is mainly purposed on the teaching-learning process. The application of ICT provides vast array of powerful tools that may help in transforming the present isolated, teacher-centered and text bound classroom into rich student-focused, interactive knowledge environment.

Use of ICT to Teachers

- ICT enhances the initial preparation by giving good teaching and training materials, use of simulators, recording and feedback in teaching.
- With the help of ICT, teachers can access with colleagues, schools, institutions, and universities, expertise, rich resources in cyber space.
- ICT enables interaction with students over a physical distance.
- Didactic software and intelligent tutoring systems can dramatically reduce the cost of teacher training.
- ICT provides lifelong professional development y providing courses in a virtual situation, training on demand, orientation and refresher courses through videoconferencing and online.
- ICT facilitates sharing of ideas, experience as well as collaborating on projects, and exchange materials through virtual communities.

Therefore, teachers should have deep knowledge and strong attitude towards skillful use of ICT.

Conclusion

In the modern era, ICT is becoming part and parcel of the educational system. ICT is a medium of teaching and learning and also an assisting tool for making assignments, collecting data and documentation, communicating and conducting research. ICT rings changes in the pedagogy of academic transaction. It is also useful for organizing and managing schools. ICT provides enjoyable environment for both teacher and learner. This shift develops a creative and interactive learning environment for both.

Therefore, it is imperative that teachers should be competent enough to use ICT effectively in the classroom situation. Hence, it is important and need of the time for teachers to have practice and learning in ICT during their service experiences. While the curricula and teaching methods are important, it is necessary to know how one could implement technology in the curriculum.

References

1. Nagpal Rajni, Sangeeta.(2013). Integrating Information and Communication technologies (ICTs) in Teacher Education. Edutracks. December .
2. Myrtle Joyce shobha D'Souza.(2012). Perspectives on ICT Integrated Approach at the Teacher Education Level. Edutracks. January.
3. Behera Biswajit.(2013). Need of Continuous Professional Development of Teachers. University News. December.
4. Amrughavalli Devi,A.(2005). The usage of Technology in mathematics Education. Edutracks. February.
5. Information and communication technologies in Teacher Education: A Planning Guide.(2002) United Nations Educational Scientific and Cultural Organization.
6. Panigrahi Ranjan Manas.(2016) Resource Book on ICT Integrated Teacher Education. Commonwealth Educational Media Centre for Asia New Delhi

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