

Role of ICT to Elevate Teacher Education

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One of the important characteristics of ICT is that it saves time and efforts and increases efficiency. The advent of internet has opened the facilities for web-based training, and hence, necessitates a fundamental change in the mode of education and training. The teacher-educators may be brought live from different locations through a network of computers, in order to arrange effective interactions which would be similar to the once occurring in the face-to-face mode. This would reduce learning time, and would not require additional faculty and buildings, laboratories or libraries. The interaction of the trainees with the best available faculty may be arranged by creating virtual classroom at a minimum cost. It is said that development of ICT has tremendous capacity to save time and one year is reduced to three months meaning thereby that what could be done in one year by using traditional methods can be done in three months if ICT is utilized properly. Even if we have to increase content and practical aspects of teacher training programmes, extension of duration is not desirable, but it is not so easy. So, there is need to change in each and every sphere of the society according to the tune of ICT. It has the ability to enhance every type of development in the society. Education is the only means to incorporate ICT in the developmental aspects of the society. ICT can also be used as a tool to improve the quality of education for preparing the society and its manpower to handle and use ICT in the schools in a proper way.

The emergence of ICT has ushered in new era. It has influenced every sector of the society i.e. science, technology, education, trade and industry. ICT includes devices for encoding, storing, organizing, processing, retrieving, transferring and presenting information with the help of communication, television and computers. As we know that the greatest challenge for society in which we live today is keeping pace with the knowledge and technological expertise necessary for finding, applying and evaluating information. This has a special meaning as well as challenge in Teacher-Education and to persons involved in the system. Information literacy is a survival skill in this information age. Instead of drawing in the abundance of information that floods their lives, information literacy people know how to find,

analyses evaluate and use information effectively to solve a particular problem or make a decision - whether the information they select comes from a computer, a book, a government agency, or from other possible modern electronic resources.

The characteristics of the information age are pluralism and dynamic changes. Knowledge that shapes development is changing, changing faster and deeper with every passing decade. Our propensity to be at ease with change is dependent on the extent and quality of our education. As such, it is necessary that the learner of the 21st century acquires knowledge independently and uses it to solve new and emerging problems. With the frontiers of knowledge expanding, it would be futile to pass on to the learner the limited knowledge, as was done in the past. The teacher has to guide the learner in the quest to harness the best expressions of the human race across the globe and organize relevant areas of information into the knowledge that would influence, in a large measure, the quality of life.

An educational system can only be as good as its teacher. Teacher training both pre-service and in-service, must be informed so that teachers have the competence and motivation to interact with students and to facilitate their development. It is felt that pre-service training focuses almost exclusively on knowledge acquisition, with little attention to pedagogy, instructional practices and classroom management skills (NCTE, 1997). Teacher training institutions are gradually losing their organizational identity. It is echoed in the reports of different committees and commissions.

The Education Commission (1964-66) stressed that in a world based on science and technology it is education that determines the level of prosperity, welfare and security of the people and that a sound programme of professional education of teachers is essential for the qualitative improvement of education. Obsolete courses and out dated methods were being followed in teacher education institutions. Due to the lack of proper management and supervision, in its in-service and distance mode programmes teacher education had degraded in terms of its quality mainly during the eighties and nineties. After the intervention on NCTE, there is a significant change in the system of teacher

education properly according to the need of the present education system.

The most important development affecting teacher education in the coming decades will be the application of ICT. It will demand more effective and challenging teachers and teacher-educators to cope with the demand of the future students. Building quality in system implies a change towards a set of target. Change towards integrating ICT in curriculums will not come without instilling a passion for qualitative improvement in teaching acts.

The integration of ICT and the development of technology supported learning can contribute to the further development of the relationship between theory and practice in teacher training. New forms of dialogue based on telecommunications can create increased interaction between theoretical reflection which are part of the teaching and learning at colleges of education, university departments and the learning in practice which takes place during teaching practice correspondingly, the development of technology supported learning can contribute to the creation of new opportunities for flexible, further training for teacher at colleges of educations and teachers in the institutions where they are employed.

The relationship between theoretical reflection and learning through practice can be changed, such that an increasing part is played by actual educational needs. Co-operating teams and participant oriented working methods. It will be interesting to study and develop the possibilities of creating interaction between several target groups. Experimental initiatives that seek to create a synergy effect in the development of technology supported learning can contribute significantly in the development of the common basis of knowledge.

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In technology enhanced learning (TEL) teacher's role will be more challenging and definitely different from what is presently the traditional class room teaching. In the new role he will be more a director/coach or a facilitator, because the ET enhances the quality of teaching and learning by arousing inquiry, curiosity and exploration. ICT will afford opportunity to the individual for self-paced learning, which caters to learner's abilities and aptitude.

The paper attempts to discuss the role of ICT to meet the challenges of knowledge economy and to explain the development of new methodology of learning and teaching aptitude in the changing context i.e. privatization, liberalization and globalization.

One of the major advantages of using ICT's in the class room has been to prepare. The present and next generation of students for a workplace where ICT's particularly computers internet and others related technologies are becoming more and more important. These computer savvy and technologically literate students possess the desired competencies to use ICT's effectively. These knowledgeable persons possess the competitive edge in an increasingly uncertain globalizing job market. Along with the technology literacy development of specificity skills are also required. For well paying jobs specifically of skill is of the primary importance.

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According to Dr Kastusiranjan one of the noted scientists of India has observed that global development over the past two centuries have already demonstrated that the central role of advances in science and technology and their applications in the social economic and cultural transformation of the world is tremendous. Human experience with technology is constantly evolving and is finding expression in myriad dimension. Technology has been affecting every part of human endeavor.

India can benefit for demographic dividends. India has 550 millions below the age of 25 offers an excellent opportunity to become technical force. It is huge opportunity which unfortunately we have not fully tapped and transform our learning and teaching through ICT's in the knowledge based economy.

The new ICT enables self-paced learning through various tools such as assignments, computer etc. as a result of this the teaching learning enterprise has become more productive and meaningful. ICT helps facilitate the transaction between producers and users by keeping the students updated and enhancing teacher's capacity and ability fostering a live contact between the teacher and the student through e-mail, chat session etc. This promotes active learning, sharing of ideas, discussion and also provides immediate feed back. This activates paced learning and allows effective mapping of learning path ways.

This requires high quality meaningful digital content to be made available to teacher and student. Teachers particularly should possess updated knowledge and skills to use the new digital tools and resources to help students achieve high academic standards. We definitely need a vision to equip our students to meet the emerging trends. The present high tech and competitive society will sustain only through the knowledge of ICT. ICT has the capacity to store, retrieve and process e-content both fast as well as accurate. ICT represents one of the current applications of technology towards teaching- learning processes. According to UNESCO: ICT is a scientific technological and engineering discipline and management technique used in handling information in application and association with social, economic and cultural aspects. Various agencies like NCTE, SCERT, and IASES are being equipped with necessary hardware. NCTE is in the process of developing ICT based instructional packages for teacher educators. It would use ICT enabled learning which would bring in several innovations in teacher education

Use of Emerging Learning Technologies (ELT)

We may have heard the names of following terms without understanding. Here are few ELT which are in use:

- **Blogging:** A blog (a blend of the term web log) is a type of website or part of a website. Blogs are usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Most blogs are interactive, allowing visitors to leave comments. The ability of readers to leave comments in an interactive format is an important part of many blogs. Most blogs are primarily textual, although some focus on art photographs, videos, music and audio.
- **Integrated Learning Modules:-** Availability of open source software has enabled development of content management system and learning management system such as a Module. Integrated Learning Module (ILM) is thematically focused classes, delivered primarily over Internet. The course content is integrated and comprehensive creating a unique perspective on course themes without the potentially repetitive requirements of separate stand-alone courses. Content and language integrated learning is an approach for learning content through an additional language (foreign or second

language) thus teaching both the subject and the language.

- A podcast:- A podcast (or non-streamed web cast) is a series of media files (either audio or video) that are released episodically and often downloaded through web syndication. The mode of delivery differentiates podcasting from other means of accessing media files over the Internet, such as direct download, or streamed web casting. A list of all the audio or video files currently associated with a given series is maintained centrally on the distributor's server as a web feed, and the listener or viewer employs special client application software known as a pod catcher that can access this web feed, check it for updates, and download any new files in the series.
- Wikis:- Ebers bach et al (2006) note that the following basic features are common in wikis:-
- Editing: - Most of the wikis use the same basic page editing function such as Text editing and image, table list hyperlink and file insertion.
- Links: - Each article can be linked to other articles and thus form a new network structure.
- History: - A function which saves all previous version or modifications of any single page. It allows tracking of the editing processes of an article since all changes have been documented.
- Recentchanges: - The features can provide a current overview of a certain number of recent changes to wiki pages or all changes with in a predefined time period.
- Search function: - Most wikis also offer a classic full text or title search for wiki pages. A well known wiki is wikipedia ([http:// www. Wikipedia.org](http://www.Wikipedia.org)) online collaborative encyclopedias where anybody can edit update the site content as they see fit. The homepage of wikipedia can be accessed easily on browsing the website.
- Enhancement for browsers: Web browsers are adding functionality for their uses. Del.icio.us is a programme which helps you to favorite online and then access in

another computer instead of a dedicated computer. Thus these are all additional plug ins that add functionality to the browser.

The new environment of interactive learner-centered approach of ICT has completely metamorphosed the process of education i.e delivery and dissemination. The technological creativity learner will help generate sharing of knowledge to perform tasks in a better way and to develop their capacity and skills to keep pace with the rapid changes but the pace of change is so fast that what was avant-garde few years ago is just a thing of past. We must not allow the ICT related opportunities to slip out of our hands.

We must empower our youth with the latest technology to tap the latest skills and hidden potential of our youth population. There is considerable hope that technology can expand and improve education in all levels with special reference to design and content of instructional materials, delivery, and assessment and feed back..

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and use Technology Supported Teaching And Learning in the schools in a proper way.

Advances in science and technology bring about changes in the life style of people. Institutions are concerned more and more about producing efficient individuals. The inculcation of human and social values would pose as the most challenging parameter of education in the next century. Technology is for man's advancement and not for his enslavement. Unless our progress and development are monitored and guided by a welldefined value system, we shall soon end up in an ethical vacuum. Emphasis on intellectual development should not lead us to moral illiteracy. In April 2001, MIT announced that learning materials and syllabi for all courses were being put on the Internet for anyone to use – recognizing the power of the Internet and that knowledge is for sharing. E-learning has the following advantages:

1. Access to the learning programme any time convenient to the learner.
 2. Learners can be at any place to log on.
 3. Asynchronous interaction providing participants and tutors with time to prepare their responses leading to succinct and to-the-point interaction and on-track, thoughtful and creative conversations.
 4. Enhanced group collaboration creating shared electronic conversations which can be more thoughtful and permanent than voice conversation. Aided by group co-ordinators, these sessions can be powerful for learning and problem solving.
 5. New educational approaches can be used. For example, faculty from anywhere in the world, faculty teams with different specialities can be put together and innovations of teachers can be shared along themselves for improvement and adaptation.
 6. Recently developed intelligent computer-assisted instruction (ICAI) programmes are able to generate and solve problems, diagnose students' misconceptions, select appropriate teaching strategies and carry on dialogues with students based on in-depth studies by researchers on how people think, learn and solve problems.
- However, these advantages are out of reach of most developing countries, where power and telecommunication facilities are poor.

The tasks of higher education institutions for the development of basic education and literacy given in Section II give the broad basis of what higher education could do to promote education for all. The role of information technology and distance education becomes important, if not imperative, to perform some of the principal tasks.

In a period when, on the one hand, central authorities are delegating managerial tasks to institutions (retaining only the controlling and regulatory functions) and, on the other hand, when management of resources has become an important

issue and when development in information and communication technology is accelerating, it is only natural that cost-effective means of imparting education have to be adopted. Distance education with the use of affordable ICT can provide that cost-effective means, as has been evident from the above discussion. Each institution of higher education could help such development in the following ways:

- Each institution of higher education should set up a Research and Development Centre for the development of basic education and literacy which will work on educational content (videos, cassettes, texts), method of delivery, monitoring and evaluation of the programmes of basic education.
- In respect of the methods of delivery, each institution should establish inter-linkages of the R&D Centre with units working on communication and information technology (including the Computer Centre). An interdisciplinary team should be set up to work on the effective methods of teaching/learning strategies. The R&D Centre should interact and co-ordinate with the traditional system of basic education and literacy to maintain quality and harmony.
- The interdisciplinary team should also advise the R&D Centre on the contents and programmes of education in different disciplines so that the learners can find them interesting and attractive in the distance learning mode. (See for example, the Norwegian and Swedish experiences.²⁷)
- The interdisciplinary team should also advise on the preparation of programmes for the parents and the community to be diffused through media so as to keep them involved in and committed to basic education development.
- The R&D Centre should also develop the content, method of delivery, monitoring and evaluation mechanism of teacher-training programmes with the use of affordable information technology, in distance learning mode. The experiences mentioned above could provide useful hints for developing such programmes. The R&D Centre should also co-ordinate and interact with the traditional system of teacher training.
- The institutions of higher education should encourage and initiate textbook management training programmes in distance learning mode with the use of

ICT. The IIEP experience in this area may be useful.

- There should be a national co-ordinating body and clearing house of all the programmes and experiences of each institution. Brazil has already set up such a co-ordinating body. The universities' role has to be delineated precisely in this body given their resource, expertise and infrastructure potential.
- Until computers are available at home, a nationwide network of Community Learning Centres should be set up stocked with computer laboratories with broad band access and trained staff to access online distance learning courses. The experiences of the countries mentioned provide some optimism.
- The trained staff of these Community Learning Centres should provide tutoring support to individuals and groups engaged in learning.

- These Community Learning Centres can be connected to schools, hospitals, clinics or other community service centres to mobilize the different stake holders in the programme of education for all.

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