



ROLE OF ICT AND DIGITAL LEARNING IN THE CAPACITY BUILDING OF TEACHER EDUCATORS

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ICT: An overview:

There has been a phenomenal expansion of higher education in India in the last few decades as it is evident from the enormous increase in the number of universities, colleges and students. According to a recent World Bank Report 'India has earned the distinction of having the world's largest education system in the world after China. At the time of independence I 1947 there were only 20 universities and around 550 colleges in the country where as today there are more than 300 universities and approximately 13500 affiliated colleges. One disconcerting consequences of this indiscriminate expansion, however has been decline in the quality of higher education with special reference to the declining standard of the professionalism professional ethics and values. The irony is that this is happening at a time when we are witnessing the rise of knowledge, science & technology in the society. Consequently,. Our system of higher education especially the teacher education is faced today with the challenge of managing quality assurance and capacity building among the teacher and teachers educators.

In response it UGC has taken some concrete steps in the past years to overcome the growing concern for buildings quality assurance in higher education and especially of the teachers and teacher educators. Several scheme and programmes of quality improvement and capacity building for college and university teachers have been launch by the UGC such as Faculty improvement programme (FIP). University Leadership Programme (ULP). National Educational Testing (NET), Academic Staff Colleges (ASC) and Autonomous Colleges Programmes (ACP) and lastly the (NAAC) National Assessment and Accreditation Council. All these schemes and programmes spells out clearly the quality parameters designed by the

UGC for the better capacity building of university and college teachers by improving their Professionalism and standard in the field of higher education.

This paper is based on two major approaches to teacher education programme. The first one is ICT in the present context and how ICT could be better utilized for capacity building of teacher educators at Secondary Level.

The rapid spread of electronic communications has the capacity to affect the quality and efficiency of basic education throughout the world in dramatic ways. Educators virtually everywhere have long looked to the emerging technologies of their time to improve the delivery of instruction in the classroom and to help them reach students and teachers in remote locations.

Information and Communication Technology (ICT) is the chain of Service rendered in any discipline or organization by collecting, storage, processing, transmitting information and retrieval of desired information in various formats.

ICT Defined

According to the UNDP (2004) report, “ICTs are basically information handling tools a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information”. Today, information is the late line of complex industrial societies and is growing in importance at a rapid pace. The ICT has to play greater role in the task of distances teacher education. The nature and quality of teacher education is a matter of much concern in almost all the countries around the world. These countries are both developed and developing.

Teacher Education Course in India:

Teacher education programmes in India are under too many agencies. These also lack co-ordination, coherency and generally not tied to school curriculum. Teaching learning materials, both in theory and practice are not properly backed by the developments in JCT. The teacher education institutes still rely on prescribed textbooks written by teacher educators. These also back practical bias. These books are generally targeted for the formal teacher education institutions. In teacher education there is a need to provide ICT base and ICT work culture to, Up, OI to the theoretical perspectives in at least two areas namely (A) Teaching Learning Process and (B) Knowledge bases for teaching.

Teaching Learning Process, knowledge Bases and ICT:

Teaching learning process pre-suppose a constructivist view of learning which perceive children as intellectually active learners. Learning in classrooms, by and large involves the extension elaboration and modification of learner’s cognitive schemes. They

should be constructing meanings by themselves with the active help of the teachers whose role is facilitator or as a resource manager. Use of JCT is important according to the principle of “learning by doing”. Teaching Learning Skills have to be viewed in terms of the appropriateness of task of presentation of implementation and assessment and diagnosis.

The other component of modern teacher education. Where knowledge of ICT can play key role, are the seven knowledge bases for teaching as delineated in 1987 by L.S. Shulman in his paper “Knowledge and Teaching: Foundation of New Reforms” The knowledge bases in which the student teachers need to be trained include content knowledge general pedagogical knowledge, curriculum/ syllabus based knowledge pedagogical content based knowledge. Knowledge of learners and their characteristics. Knowledge of educational ends purposes and values and philosophical & historical grounds.

ICTs and Teacher Education

Information and Communication Technologies (ICTs) are major factor in shaping the new global economy and producing rapid changes in society. Within the past one decades. The ICT tools have fundamentally changed the way people communicate and do business. ICT have made significant transformations in industry, agriculture, medicine, business, engineering and other fields. They have also potentially transformed the nature of education where and how learning takes place and the role of students and teachers is the learning process. To order to achieve the potential benefit of ICTs in the learning, it is essential that pre-service and in-service teachers have basic ICT skills and competencies. Teacher Education institutes and programmes must provide the new pedagogies and tools for learning. They must also provide adequate guidance and leadership in determining how the new technologies can be best used in the context of the culture needs priorities and economic conditions within the existing system of educations. Teacher education institutions also need to develop strategies sand plans to enhance the teaching – learning process within teacher education programmes and to assure that all the future teachers are well prepared to potentially use the new tools and technologies for the effective transaction of curriculum in the class room.

According to a recent UNESCO World Education report entitled “Teachers and Teaching in a Changing World” says “The emergence of a knowledge-based society is changing the global economy and the status of education in the entire world. The challenge confronting our educational systems is how to transform the curriculum and teaching learning process to provide students with the skills to functions effectively in this dynamic, information rich and continuously changing environment and by accelerating growth in

knowledge production. High technology based educational hardware and software and high efficiency digital communication equipments, emergence of dedicated satellite channels with broad band internet, Ethernet and Wi-Fi-network connected learning environment have challenged learners gain access to knowledge and have the potential to transform teaching and learning process. ICT provides an array of powerful tools that may help in transforming the present knowledge environments. To meet these challenges the training institutions and our school system in the country must embrace the new technologies and acquire the functional skills of using and manipulating new ICT tools for learning. To accomplish this massive goal requires both a change in the traditional view of the learning process. An understanding of the new digital technologies can create new learning environments in which students are engaged as active learners able to take greater responsibility for their own learning and constructing their own knowledge.

Technology Use in Classroom:

Virtual Classroom:

Education virtually everywhere has long looked to the emerging technologies of their time to improve the delivery of instruction in the classroom and help them reach students and teachers in remote locations. The concept of virtual classroom aims at facilitating all academic, curricular and extracurricular activities knowledge and experience through ICT and advanced communication channels it actively provides all the academic requirements and support of individual teacher's guidance, library and documentation support, consultancy services, evaluation and certification through audiovisual, interactive programme, virtual classroom goes beyond the limitations of textbooks and classroom transactions and provide a wide range of innovative and joyful learning environment with a academic resources through computer, television networks, internet and interactive multimedia programmes. Individual and group interaction brain storming session also takes places effectively through virtual classroom systems. It is otherwise known as universities without walls or 'click' universities.

Multimedia

Broadly the term describes multiple media types being accessed interactively via computer. It is a combination of various types of media like, Audio, Video, still picture. Graphics, Photographs, Special effect, animation, audio effects, slides, and their effective manipulation for communicating a single concept or a chain of concepts at a time. Multimedia provides multimedia utilization is various subjects even without the physical presence of the teacher.

Interactive Media:

The term is used because it is independent of the distribution mechanism for example (CD ROMs DVDs, World Wide Web, Internet, ITP Programmes etc.) and conies with the most important dimension, interactivity, without the requirement for multiple media types. There are many viable uses of interactive media that use one media type only, programmed instruction and programmed learning materials are the best utilized materials for self learning through this media. There is ample scope for individual or group interaction through various quizzes based, self operated interactive software. The programmes run as per the pace and individual requirement of the learner with the scope for self assessment and grading. Drilling & practice with the gradually enhancing difficulty level is also possible for active and participation of the learner through this programme.

Online Education:

Used to denote material that is accessible via computers using the network of telecommunications rather than material accessed on paper or other on-networked medium. This innovation has reduced the cost of education and successfully overcome the barrier of distance, time, space and physical deficiencies of formal system of education in the country and around the world. The experiment is effectively used in almost all I.I.T.s and advanced centers of learning across the country.

Broadband:

Broadband is a new way of connecting to the internet that will ensure rapid access, fast download times and a better overall performance such as high-resolution graphic and digital sound, Broadband connections can be delivered in several ways such as – Cable, DSL, Fixed Wireless, Wi-Fi Wireless and Satellites. Broad – band will allow the user to enjoy the multi media and high speed internet experience with the high quality picture resolution, audio, video and data at lightening fast speed. There are many educational benefits that can be derived from the use of broad band within education at least five areas that demonstrate these benefits Broad band can help the student to

- (A) Enhance their learning experience by providing a wide range of textual materials audio, video, graphics, special efforts, animation and three dimensional multimedia experiences to supplement their deficiencies of class teaching.
- (B) Improve co-operation between educational institutions and keeps linkage with centers of advanced learning and upgrade their educational resources.
- (C) It can provide new potentialities and provide great scope for individual learning and group interaction with peers and subject expert throughout the world.

- (D) It can improve the efficiencies of the teachers and teacher and teacher educators by bringing the whole outer world into in to the classroom providing direct and firsthand experience to the learners.
- (E) It widens the scope and access to education by minimizing the space, time and resources dimension.
- (F) It can transform the whole learning experience of the students as it can expose them to a wide range of exciting and innovative learning content and style of delivery that was previously either inaccessible or unpractical in the traditional dial-up net work environment.
- (G) Exposure to new forms of content can have a positive and motivational effect and encourage students who to want to learn beyond their curricular means.

Digital- Media & ‘E’ Learning:

E-learning focuses on the self-learning through electronic devices. It is an advanced concept, which will provide students the appreciate support and atmosphere for self learning and achieving maximum learning resources. With the advancements in the field of ICT the capacity of storage, processing and delivery of data in form of text, pictures, graphics, video and audio formats have grown to an unimaginable extent and opened new horizon to the human learning. In many cases the transaction from analog to digital media domains allows greater functionality and adds new characteristics to the media-types (such as image manipulation, compression in JPEG,MPEG,MP3,MP4) formats for huge capacity of storage and delivery system. Along with this, computer assisted instruction (CAI), computer assisted learning (CAL), computer assisted teaching (CAT), teleconferencing and video conferencing techniques should be utilized properly in order to enhance the efficiency of e-learning.

Most of the advanced libraries and institution today have gone for digital learning and “e” learning systems by adopting this innovative technology and opened their huge educational resources through digital libraries and online education. This experiment has really made the dream true of the concept of making the world to global village.

Electronic Performance support system:

EPSS are a powerful tool for just in-time learning. They can provide students or professional with the right type of information (for example conceptual explanations. Step by step procedure about any particular skill. Or past performance data) at just the right place (e.g. shop. Industry, factory research or in classroom as a part of computer software right time. EPSS solves many day to day problems and enables the users to clarify their mistakes and doubts at the place of work with the precise amount of information at the right moment

and avoid to search for a huge volume of information at any problem situation. For example an EPSS may be designed to assist teacher in choosing from among dozens of packaged as a menu selection in the main software package.

Interactive Video Conferencing/ Tele Conferencing:

Interactive Video conferencing is defined as synchronous two way interactive video and audio communications, ideally conducted in a full duplex mode meaning that everyone in the conference can talk and be heard at the same time. Video Conferencing or Tele Conferencing provides a unique opportunity to its viewers to interact effectively with the instructors and share the information and skills beyond the space and time dimension. Video or Tele Conferencing experience in our country is quite established since INSAT, VSAT and at present EDUSAT experiments. At present most of the advanced teacher education institutions in the country use ISDN and IP video conferencing network through EDUSAT. Besides satellite based video conferencing internet based video conferencing is also in use but it is not as fast as the previous one. NCERT in collaboration with ISRO is at present using EDUSAT based Tele Conferencing Programme for orienting the teachers of CBSE, KVS & NVS Schools at 160 Centers throughout the country on the New Curriculum Framework and new textbooks for their effective transaction in the classroom. It is planned that almost all the SCERTs, RIEs, OMS, KVS, NVS and diets in the country will be connected by the EDUSAT Tele Conferencing network withing next plan period.

Applications & Benefits:

1. Video & Tele Conferencing is one of the most cost effective instructional tools for delivery of course materials.
2. It provides supplementary as well as complementary classes and training programmes at time throughout the nation.
3. It includes a wide variety of media sat a time during presentation of lessons using specially designed multi-media packages.
4. Students performance could be assessed by the teachers during delivery of lesson.
5. Online interviews and tests could be conducted by this medium.
6. Research, brain storming, problem solving and status reporting could be done together at the same time.
7. Collaborative efforts for research projects, publications and presentation s& planning session could be organized at a time.
8. It can overcome the time and distance constraints.
9. It improves the quality and spontaneity of guest lectures and presenters.

10. It communicates directly with appropriate subject experts to enhance understanding level in various subject areas.
11. Multi-class courses and discussions between different faculties at the institutional and regional level could be well organized.
12. Real contact with per groups across the world could heighten student interest and exposure to real world.
13. Low enrollment classes benefit by this medium to a great extent.
14. Students can take classes sand courses not offered in their location.
15. Students can meet the tutors for better enrichment and remediation.
16. Student isolated by the distance or physical disabilities scan take classes at a distance effectively.
17. Teachers can provide team- teaching with remote located centers by sharing the subject matter of their expertise and share innovative practices of their centers of excellence.
18. Rare subject experts can be made available on subject areas of highly advanced branch of science and research beyond geographical territory.

ICT enable Universalisation of Elementary Education:

Universalisation of Elementary Education is the topmost priority of our country and a sizeable amount of the total national resources is spent for providing free sand compulsory education to all our children of in the age group of 0 to 14 years as a part of the constitutional commitment to the nation. Now of course pre-primary and secondary education has also included in the top priority of national agenda. This age of KT is universally regarded as the greatest changing agent which and it is going to bring many more promising role in the coming years.

According to a recent UNDP document that ICT by itself cannot universalize primary education. It is a tool which has to be provided to the teachers. The teachers should be properly oriented to handle and use various shard wares and software's which requires a regular training programmes on educational hardware and software from time to time by the district and state education departments with the help to locally available experts and teacher educators of training colleges and media organizations. Once the capacity is built among the teachers to know and use KT in the classroom they can bring variety of learning experiences to their teaching learning process. They can apply their intelligence and creativity and use information technology effectively for various purposes, such as regular teaching of various subject, remedial teaching, evolution, education of children with special needs and joyful learning activities along with assigned co-curricular activities. The teachers could use various

types of educational software available which are quite motivating and encouraging for children at all levels of education. The CDs multi-media, E1V, 1TV, Computer assisted learning and internet could enable students to actively learn through enquiry, explanation play way and interactive modes. The audio-visual interaction, animations special effects high quality video and audio images make the students more motivated, interested and attentive during the learning activities. In the context of introduction of ICT the role of manage with better creativity confidence and initiatives. They have to create simulating of information technology based learning experiences plan for an individualized and need based projects for the children and also enable to help their students for accessing useful learning materials related to their curriculum plan and implement many other activities which would enrich learning experiences of their students in the school.

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