ICTS in Teacher Education: Challenges and Remedies

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Abstract: *Globalization and privatization have thrown up new challenges before educational planners. It is very important for qualitative improvement of education to prepare competent teachers. In order to ensure production of right type of teachers a sound program of professional preparation of teachers is essential; for this purpose we need to integrate Information and Communication Technologies (ICTs) in teacher education programmes. One of the major shortcomings among others in the present courses is that the teacher-trainees do not get proper training in the use of ICTs. The teacher-educators themselves do not possess the necessary ICT skills. The author in this article avers that bulk of the faculty currently engaged in teacher preparation is neither prepared to use technologies (ICTs) not has it updated its knowledge on technological developments.*

Keywords: *ICTs, Teacher education, Quality education, MS office, Computer networks, Multimedia, Internet*

1. INTRODUCTION

A nation's development potential depends upon its ability to continuously educate its population and create armies of skilled manpower. In particular, use of Information and Communication Technology (ICT) in acquiring knowledge and skill has become an essential element in education and training. These ICT elements in the educational process have magical effects.

Higher education without the support of ICT makes the lives of learners and teachers equally difficult. A nation's intellectual strength depends on ICT support. The use of computing and communication technology to enhance the efficacy of transaction and productivity is the driving force in this new era of social and economic transformation in the new society called Information Society.

A strong ICT infrastructure can give an institution a competitive advantage for the best students and faculty and an advantage in competition for absorbing external research grants to execute studies, research etc, in a shorter time and with great resolution. The quality of an institution's environment for digital information storage and retrieval becomes more important than the institution's **conventional, library resources in print media.**

2. CONCEPT OF INFORMATION AND COMMUNICATION TECHNOLOGY

Information science is "the science that investigates the properties and behaviors of information, the forces governing the flow of information, and the means of processing information for optimum accessibility and usability. The field is derived from those related to mathematics, logic, linguistics, psychology, computer technology, graphic arts, management and other fields".

ICT implies telecommunications involving a combination of computers, networks, satellites, radio, television and the like. ICT resources involve not only hardware (equipment) but also software (programmes), people, education, government and association/collaboration resources. Application of ICT to education involves many disciplines related to computers in handling, processing, management, automation and communication of information in the broader cultural and economic context of a society.

ICTs in Teacher Education

The need for teacher training is widely acknowledged. Professional development to incorporate ICTs in to teachers and learners is an ongoing process. Teacher education curriculum needs to update this knowledge and skills as the school curriculum change. The teachers need to learn to teach with digital technologies, even though many of them have not been taught to do so. The aim of teacher training in this regard can be either teacher education in ICTs or teacher education through ICTs. A teacher's professional development is central to the overall change process in education. They are unsure of how to make most effective use of ICT as a powerful and diverse resource and one which can potentially alter traditional teacher-student relationships. If they are to invest time and energy in embracing the technology, teachers need to

understand and experience the potential benefits of using ICT.

3. UNIVERSITY ROLE IN TRAINING ON ICT

What are universities doing to popularize among students of Teacher Education? It is difficult to compare one university with another in this regard as there is a great variation in philosophy, strategy, and funding among the universities, particularly in teacher education. However, universities involved in preparing teachers, are supposed to apply ICT in effective classroom transaction, storage, retrieval of information and evaluation. This is applicable equally for pre-service teacher training, as well as continuing education for teachers.

Of primary concern to the university is the issue of what technology and technology applications teachers ought to learn. The issue of what to teach about technology is complicated, for several reasons. Should teachers in training college learn about ICT as content, or technology as instructional tools?

It is argued by some that the most important thing the university can do for pre-service and in-service teachers is to help them understand the implications of technology developments in general on the perspectives and lifestyles of aspiring teachers. That is, the university ought to teach aspiring teachers ICT as content as well as ICT as instructional tool. Underlying this perspective of ICT as content is the belief that ICT developments are bringing about not simply evolutionary changes in society, but also profound and revolutionary changes.

At the moment, technology in many colleges means computer technology. In the recent past technology meant television or language laboratories. From today's information and communication technology systems, i.e. multimedia, telecommunication, videoconferencing, computer conferencing and the like are becoming more pervasive and providing these new technology systems is likely to require new kinds of skills on the part of students seeking to use them; this in turn will require new skills on the part of teachers to manage the technologies as important components of teaching and learning environments. Given these changes in the technology base, what do we teach trainee teachers today that will stand them in good stead for the classrooms of tomorrow?

Structural Issues

The structural issues involved in discussion of ICT training for pre-service and in-service teachers might be summarized by the following questions: (1) Wherein the teacher preparation curriculum will training about technology application be lodged? (2) Who will impart the teaching about technology? (3) How will this content be taught?

The 'where' question might be subdivided further. Should any content that is taught be infused in existing 'teaching methods' or should a separate course be provided, focusing on information technology applications? The curriculum for teaching technology is made further complicated by the broader debate over the proper form and substance of teacher education in general.

The question of wherein the curriculum ICT training ought to be lodged impacts on the question of 'who' should teach that content. Should instructional technologists, educational psychologists, discipline method specialists, or computer scientists teach technology application material? The curricular location of technology training says much about an institution's perspectives on ICT applications.

As far as the university is concerned, structural issues of the kind posed above represent potential barriers to effective training/teaching about difficulties in solving the 'who, where' and 'how' issues are the result of genuine intellectual disagreement among the policy makers.

4. INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) CURRICULUM FOR TRAINING ASPIRING SCHOOL TEACHERS

There are ten groups/units of subjects and practicum in the present ICT curriculum.

Unit-1: Educational Technology

Unit-2: Communication & Classroom Interaction

Unit-3: Fundamentals of Computers

Unit-4: Computer Networks & Internet

Unit-5: MS Office Applications

Unit-6: ICT in Education

Unit-7: Instructional Strategies & Models

Unit-8: ICT Integration in Teaching Learning Process

Unit-9: E-Learning & Web Based Learning

Unit-10: ICT for Professional Development

4.1. General Objectives

The course will enable the student teachers to:

➢ Explain the concept of ICT in education.
➢ Appreciate the scope of ICT for improving the personal productivity and professional competencies.
➢ Explain the concept of educational technology.
➢ Develop skills of interaction in the classroom.
➢ Explain different approaches of ICT integration in education.

- Appreciate the applications of e-learning in education.
- Explain instructional strategies and models.
- Explain the fundamentals of computers and operation systems.
- Develop skills in using MS office applications for education.
- Use internet efficiently for access remote information, communicate and collaborate with others.
- Describe social, economic, security and ethical issues associated with the use of ICTs.
- Develop the electronic teaching portfolio.

4.2. The Curriculum Should Address the Need of a Practicing Teacher. He Must Have

- Positive attitude towards Information and Communication Technology.
- Ability to promote ethical and legal behavior in the use of ICT for school and home use.
- Ability to meet all basic hardware knowledge and use requirements specified in the classroom.
- Ability to apply technology tools to solve a variety of problems for teaching and learning with technology.
- Ability to make decisions regarding the use of specific technologies based on empirical research on learning effectiveness.

This rapid growth in the use of ICT in education has created the need for all teacher education faculties to be proficient into mainstream teacher education programme delivery. Curriculum should focus on the following minimal ICT competence, which is also the basic survival skill for most Teacher Educators.

Computer Skill

- Keyboarding, word-processing, creating database, drawing, graphs, pie chart etc.
- A spread sheet

Statistical analysis

- Basic knowledge of using Authoring Tool for creation of interactive lessons in multimedia.
- Accessing and downloading item from the internet.
- Familiarity with e-mail (accessing, sending etc.)

In any programme of training the trainee-teachers must establish cooperation among relevant academic departments. The nature of such cooperation should involve the computer science department and relevant departments in engineering, social sciences, humanities and education. The cooperation should cover areas of teaching. This kind of cooperation is needed for evolving the socio-scientific-humanistic paradigmatic integration that is required for new point of view in ICT programs.

4.3. Faculty Developments for Teacher Educators

The reality is that the bulk of faculty currently engaged in teacher preparation were themselves not prepared to use technologies, nor have updated their knowledge in technology developments. Once again there are notable exceptions to this generalization. For most faculties in teacher education, however, ICT is a mystery or a blur. Young students being prepared by these members of faculty, in an increasing number of cases, are somewhat knowledgeable about ICT due to imports from this environment: an intellectual gap of some importance is thus being created. Can universities meet the challenge?

Many members of faculty are yet to appreciate the use of technology for the delivery of instruction. The following are the benchmarks to assist in the development of faculty knowledge, skill, and ability:

- Ability to master basic ICT skills in the area of productivity, multimedia, telecommunication and classroom integration;
- Ability to use multimedia as a medium for delivery of class lectures;
- Ability to guide students to work collaboratively to make group presentations using ICT;
- Ability to enthuse students to use ICT for problem-solving tasks;
- Ability to introduce new interactive learning package in content-related courses relevant to teaching and learning;
- Creation of an information newsletter and an Internet home page to reciprocate information with others, etc.

Teacher education programmes can be major catalysts for educational reform by preparing pre-service and in-service teachers to effectively use ICT in classroom through specialized pre-service courses and in-service training. Teacher education must model the integration of ICT throughout the teacher education programme.

5. CONCLUSION

Can teacher education institutions or universities meet the challenge? It would require a significant commitment to provide training for faculty staff, and to provide resources. Unless substantial effort is made on the part of universities, teacher educators and trainees alike will be deprived of the joy of using ICT.

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