

ICT IMPLEMENTATION IN TEACHER EDUCATION- ISSUES & CHALLENGES

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ABSTRACT

Teacher education system empowered by ICT-driven infrastructure can have a great opportunity to come up to the center stage and ensure academic excellence, quality instruction and leadership in a knowledge-based society. The objective at pre-service level is not to prepare technocrat, but to develop techno pedagogues. Teacher should be in a position to integrate technology into teaching / learning, as well as develop the art and skill of webology (i.e., to make use of internet technology, exploring it, accessing information from it to use in teaching learning etc.) Besides, offering ICT as a compulsory and special course, integrated approaches need to be studied along with methods courses. It is very important to remember that ICTs in education are not transformation on their own. Transformation requires to improve student learning. The professional development of teacher educators in the area of ICT integration is essential. Unless teacher educators model effective use of technology in their own classes, it will not be possible to prepare a new generation of teachers who effectively use the new tools for teaching and learning.

INTRODUCTION

Teacher is considered to be the architect of the nation. In other words, the future of the nation lies in the hands of teacher. This shows the importance of teacher. One can realize how important education is which makes one a teacher. Teacher education is looked after by a systematic operation of various agencies involved in it. In our country, no system is free from problems; teacher education is not an exception to it. Various education commissions and a number of expert committee have discussed the aims of teacher education in India. Unfortunately, barring a few exceptions, our universities and institutions of higher learning have largely not been able to live up to

these great expectations. On the contrary, they have just become bodies for conducting stereotyped examinations and degree-awarding centers. The quality and reliability of such exams and degrees is also sometimes questionable. One of the main reasons is the inadequate academic, professional and pedagogic preparation and insufficient level of knowledge and the skills of the faculty. Besides this, traditional versus modern methods of teaching, outdated knowledge and information and lack of skills, teachers' attitude, aptitude and authenticity of their sources of knowledge are some of the other core issues. Owing to knowledge explosion and tremendously fast changing ICT, the teachers sometimes find it rather difficult to cope with the new intellectual challenges being thrown up by the changed global and local context. Therefore, they need to acquire new knowledge, and reliable and authentic information. In present scenario, teachers need to help their students in: how to learn, how to grow in future, how to develop study skills, how to conduct fundamental research, how to examine, evaluate and assess information and also how to question and then dismantle unauthentic structure of knowledge and cognition if need be. This is necessary if the teachers really want to survive in the ICT savvy world of education. All these expectations may be met only through need-based, goal-oriented and meaningful in-house discussion, conferences, symposia, workshops, refresher and orientation courses, crash courses, capsule courses and subject-based courses, interdisciplinary and holistic approaches to education and quality research and by enriching the existing libraries and making use of the user-friendly ICT with contextually appropriate and firm pedagogical scaffolding. The teacher educators and individual teacher ought to sincerely and persistently work hard toward this goal.

TECHNO-PEDAGOGY- A SKILL

Merely introducing technology to the educational process is not enough. One must ensure technological integration since technology by itself will not lead to change. Rather, it is the way in which teachers integrate technology that has the potential to bring change in the education process. For teachers to become fluent in the usage of educational technology means going beyond mere competence with the latest tools to developing an understanding of the complex web of relationships among users,

technologies, practices, and tools. Teachers must understand their role in technologically-oriented classrooms. Thus, knowledge about technology is important in itself, but not as a separate and unrelated body of knowledge divorced from the context of teaching--it is not only about what technology can do, but perhaps what technology can do for them as teachers.

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.

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.

Technology (T) encompasses modern technologies such as computer, Internet, digital video and commonplace technologies including overhead projectors, blackboards, and books.

Speaking truthfully, technology integration entails the understanding and negotiating of the relationships among the aforementioned three components. Good teaching is not simply adding technology to the existing teaching and content domain. Rather, the introduction of technology causes the representation of new concepts and requires developing sensitivity to the dynamic, transactional relationship between all three components suggested by the TPCK framework. (Koehler, M. J. and Mishap, P. 2005)

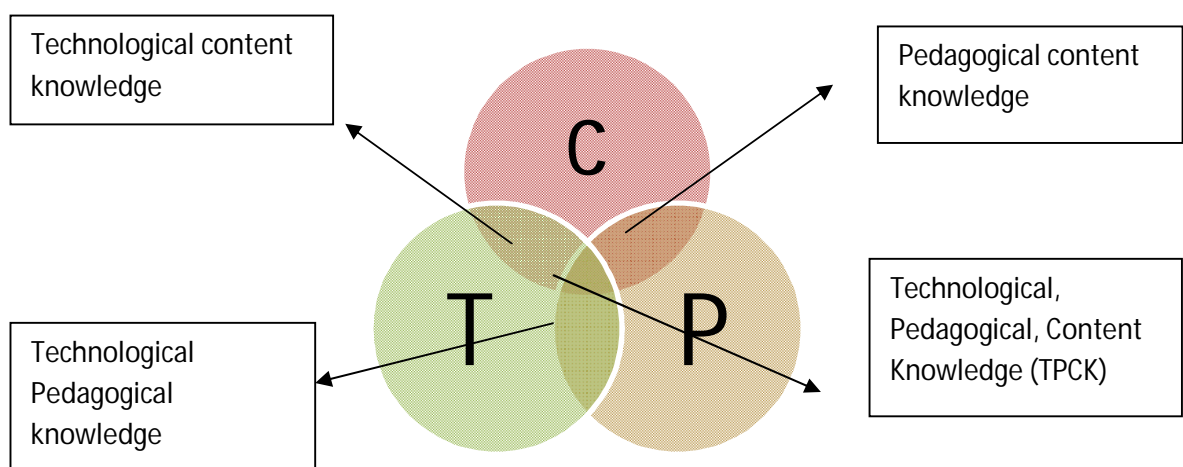


Fig. 1.1- TPCK framework (Koehler and Mishap, 2005)

Depending upon the nature of content, scope of content, and level of students, appropriate technology integration must be sought. Technology as an aid enhances the process of learning and helps in achieving higher level objectives.

According to Verma (2010), a teacher plays a significant role not only in class teaching learning situation but in social engineering too. Society gives a respectable place to teachers who are really perspective empowered. This empowerment is not at in terms of physical perspective. It is in academic, intellectual, social, and national perspectives.

The role of interactive multimedia in a perspective where learning is part of schooling, working or just living. ICT also includes web TVs, Net PCs, and Web-Based Education that offers accessibility, flexibility and innovativeness in teaching and learning. ICT integrated teacher education is more important to Indian education system that is committed to maintain global partnership as well as leadership in knowledge-based society.

Teachers in the future will make even more use of ICT for professional activities including lesson planning and preparation of teaching materials, recording student assessment and other administrative tasks and their own professional development and continuing education. Teacher already produce design briefs and worksheets using word processing, but this will change to encompass web based material as the electronic screen slowly replaces printing on paper-schools are beginning to make use of wireless technology for computers, especially wireless local area networks(WLAN). Concepts such as 4MAT (About learning 2001) will be used to help teachers devise learning experiences that don't just allow for different learning styles, but instead actively encourage students to learn to learn in a variety of modes and groupings.

To assist future teachers it is necessary that education systems, the employers indicate to teacher education providers which models they would expect teachers to follow. Otherwise it is impossible to properly prepare new teachers and to offer professional development to existing teachers, when there is no systemic agreement on which ideas will be used at what levels. Research has shown that the appropriate use of ICTs can catalyze the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21st century.¹⁹ If designed and implemented properly, ICT-

supported education can promote the acquisition of the knowledge and skills that will empower teachers. When used appropriately, ICTs—especially computers and Internet technologies— enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way

Prof Ram Takwle (2003) says about IT driven education: "They are changing the methods of content generation, content storage, content packaging and content delivery and hence offer a new paradigm of education." These multimedia programs and packages are also intended to supplement the real classroom activities and help their easy assimilation. ICT especially in the 21st Century context of teacher education fulfills the following objectives:

- It envisages excitement to the learner's eyes, ears, and more importantly the head.
- ICT fulfills the needs of learners by providing items and packages of higher standard and interest.
- It helps in transforming the definition of literacy, learning and knowledge; a definition that increasingly includes multimedia digitized literacy.
- Multimedia provides a kind of control over the learning environment to the pupil teachers and they experience learning from their failures and I practices.
- ICT facilitates the learner to have control on lesson, pace the sequence, content, feedback, which in turn enhances the efficiency of learning.
- Unlike books, it is interactive in nature and creates motivation and interest among the learners, in turn meeting the individual unique needs effectively and efficiently
- Develops the ability of self-learning and interacting individually, as the learner attains vast experiences effectively, efficiently and expeditiously,
- ICT-empowered simulated situation minimizes dangers in the real world' e.g. practical in science, pilot training driving etc.
- ICT is a powerful new development with ambitious role in teacher education, Digital and Internet.-based multimedia transforms the presents trend in the field. It takes just a computer to play multitude of media enabled programs and packages.

ICT IMPLEMENTATION CHALLENGES IN TEACHER EDUCATION INSTITUTIONS AND BEST PRACTICE RECOMMENDATIONS TO DEALING WITH THEM

We argue that the following are the major challenges that hinder or lead to failure in the integration of ICT in organisations in the developing countries. Best practice approaches given for addressing each of the challenges.

Lack of systemic approach to ICT implementation: Integration of ICTs in the functions of any organization is a complex process that needs to be fully conceptualized and defined from the beginning. The diversity and competing interests of different stakeholders in the institution should be recognized when developing ICT policy and a strategic plan. The following issues, amongst others, should be taken into consideration: (i) ICT infrastructure already in place; (ii) ICT skill levels in the institution; (iii) number of staff and students in each department and projected growth; (iv) academic management process: curriculum development, assessment methods and administration; (v) cost-effectiveness analysis (including hidden costs) and the choice of proper technologies for the needs of the institution; and (vi) staff development in new technologies

Awareness and attitude towards ICTs: It is important for all stakeholders in the institution to know the existing ICT facilities and services and their importance in relation to their specific tasks. However, according to Tusubira and Mulira (2004), there tends to be some vague knowledge about ICTs, some interpreting them as simply advanced technologies that require a lot of money and very advanced skills. They are not appreciated as a means of creating efficiency and cost effectiveness. Lack of awareness goes along with attitude. Positive attitude towards ICTs is widely recognized as a necessary condition for their effective implementation (Woodrow 1992). Full involvement of all stakeholders in the implementation process is a key to addressing awareness and attitude problem. Formally organized awareness programmes, visits to similar institution where success has occurred, and short trainings can contribute to raise the awareness and change the attitude of stakeholders towards facilities and services.

Administrative support: Administrative support is critical to the successful integration of ICTs into teaching and learning processes. Administrators can provide the conditions that are needed, such as ICT policy, incentives and resources. The commitment and interest of the top management and other leaders at every level is the most critical factor for successful implementation of ICTs. Dwyer *et al* (1997) emphasize that for the integration of ICTs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education.

Technical support: This includes issues like installation, operation, maintenance, network administration and security. This is an important part of the implementation and integration of ICT in education system. In most cases however, technical support is not available, which implies that trainers and students require some basic troubleshooting skills to overcome technical problems when using ICTs.

Transforming teacher education: Many institutions fail to integrate ICTs into teaching and learning because they are using ICTs to replicate their traditional practices, content and control. However, effective integration requires a transformation process where all stakeholders are involved to re-examine their existing structures and practices. As pointed out by Bates (2000), if universities and colleges are to successfully adopt technologies for teaching and learning, many more than minor adjustments in current practice will be required. Indeed, the effective use of technology requires a revolution in thinking about teaching and learning.

Staff development: Integration of ICT in teaching and learning does not only deal with introduction of new hardware and software, but both trainers and the students have to adopt new roles, and change their ICT behaviors and ways of teaching and learning. As Farrell (1999) points, training and workshops are needed not only to improve the skills of the instructors, but also as a means of getting them involved in the process of implementing and integrating ICTs in teaching and learning. For example, faculty staff requires training not just in the choice and use of appropriate technologies, but more fundamentally in how people learn and in instructional design (Bates 1997). Pelgrum

(1999) recommends staff training to be a continuous process for regular updates with the development of ICTs.

Inadequate funds: Financial resources form a key factor to the successful implementation and integration of ICTs in teacher education. It is obvious that countries with higher financial resource bases, stand a good chance than those with limited resources to reap benefits offered by ICTs. In addressing the problem of limited funds and sustaining donor funded projects, higher learning institutions can do the following: (i) adopt freeware and open source software for teaching and learning activities; (ii) continuously press for more funds from their governments; and (iii) diversify sources of funds to have a wide financial base.

The teacher education system empowered by ICT driven infrastructure can have a great opportunity to come up to the centre stage and ensure academic excellence, quality instruction and leadership in a knowledge-based a society. ICT has revolutionized the entire concept of education, learning and research by offering new opportunities and challenges in creation and dissemination of information by way of Web TV's, Net PC's and Web-based education independent of time, pace and place. It is really a challenging task to strengthen ICT in teacher education because a large majority of the teacher education institutions are unequipped or under-equipped in the terms of digitized and high-tech infrastructure.

ICTs have been used to improve access to and the quality of teacher training. For example, institutions like the Cyber Teacher Training Center (CTTC) in South Korea are taking advantage of the Internet to provide better teacher professional development opportunities to inservice teachers. The government-funded CTTC, established in 1997, offers self-directed, self-paced Web-based courses for primary and secondary school teachers. Courses include “Computers in the Information Society,” “Education Reform,” and “Future Society and Education.” Online tutorials are also offered, with some courses requiring occasional face-to-face meetings.¹⁵ In China, large-scale radio and television-based teacher education has for many years been conducted by the China Central Radio and TV University,¹⁶ the Shanghai Radio and TV University and many other RTVUs in the country. At Indira Gandhi National Open University, satellite-

based one-way video- and two-way audio-conferencing was held in 1996, supplemented by print-materials and recorded video, to train 910 primary school teachers and facilitators from 20 district training institutes in Karnataka State. The teachers interacted with remote lecturers by telephone and fax.

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