



INTEGRATING ICT IN TEACHER EDUCATION: A STEP TOWARDS QUALITY EDUCATION

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“The Mission of the Teacher Education is to prepare reflective teachers who possess the professional knowledge, skills, and dispositions necessary for effectively teaching students in a diverse and global society.” - Catawba College



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Today, in this era of 21 Century, the world economy is experiencing an unprecedented change. New developments in science and technology, media revaluation and internationalization of education and the ever expanding competitive environment are revolutionizing the education scene. A paradigm shift has been noticed in higher education now a day, from 'national education' to 'global education', from 'one time education for a few' to 'lifelong education for all', from 'teacher- centric educations' to 'learner centric education'. These changes make new demands and pose fresh challenges to the established education systems and practices in the country.

As Indian industry moves towards more professionally managed culture, the education sector too is taking strides. With the diversity in our educational set up and to meet the diverse needs of our rural populations scattered over a large geographical area in about 6,00,000 villages most of which are very small and remote, we need to adopt curricula that suits the needs of different socio-cultural groups. This can be achieved when we build the capacity to train large number of teachers and use Technology as a lever to generate this change and cater to the

training requirements of teachers. IT enabled education and training would not only be cost effective but also make education effective and efficient while offering mass customization of learning, and continuous support.

In the majority of teacher education institutions, the syllabi exhibit less weight to practical than theoretical aspects. Since the nature of ICT subjects is more practical and application-oriented, there needs to be more practical than theoretical input. This aspect seems to be neglected in designing and framing curricular objectives. The present approach for ICT integration is dismal as an “add on” approach for ICT course is adopted:

- ICT basics are taught to teacher trainers focusing on technical issues, but little emphasis is given to the pedagogical aspects
- Educational technology courses are taught in a rather traditional way and show little evidence of using new technology to support instructional innovations
- Students don't know how to use new technology in their classroom instruction when they go to schools
- Technology input is not integrated in the curriculum courses, especially method courses.

Problems in Integration of ICT in Teacher Education:

These are certain basic problems associated with the integration aspects of technology. These are major hurdles in the integration of ICT in the teaching/learning process. This scenario shows that the objectives of introducing ICT at the pre-service level are developing technological know-how and awareness regarding various other technologies and software packages. Further, the time spent for practical sessions is less, as more time is spent for theory sessions. The total approach of introducing ICT at the pre-service level is not very serious. It is very clear that student teachers will not get much scope in order to integrate ICT in curriculum or the teaching/learning process. In teacher training programs at the secondary level, the ICT education scenario is struggling with the following problems: 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.

The objective at the pre-service level is not to prepare technocrats, but to develop technopedagogues. Teachers should be in a position to integrate technology into teaching / learning as well as develop the art and skill of “webogogy” (i.e., to make use of Internet technology, exploring it, accessing information from it to use in teaching learning, etc.). So, objectives must be set at the attainment of application and skill levels rather than just at the knowledge and understanding levels. The professional development of teachers needs to be given importance. There must be congruence between the school curriculum and teacher training curriculum at the secondary level. Otherwise, teachers are not ready to utilize their knowledge to effectively design teaching/learning processes, project work, and assignments. In addition to offering ICT as a compulsory and special course, integrated approaches need to be studied along with methods courses. This will help student teachers to develop the concept of ‘techno pedagogy’ to a greater extent.

Thus, management of change in teacher education is a complex and demanding task involving comprehension, concern, caution, and contemplation. Planners and administrators of teacher education have to provide academic leadership to prepare reflective teachers who can manage the educational system efficiently at various stages of education at the pre-primary, primary, elementary, secondary, and higher secondary levels. Effective change in schools is possible only when there are corresponding changes in the management of teacher education programs.

Approaches to ICT integration in Teacher Education

Use of ICT within teacher training programs around the world is being approached in a number of different ways with varying degrees of success. These approaches were subsequently described, refined and merged into following approaches:

1. **ICT skills development approach:** Here importance is given to providing training in use of ICT in general. Student teachers are expected to be skilled users of ICT for their daily activities. Knowledge about various software, hardware and their use in educational process is provided.
2. **ICT pedagogy approach:** Emphasis is on integrating ICT skills in a respective subject. Drawing on the principles of constructivism, pre-service teachers design lessons and activities that center 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 underlying pedagogy allows students to further develop and maintain these skills in the context of designing classroom- based resources.
3. **Subject-specific approach:** Here ICT is embedded into one's own subject area. By this method, teachers/subject experts are not only exposing students to new and innovative ways of learning but are providing 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 emphasis is on providing exposure to the use of ICT in practical aspects of teacher training. Focus is on developing lessons and assignments. Using ICT and implementing it in their work experience at various levels provides students an opportunity to assess the facilities available at their school and effectively use their own skills.

From the above suggested approaches, regarding ICT as a core component at the pre-service level, integration of all approaches would help in developing proper attributes among prospective teachers. There should be joint efforts of educators and prospective teachers in implementing and sharpening ICT skills. Whatever approach is followed in educational institutions to develop knowledge about ICT, it has inherent limitations. Coupled with other reasons, we are not making student teachers fully confident in using ICT in their daily classroom activities. As reported by Larose F. in their study, the level of computer literacy of the teaching staff is satisfactory but

there is little transfer of these competencies to teaching practices (Larose F., et al. 1999). Efforts are required on the part of teachers to make use of the available facilities for the best use in teaching /learning.

Key Principles for Effective ICT Development in Teacher Education

The UNESCO *Planning Guide* for ICT in teacher education (Resta 2002, pp. 32-33) cites three key principles for effective ICT development in teacher education that were put forward by the Society for Information Technology and Teacher Education (SITE). These principles are particularly pertinent for countries in the Asia-Pacific region looking for the most effective ways of integrating ICT in teacher education.

The first principle is that technology should be infused into the entire teacher education programme. This principle means that ICT should not be restricted to a single course but needs to permeate all courses in the programme.

The second principle advanced by SITE is that technology should be introduced in context. According to this principle, particular ICT applications like word processing, databases, spreadsheets and telecommunications should not be taught as separate topics but rather encountered as the need arises in all courses of the teacher education programme.

The third of the key principles is that students should experience innovative technology-supported learning environments in their teacher education programme.

This last principle requires that students should see their lecturers engaging in technology to present their subjects, for example, utilizing PowerPoint or simulations in lectures and demonstrations. Students should also have the opportunity to use such applications in practical classes, seminars and assignments. The application of these three principles will go a good way towards effectively integrating ICT in teacher education.

ICT in Education Course Scenario at the Pre-Service Level

The syllabi for ICT in education courses offered by some of the universities in India were analyzed in terms of the objective of the course, weight given to theory and practice, and other syllabus components. The Curriculum Guide and Syllabus for Information Technology in Schools developed by NCERT, India, has the following expectations ICT AS PART OF CONTENT, ICT AS FACILITATOR, ICT AS CORE CONTENT, ICT AS CORE DELIVERY, ICT AS A CORE COMPONENT IN TEACHER EDUCATION AND ITS APPLICATION

about basic competencies of teachers to achieve the objectives of ICT education at the secondary level:

- Understanding the role of technology in change and the implications of technology-mediated changes for education.
- Creating interest in learning among students through unique utilities like animation, simulation, the Internet, etc.
- Demonstrating a sound understanding of basic IT concepts and operations.
- Planning and designing effective learning environments with necessary technology support.
- Making the best use of technology-enhanced lessons to enrich student learning.
- Adopting assessment strategies to evaluate
- student competencies in IT skills and (b) student learning in the new environment.
- Using technology to enhance our own creativity and professional practices.
- Demonstrating understanding of social, ethical, legal, and human issues surrounding the use of technology in schools.
- Fashioning a climate of values that encourage questioning, exploration, problem-solving, decision-making, and group co-operation.
- Striving for education to emerge from its disciplinary narrowness.
- Identifying useful learning material from various sources.

The teacher has to take an active part in developing his own checklist for evaluation of learning materials and use it in the context of (a) the learner profile, (b) the learning environment, and (c) the technical strength of the computer laboratory of the school. Moreover, the tasks of the teacher are:

1. Design one's own checklist.
2. Review software to be procured or on the World Wide Web
3. Report his/her assessment of courseware to the principal so a purchase decision can be made.

ICT is introduced in secondary teacher training courses at various levels as a compulsory subject or a special field subject. Sometimes, it is also introduced as one of the subjects to be studied under a course titled 'Educational Technology'. Various objectives/rationales for introducing the course are as follows:

1. Understanding the scope and importance of ICT in contemporary society.
2. Developing effective perspectives and attitude towards emerging technologies.
3. Developing skills in handling, maintaining and protecting different types of hardware and equipment in the institutions of learning.
4. Acquiring a theoretical basis of ICT and to develop awareness about recent developments in the area of ICT.
5. Acquiring adequate knowledge about the fundamentals of computers and operating systems.
6. Acquiring the necessary skills of handling software packages for the purpose of education in the institutions of learning.
7. Acquiring knowledge about new Internet technologies and their place in the field of education.

Regarding the weight given to the subject, different approaches are followed. Overall the weight given to theory and practice is 60/40 (60% for theory and 40% for practice). Broadly the content areas regarding theory/practice include:

- a) Introduction to Computers
- b) Introduction to Operating Systems
- c) Application of Computers in Teaching
- d) Functions of Computers – Knowledge of M.S. Office and other related packages and Computer languages
- e) Application of computers in Education
- f) New Trends and Techniques in Computer education (EDUSAT etc.)
- g) Knowledge of Internet, World Wide Web, etc.

Conclusion: A well-designed teacher training program is essential to meet the demand of today's teachers who want to learn how to use ICT effectively for their teaching. We also need more empirical studies focusing on factors affecting learning process, satisfaction and achievement in different teacher training approaches. Given the fast development of ICT, we can expect that ICT will bring changes in forms of teacher training throughout the world. It is thus important for teacher trainers and policy makers to understand the factors affecting effectiveness and cost-effectiveness of different approaches to ICT use in teacher training so training strategies

can be appropriately explored to make such changes viable to all. Finally, more attention should be paid to specific roles of ICT in offering multimedia simulations of good teaching practices, delivering individualized training courses, helping overcome teachers' isolation, connecting individual teachers to a larger teaching community on a continuous basis, and promoting teacher-to-teacher collaboration. Intended outcomes as well as unintended results of using ICT for teacher professional development need to be explored.

References

- Bowes, J. (2003). The emerging repertoire demanded of teachers of the future: Surviving the transition, retrieved, September 1, 2004, from <http://crpit.com/confpapers/CRPITV23Bowes.pdf>.*
- Carlson, S., & Gadio, C. T. (2002). Teacher professional development in the use of technology. In W.D. Haddad & A. Draxler (Eds.), Technologies for education: potential, parameters, and prospects, Paris and Washington, D.C.: UNESCO and AED, retrieved April 25, 2005.*
- Collis, B., & Jung, I. S. (2003). Uses of information and communication technologies in teacher education. In B.*
- Fontaine, M. (2000). Teacher training with technology: Experience in five country programs. TechKnowLogia, November/December, 69-71.101*
- Jung, I. S., & Rha, I. (2000). Effectiveness and cost-effectiveness of online education: A review of literature. Education Technology, July-August, 57-60.*
- Perraton, H., Robinson, B., & Creed, C. (2001). Teacher education through distance learning: technology, curriculum, evaluation, cost, Paris: UNESCO.*
- Robinson & C. Latchem (Eds.), Teacher education through open and distance learning, London: RoutledgeFalmer, 171-192.*