

## ABSTRACT

*Information and Communication Technologies used in the educational process has been divided into two broad categories: ICTs for Education and ICTs in Education. ICTs for education refers to the development of information and communication technology specifically for teaching/learning purposes, while the ICTs in education involves the adoption of general components of information and communication technologies in the teaching learning process. Teachers and teacher-educators are of central importance in tapping the potential offered by information and communication technologies (ICT) to enhance the quality of education. This paper deals with the pedagogical uses of ICT and the aims and objectives of ICT in pre-service programmes.*

## INTRODUCTION

Teachers and teacher-educators are of central importance in tapping the potential offered by information and communication technologies (ICT) to enhance the quality of education. The Central Government and State Government observe how teaching and learning take place at schools and in the community. Consequently, building the capacity of the teachers and other facilitators to integrate appropriate ICT into the teaching-learning process needs special attention. Asia and South Pacific region have a wide range of policies with regard to ICT in education. Variations in ICT absorption within education have led to relative variations in the scale of teacher training. UNESCO has recognised the need of ICT in teacher education and has a broader vision to harness ICT for achieving education for all goals. UNESCO aims to empower teachers, teacher educators, managers and leaders to effectively use ICT for expanding learning opportunities and ensuring educational quality and relevance. As part of the UNESCO "ICT in Education" programme, UNESCO Asia-Pacific Programme of Educational Innovation for Development (APEID) is implementing a project titled "Training and Professional Development of Teachers and Other Facilitators for Effective Use of ICTs in Improving Teaching and Learning" which is funded by Japanese Funds-in-Trust (JFIT). The Project recommends provision of ICT training to teachers to enhance the quality of education. Pre-service training

in ICT is necessary to enhance the quality of education and if it is extended to in-service training for working teachers it will certainly ensure the innovative approaches in teaching and learning. In our country, National Council for Teacher Education (NCTE) is a statutory body constituted under an act of Parliament to regulate all aspects of teacher education in the country. It played a pivotal role in the promotion of computer literacy among teacher educators during the early stages of introduction of ICT as a component in the teacher education curriculum in the country. The NCTE also developed the curriculum guidelines. Hence ICT has a unique place in teacher education.

## TWO CATEGORIES OF INFORMATION AND COMMUNICATION TECHNOLOGY

However, the use of information and communication technologies in the educational process has been divided into two broad categories: ICTs for Education and ICTs in Education. ICTs for education refers to the development of information and communication technology specifically for teaching/learning purposes, while the ICTs in education involves the adoption of general components of information and communication technologies in the teaching learning process. Generally, however, the educational relevance

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of computers and other components of information technology cannot be overemphasized. From the period when Skinner applied programmed instructions to teaching machines, through Brunner's experiment with computers in instruction, to the current wave of information transmission and exchange via the worldwide web, we have seen different applications of ICTs in enhancing cognitive development.

In a classification by Thomas & Ranga (2000), the application of computers and other communication technologies in education was divided into three broad categories: Pedagogy, Training and Continuing Education. The pedagogical applicability of the ICTs is concerned, essentially, with more effective learning with the aid of the various components of ICTs. Almost all subjects ranging from mathematics (the most structured) to music (the least structured) can be learnt with the help of computers. It should be emphasized that pedagogic application of ICTs involves effective learning with the aid of computers and other information technologies, serving the purpose of learning aids, which play complementary roles in teaching/learning situations, rather than supplement the teacher/instructor/facilitator.

### PEDAGOGIC USES OF ICT

The main aims of ICT in pedagogy are enhancing teaching and facilitating learning using multi-model courseware in the teaching learning process and integrate ICT using pedagogical innovations to develop higher order thinking skills among learners. In fact, the computer is regarded as add-on rather than a replacing device. The pedagogic uses of the computer necessitate the development, among teachers as well as students, of skills and attitude related to effective use of information and communication technologies. Besides literacy, ICT also facilitates learning to programme, learning in subject areas and learning at home on one's own, and these necessitate the use of new methods like modeling, simulation, use of databases, guided discovery, closed-word exploration etc. The implications in terms of changes in the teaching strategy, instructional content, role of the teachers and context of the curricula are obvious as well as inevitable. Pedagogy through the application of information and communication technologies has the advantage of

heightening motivation; helping recall previous learning; providing new instructional stimuli; activating the learner's response; providing systematic and steady feedback; facilitating appropriate practice; sequencing learning appropriately; and providing a viable source of information for enhanced learning. Teachers who are trained with this system of instructional strategy would be able to kindle in the hearts of the learners a desirable attitude towards information technology tools in their entire way of life. The concept of training refers to the development of skills and a skill as we know, is a well coordinated psychomotor activity. Use of ICTs in teacher education exists parallel to the one already reviewed. This literature is linked to a research tradition focusing upon an observed weak transposition of computer literacy acquired during pre-service education to the field of practice by young teachers (Brummelhus & Plomp, 1994; Byard, 1995; Kay & Mellar, 1994). All of this research leads to the same conclusion: regardless of the quality of computer equipment available to teachers in the school environment and independently of the quantities of courses which they have taken during their undergraduate studies, the level of transfer of acquired competencies and learning to practice is very weak.

### GOALS AND OBJECTIVES OF ICT IN PRE-SERVICE PROGRAMMES

The main objective of ICT pre-service teacher education programmes has been to produce teachers who

- (i) are qualified and competent to employ the tools of the technology to supplement their traditional teaching methods and thereby achieve enhanced student learning,
- (ii) can use the tools of the technology to keep themselves abreast of the latest developments in the subject/s they teach, and
- (iii) can contribute to their own professional advancement.

The training programme employs various instructional strategies and methodologies such as:

Interactive theme presentation

Group discussions and roundtable tasks.

ICT integration demonstrations.

Sharing of experiences.

Hands-on practice.

Any training programme is thus concerned with improved ways of doing things, of carrying out various activities in a professional manner. The contribution of information and communication technologies can be very useful for the development of skills as they provide effective training programmes. This usage applies not only to subjects like sciences and languages, but also to various aspects of professional courses like engineering and teacher training. ICTs could assist in the development of administrative skills related to student management, tutoring, course writing and pedagogic skills in education. The special skills cannot be acquired without the general abilities, and the general abilities are not of much benefit if a teacher does not possess specific skills for applying ICTs in his teaching activities. Studies in ICT development in both developed and developing countries identify at least four broad approaches through which ICTs could be adopted for teacher training and professional development.

EMERGING

APPLYING

INFUSING

TRANSFORMING

The above model depicts a continuum of approaches to ICT application for teacher training and development and it indicates the skills of teacher trainees flow from the emerging to the applying into the infusing and then culminate in the transforming processes of the educative activities which take place in schools. The Emerging approach is the first stage of ICTs skills development in teachers. Here the focus is on appreciation of technical functions, components and general uses of ICTs, especially for education and training. This approach tends to be theoretical and the practical components involve the personal use of ICT such as the use of word processing to prepare worksheets, locating information on CD-ROMs or on the internet, or communicating with friends and family via e-mail. The emphasis here is on training of teachers in a range of tools and applications, and increasing teachers' awareness of the opportunities for applying ICT to their teaching in the future. The next level of the continuum model emphasizes the application of ICTs to the teachers' subject areas. In the applying

approach, teachers use ICT for professional purposes, focusing on improving their subject teaching in order to enrich how they teach with a range of ICT applications. This approach often involves teachers in integrating ICT to teach specific subject skills and knowledge; beginning to change their methodology in the classroom; and using ICT to support their training and professional development. The infusing approach involves the inclusion of ICT in all aspects of the teachers' professional lives in such ways as to improve student learning and the management of learning processes. The approach supports active and creative teachers who are able to stimulate and manage the learning of students, integrating a range of preferred learning styles and uses of ICT in achieving their goals. The infusing approach often involves teachers easily integrating different knowledge and skills from other subjects into the project based curricula. Transforming teaching through ICTs involves teachers and other support staff in the school system. Regarding ICT as a natural part of everyday life of the system they begin to look at the processes of teaching and learning in new ways. The emphasis changes from a teacher-centric to a learner-centric system where the teacher is seen as a 'guide by the side, rather than the sage on the stage', helping students as the facilitator of their learning experiences to construct new learning paradigms out of the various offerings that the school makes available to them. This shift in emphasis in learners' needs also calls for new training needs on the part of the teachers, where they would be imbued with such components of knowledge that prepare them to annex the potentials of ICTs in sourcing and disseminating information to their students.

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#### USES OF ICT IN TEACHER EDUCATION

ICT can be used in Teacher Education for simplifying the teaching learning process and it creates enthusiasm among the student-teachers whose dynamic activities ensure cent percent comprehension of the learners. It can be utilized for

1. Preparation of lesson plans,
2. Planning and presentation of lessons effectively in the class room,

3. Use in Micro Teaching classes.
4. Rectifying the errors committed by the student teacher.
5. Preparing e-Teaching Learning Materials.
6. Evaluating immediately.
7. Encouraging virtual learning.
8. Experiencing on line learning.

### EXPECTED BENEFITS AND OUTCOMES FROM STUDENT-TEACHER

After the training programme, the prospective teachers are expected primarily to be able to

- Teach their subject/s using the tools of ICT wherever possible, achieving an appreciable degree of integration,
- Teach the basics of ICT, both theory and practice, that would enable their students to benefit from the tools of the technology,
- Employ and promote Web-based education as a strategy to promote directed self-learning among their students, and
- Motivate their students to pursue ICT in their future higher studies and as career options.

### CONCLUSION

This paper concludes that use of ICT is tremendous and if it is concentrated, teacher education will pave way to achieve quality education. Using ICT will simplify the class room transaction. It enlightens two categories of information and communication technology, pedagogic uses of ICT, goals and objectives of ICT in pre-service programmes, uses of ICT in teacher education and expected benefits and outcomes from student-teacher.

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### ACHIEVEMENT AND EMOTIONAL MATURITY..

4. Male and female, rural and urban teacher trainees differ significantly in their emotional maturity level. Male teacher trainees have a higher level of emotional maturity than female teacher trainees. Urban teacher trainees have a higher level of emotional maturity than rural teacher trainees.
5. Teacher trainees from nuclear and joint families do not differ significantly in their emotional maturity level.
6. There is significant positive relationship between achievement and emotional maturity in teacher trainees of Thanjavur District.

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