INTEGRATING DIGITAL TECHNOLOGIES IN TEACHING LEARNING PROCESS

By

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ABSTRACT

India has made impressive strides in the application of information and communication technology in recent years and this has reflected in a vibrant and fast growing economy. It is now an acknowledged world leader in the knowledge industry. In this paper an attempt is made to highlight the role of Information and Communication Technology (ICT) in teacher education. A brief introduction to ICT, and the role of ICT in teacher education is herewith presented. Some suggestive ideas for designing the teacher education course are also presented. ICT is a generic term referring to technologies, which are being used for collecting, storing, editing and passing on information in various forms. Information and Communications Technologies are one of the major contemporary factors shaping the global economy and producing rapid changes in society. Research and evaluation indicate that exposure to ICTs has really changed the lives of lecturers and students in tremendous and positive ways. The teacher training institute is providing the teachers of the future and National Council for Teacher Education (NCTE) assumes that teachers are the new figures in arranging learning process. At the degree level an entire paper on ICT titled "Educational technology and Computer Education" is offered to the students.

Keywords: Computer-mediated Communication, Improving Classroom Teaching, Teaching/learning Strategies, Cooperative/collaborative Learning, Evaluation Methodologies.

INTRODUCTION

India has made impressive strides in the application of information and communication technology in recent years and this is reflected in a vibrant and fast growing economy. It is now an acknowledged world leader in the knowledge industry. Today, all our activities are becoming highly knowledge based [1-9]. There is a shift from the industrial era to the information era. Globalization, liberalization and a market-oriented economy have added new flavor to our activities, with the result that knowledge and skills of every professional, including teachers need to be continuously updated [10-16].

According to American commission "The quality of a nation depends upon the quality of its citizens. The quality of its citizens depends not exclusively but in critical measure-upon the quality of their education. The quality of their education depends, more than any other single factor, upon the quality of their teachers".

The primary concern for educators is to develop the fullest potential of all students, affording them opportunities to pursue a variety of avenues to success [17]. Teacher education institutions and programs have the critical role to provide the necessary leadership for adapting pre-service and in-service teacher education. It deals with the current demands of society and economy. They need to model the new pedagogies and tools for learning with the aim of enhancing the teaching- learning process. Globalization has created an environment to make a close network between individuals, groups, institutions, and organizations around the world [16]. Sharing of views and ideas and acquisition of knowledge on the newer field has become inevitable. The wheels of "Education Providers" have been geared according to the vibrations of the technological advancement and hence the teaching-learning atmosphere takes up newer dimensions every now and then [15].

In this paper an attempt is made to highlight the role of ICT in teacher education. A brief introduction to ICT, and the role of ICT in teacher education is herewith presented. Some suggestive ideas for designing the teacher education course are also presented.

Information and Communication Technology (ICT)

ICT is a generic term referring to technologies, which are being used for collecting, storing, editing and passing on information in various forms. Information and Communications Technologies (ICTs) are one of the major contemporary factors shaping the global economy and producing rapid changes in society. They have fundamentally changed the way people learn, communicate, and do business. They can transform the nature of education, where and how learning takes places and the roles of students and teachers in the learning process.

ICTs have the potential to enhance access, quality and effectiveness in education in general and to enable the development of more and better teachers in particular. A personal computer is the best known example of the use of ICT in education, but the term multimedia is also frequently used. Multimedia can be interpreted as a combination of data carries, for example video, CD-ROM, Floppy disc and internet and software in which the possibility for an interactive approach is offered.

Use of ICT in Education

Generally the following functions of the use of ICT in education are described in literature:

ICT as object: It refers to learning about ICT, mostly organized in a specific course. What is being learned depends on the type of education and the level of the students. Education prepares students for the use of ICT in education, future occupation and social life.

ICT as an 'assisting tool': ICT is used to as a tool, for example, while making assignments, collecting data and documentation, communication, and conducting research. Typically, ICT is used independently from the subject matter.

ICT as a medium for teaching and learning: This refers to ICT as a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn.

ICT as a tool for organization and management in schools:

Research and evaluation indicate that exposure to ICTs has really changed the lives of lecturers and students in tremendous and positive ways. Students described the changes in their learning environment as follows:

1. They have become more independent learners, who do not consider the lecturers as the sole source of knowledge anymore.

2. They increasingly enjoy learning.

3. They enjoy the democratization process taking place at classroom level.

4. They consider their lecturers as students themselves.

5. They stop spending considerable time and money running around libraries to look information when given an assignment.

Use of ICT in Teacher Education

Although teachers consult each other more frequently, the teacher eventually decides on the educational practice in the classroom. The teacher is responsible and has the opportunity, as long as the results are satisfactory, to teach in the way pleases. However, in practice due to some constraints on the part of the teacher, the teacher educators rely on the traditional 'chalk and talk' lecture method.

The teacher training institute is providing the teachers of the future and NCTE assumes that teachers are the new figures in arranging learning process. The institutes, therefore, have to anticipate new developments and prepare prospective teachers for their future role. Teacher training institutes therefore have to shift their focus from dealing with present education to that of 'Future education'. Accordingly, teachers' professional development in the use and application of technology must be given the priority and resources it deserves, while still maintaining a constructive critical eye on its costs and methodologies.

A component of ICT in some form or the other, and to different extent, is now an integral part of the teacher education curriculum for all students, either at the diploma level or at the degree level. Even masters degree programs in education lead to M.Ed degree.

At the degree level an entire paper on ICT titled "Educational technology and Computer Education" is offered to the students. So most of the teacher training institutions are equipped with an 'Educational Technology Laboratory' and a 'Computer Lab' with some or all of the following minimum items of essential ICT hardware and software as required by NCTE guidelines and regulations:

- TV
- CD/VCD player
- Audio/video cassettes
- Overhead projector
- Cdwriter
- Slide projector
- Projection Screen
- Public Address System
- DVD/VCD player
- LCD projector
- Audio system
- Camera (Film and /or Digital)
- Video camera(cassette/Digital)
- Multimedia PC systems with monitors, hard disks drives.
- Floppy drivers, UPS, printer
- Windows operating system software
- MS office suite, including word, excel,& power point
- Some items of supporting software, including Antivirus Software.
- Some educational software pertaining to school subjects on Cds
- Scanner
- Laser Printer
- Networking
- Dial-up internet access

Having the above tools and techniques at our disposal, it is but natural to expect that training in ICT would be most effective. However, the situation is different. Prof. A.N. Maheswari has rightly said, "Teacher Education in India has been following the same road for over one hundred and fifty years and that road has reached dead-end from several points of view". The need of the hour is to open up the dead end road of education and design and engineer a new road.

The teachers are given importance and the knowledge delivered by them will be based on their expertise not on the real requirements and not on the level of customer satisfaction. Whereas the learning centered learning environment works on the standards fixed and followed on the system. The difference between these was explained in the Table 1.

Redesigning Teacher Education

ICT in "General Papers"

Both instruction about ICT and use of ICT can be made in general papers in a teacher education program. For example

- All written assignments must be appropriately desktop published.
- Use of web based references may be allowed and encouraged,
- Seminars or presentations by students must make use of multimedia.
- Students must be encouraged to submit some or all of their assignments as E-mail attachments.

ICT in "Methodology Papers"

In addition to the above mentioned approaches, a few more examples can be given.

- Lesson plan should be based on ICT.
- Blue print and question paper preparation can be documented using computers.

Classroom activity	Teacher Centered Learning Environment	Learning Centered Learning Environment
Teacher Role	Fact Teller, Always Expert	Collaborator, Sometimes Learner
Instructional Emphasis	Fact memorization	Relationship, enquiry, invention
Concept of Knowledge	Accommodation of Facts, Quantity	Transformation of facts
Demonstration of Success	Norm referenced	Quality of understanding
Assessment	Multiple Choice items	Criterion referenced portfolios and performances
Technological Use	Drill and Practice	Communication, access, collaboration, expression

Table 1. Teacher Centered and Learning-Centered Learning Environment

- The analysis and interpretation of the achievement test can be done using computer.

Recommendations and implications

- The today's competitive world requires the learning centric environment, in which all should learn first and then teach.
- The learning environment should possess the updated real requirement details.
- The students should study the facts by understanding the concept.

All the education systems should be outcome based and not on input and output model.

Field experiences and project work

Students should report their field experiences and project works in a CD form.

Conclusion

ICT is a fast growing field throughout the world. This is a new field evey body needs to have the knowledge of it, especially the teachers, because they are the people who will be framing the future of the country. ICT in education will not function on their own. It is the teachers who are required to use the technology to enhance student learning. So the foremost task is the development of ICT trained teacher educators. Unless teacher educators stand out as models in the classes, it is not possible to prepare a new generation of ICT literate teachers. For this to happen, ICTs should be infused or incorporated into the entire curriculum.

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