Role of ICT In Enabling the Teaching-Learning Process for Attaining Learning Outcomes

T. Mohammed Hussain
Masoodia Arabic Aided High School, Adoni, Kurnool Dist. A.P.
Email: hussaintailee@gmail.com

Abstract- *The education system in India is often criticized for its importance on rote learning, instead of critical thinking and problem-solving. Students are often observed spending most of their time memorizing their lessons, without any thoughts placed on practical applications. But, today accessibility of technology-based learning has been radically creating an upsurge in the inculcation of digital methods in traditional educational roles. Digital Technology includes social media, online games and applications, multimedia, productivity applications, cloud computing, interoperable systems and mobile devices. ICT has a positive impact on students' performances in schools, showing a rapid increment in scores compared to those without ICT training. The technology and expertise for digitizing in India are the result of a strong talent pool that is digitally proficient and is well equipped with multimedia and animation skills.*

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and modern technologies are demanding teachers to learn how to use these technologies in their teaching. A teacher plays a pivotal role in the process of teaching learning. Hence, knowledge of ICT and skills to use ICT in teaching /learning has gained enormous importance for today's teachers. Teachers are expected to know how to successfully integrate ICT into his/her subject areas to make learning more meaningful. This knowledge development during pre-service training has gained mush importance with the notion that exposure to ICT during this time is helpful in increasing student teacher's willingness to integrate technology with classroom teaching. While new technologies increase teachers' training needs, they also offer part o the solution. Information and Communication Technology (ICT) can provide more flexible and effective ways for professional development for teachers, improve pre-and in-service teacher training, and connect teachers to the global teacher community. This paper analyses and organizes a variety of approaches found in ICT uses in teacher training into a four-cell matrix. Under the changing scenario, it also discusses the responsibilities and initiatives that the teacher educators must take up for the successful integration of ICT in teacher education. It concludes with discussion of key principles for effective ICT development in teacher education.

Introduction

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and much of it is available to students as well as teachers at the same time. As new concepts of learning have evolved, teachers are expected to facilitate learning and make it

meaningful to individual learners rather than just to provide knowledge and skills. Recent developments in technologies have provided new possibilities to teaching profession but at the same time have placed more demands on teachers to learn how to use these technologies in their teaching.

Nowadays, educational systems are under great pressure to adopt innovative methodologies and to integrate Information and Communication Technologies in the teaching and learning process, to prepare students with the knowledge and skills they need in the 21st Century. Apparently, teaching Profession in evolving from an emphasis on teacher-cantered, lecture-based instructions to student-cantered interactive learning environments. ICT integration is understood as the usage of technology seamlessly for educational processes like transacting curricular content, students working on technology to do authentic tasks and developing technology-supported products, providing authentic assessments and institutional development. Today, a variety of ICTs can facilitate not only delivery of instruction but also learning process itself.

Moreover, ICTs can promote international collaboration and networking in education and professional development. There is a range of ICT options from videoconferencing through multimedia delivery to websites which can be used to meet the challenges teachers face today. In fact, there has been considerable evidence indicating that ICTs may provide more flexible and effective ways for lifelong professional development of teachers.

Undoubtedly, ICT has brought about many challenges and opportunities for education. The educational system needs to come to terms with these new challenges and take full advantage of the opportunities. If educational institutions have to ensure that their students leave the institutions as confident individuals capable of using new technology creatively and productively then their teachers should have the competence to integrate the emerging technologies and the digital content with all their operations. Therefore, the challenge for higher education institutions, particularly teacher education, has been to create a new generation of

As technology continues to persuade the way we proceed in our daily lives, every age group benefits from superior learning tools, giving rise to a synchronized existence between the tradition and modern applications. Today, accessibility of technology-based learning has been radically creating an upsurge in the inculcation of digital methods in traditional educational roles.

Current Educational Scenario

The education system in India is often criticized for its importance on rote learning, instead of critical thinking and problem-solving. Students are often observed spending most of their time memorizing their lessons, without any thoughts places on practical applications. Yet, with the advent of technology, India is growing to be a technology progressive market-with great emphasis on the IT industry. The classrooms, which were earlier a place of boredom and drudgery, have now grown to be a lively environment for symbiotic learning. The inclusion of technology has made the environment of the class more participative. With the help of

digitization, teachers are now able to teach students by use of interactive features and easy readability, decreasing the redundancy through inclusion of pro-activity. The technology and expertise for digitizing in India are the result of a strong talent pool that is digitally proficient and is well equipped with multimedia and animation skills.

What are Digital Technologies?

Digital technologies are electronic tools, systems, devices and resources that generate store or process data. These include social media, online games and applications, multimedia, productivity applications, cloud computing, interoperable systems and mobile devices.

What is Digital Learning?

Digital learning is any type of learning that is facilitated by technology or by instructional practice that makes effective use of technology. Digital learning occurs across all learning areas and domains. It encompasses the application of a wide spectrum of practices including.

- Blended and virtual learning
- Game-based learning
- Accessing digital content
- Collaborating locally and globally
- Assessment and reporting online
- Active participation in online communities
- Using technology to connect, collaborate, curate and create.

What is ICT?

There is a great upsurge of innovation in the education sector, being brought through Information Communication Technologies (ICT) at present helping both teachers and students to churn the best out of education. ICT is the use of technology to provide assistance in learning. Leading educational systems are identifying ICTs as catalysts for change; change in handling and exchanging information, teaching methods

Advantages of ICT:

The following are the salient advantages of ICT in education, which one must consider:

- Improvement in achieving wholesome education.
- Reduction of adult illiteracy rate, which sufficient emphasis on literacy in rural sector
- An increased acquisition of knowledge, skills and values required for promoting a sustainable development
- Synchronous interaction supplementing students and tutors with tools to prepare their respective roles in education process, leading to a pithy and to the – point interaction.
- Inculcation of on-track, thoughtful Andres our capful conversation sot encourage growth of a creativity-fuel drought of learning

- Enhanced space for group collaboration, creating shared electronic conversations
- Inculcation of new educational approaches such as video conferencing, digitally powered reading materials and so on, aiding people with disabilities in absorbing the lessons on a speedier manner.
- ICT helps in reducing social prejudices between pupils, as they learn to work in cohesion to achieve a given task. Students also learn to shoulder responsibilities adequately, when they use ICT to organize their work through digital portfolios or projects.

Education through e-learning

Important than ever before. Internet-based education and e learning are the trends of the day. Looking at India's attempts to harness the broadcast technologies, one comes across a kaleidoscope of activities. India is perhaps the only country with a satellite completely dedicated to education, the EDUSAT. India has developed educational broadcast channels such as the Gyan Darshan Network and dedicated satellites such as EDUSAT for audio, video and data transmission and interactivity. India has 17 Education Multimedia Research Centres and coordination centre Consortium of Educational Communication which helped in building considerable knowledge resources over a period of 20 years.

The centrally-sponsored scheme of Computer Literacy and Studies in Schools (CLASS) has been revised to accelerate the pace of introduction of IT in government schools and to create models of computer education so as to achieve the goal of universalization of computer literacy among school pass-outs. It is proposed that at least one section (of 40 students) of each of school final classes would be fully computerized. Thus, a school having 160 computers (40 computers for each of the 9th to 12°1 classes) might be called a Smart School under the scheme. In the initial phase, it is proposed to

- Achieve universalization of computer literacy in senior secondary schools
- Computer-aided learning-teaching methods may be introduced in 1000 senior secondary schools and 100 smart schools where computer education will have predominance and The Central Government, State Governments, parents and private sector should become co-partners for funding and operationalization of the scheme.
- Other measures include inauguration of the National Centre for Computer Education in NCERT.

Project Vidya in association with INTEL, for training of teachers and development of curriculum - based software introduction of in-house training facility in IT for Kendriya Vidyalaya Sangathan and Navodaya Vidyalaya Samiti setting up of Regional Centres; recommendations of the IT taskforce chaired by the Minister of Human Resource Development for accelerated outturn of IT professionals; increased output of IT manpower through Indian Institutes of Technology, and National Institutes of Technology by combining both formal and informal systems of IT training; constitution of the All India Board of IT Education under All

India Council for Technical Education and addition of nearly 42,000 seats in IT and IT-related disciplines in the technical institutions.

Depending on whether a particular aspect, component or delivery method is given emphasis, a wide array of similar or overlapping terms has been used. As such, e-learning encompasses multimedia learning, technology- enhanced learning (TEL), computer-based training (CBT), computer-assisted instruction (CAI), Internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environments (VLE) which are also called learning platforms, m- learning, digital educational collaboration, distributed learning, computer - mediated communication, cyber-learning, and multi-modal instruction. Accordingly, virtual education refers to a form of distance learning in which course content is delivered by various methods such as course management applications, multimedia resources, and videoconferencing. Students and instructors communicate via these technologies.

The world wide e-learning industry is economically significant, and was estimated in 2000 to be over $48 billion according to conservative estimates. Developments in Internet and multimedia technologies are The basic enablers of e-learning, with consulting, content, technologies, services and support being identified as the five key sectors of the e-learning industry. Information and Communication Technologies (ICT) are used extensively by young people. E-learning expenditures differ within and between countries. Finland, Norway, Belgium and Korea appear to have comparatively effective programs (Aleksander A., 2012).

Use of 30 Animations in ICT

The ICT curriculum consists of a variety of tools, with 3D animation being most popular amongst educational institutions. The process of teaching and learning gets an added dimension with 3D animations as they improve the short-term memory and long-term memory retention. 3-D animation materials with narrations and explanations augment the memory by developing the retention and recalling ability among the visual communication learners while enhancing the capability to understand visual concepts. Teachers make use of animated video clips to explain complex concepts (like cutting solid figure, calculating area of complex figures etc.). These visuals make it easy for students to not only understand concepts clearly but also help in retaining memory for a longer time.

Approaches to ICT integration in Teacher Education.

Use of ICT within teacher training programs around the world is being approached in a number of ways with varying degrees of success. These approaches can be subsequently described, refined and merged into four primary approaches via.

- ICT skills development approach.
- ICT pedagogy approach.
- Subject: Specified approach.
- Practice – Driven approach.

Thus, ICT in teacher training can take many forms. Teachers can be trained to learn how to use ICT tools. ICT can be used as a core or a complementary means to the teacher training process (Collis and Jung, 2003). The various ways in which CT teacher training efforts can be classified are:

- ICT as part of content
- ICT as facilitator
- ICT as core content
- ICT as core delivery

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 CT skills. Whatever approach is followed in educational institutions to develop knowledge about CT, efforts are required on the part of teachers to make use of the available facilities for the best use in teaching /learning.

Changing Role of Teacher Educator

Under the changing scenario, there is a need to redefine the role of teacher- educators. For the successful integration of ICTs in teacher education, the teachers must shoulder the following responsibilities:

- Act as a role model for pre-service trainees and in-service teachers, demonstrating the use of technology across the curriculum.
- Encourage technology integration among the trainees, colleagues, teachers and parents.
- Be up-to-date with the latest technological developments and advise the institutions concerning technology advancements and up-gradation.
- Aid in the implementation of technology plans of the institutions.
- Plan, design, and demonstrate the use of multimedia applications for instructional use through multimedia projects.
- Examine a variety of evaluation and assessment tools.
- Become active, competent online users of telecommunication services and act as model in the use of Internet as an instructional tool.
- Direct trainees and teachers to digital resources that will be able to answer their questions.
- Address issues related to acceptable user policies, student safety, ethics, security copyright, etc.
- Use information literacy to access, evaluate, and use information from a variety of sources.

ICT Training Inputs for Teachers and Teacher-educators

For the successful implementation of ICT, teacher trainees, teachers and teacher-educators need to be trained in the following dimensions.

- Awareness Phase
- Learning theories and technology integration
- Basic hardware skills
- Understanding system software
- Using application/productivity software
- Using multimedia
- Using Internet
- Pedagogical application of ICT tools
- Social, legal, ethical and health issues
- ICT for professional and personal productivity

Teacher Educators' Initiatives

Whatever may be the inputs in the training and howsoever well designed it is, the transformation can't be achieved without the leadership, commitment and initiatives of the teachers and teacher educators. Hence, both should take up initiatives like:

- Self-learning using the tutorials available on the NET, or print medium.
- Haring an ICT expert by a group of teachers/teacher educators.
- Enrolling for online professional development courses. There are many websites offering free training modules.
- Enrolling for the best commercially available ICT training programs
- Coaching by a colleague-Mentoring.
- Attending ICT training courses, seminars, conferences and workshops.
- Online learning by means of videoconferencing, discussion forum, chart, blogging etc.
- Visiting institutions where the ICT is already being integrated.
- Action research trying out various models of technology integration and publishing the result of the same.
- Take up diploma or Certificate courses in ICT offered through distance mode by national or international universities and organizations.
- Exploring the possibility of faculty exchange program to get places in an organization where the ICT integration in already in place.
- Keeping up-to-date with the latest developments in ICT through journals, magazines, newspapers and the internet.
- Planning and implementing ICT in-service training programs for schoolteachers-the best way to learn is to teach.

UNESCO Planning Guide for ICT in Teacher-Education has cited three key principles for effective ICT development in Teacher Education that were put forward by the Society for Information Technology and Teacher Education.

- That technology should be infused into the entire teacher education program, implying that ICT should not be restricted to a single course but needs to permeate in all courses in the programs.
- That technology should be introduced in context.
- Accordingly, ICT application like world-processing, databases, spread-sheet and telecommunications should not be taught as separate topics rather encountered as the need arises in all courses of Teacher-Education programs.
- That students should experience innovative technology supported learning environment in Teacher-Education programs. This requires that students should see their lecturers engaging in technology to present their subjects 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 be a milestone in effectively integrating ICTs in Teacher-Education.

To sum up: 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 society. ICT has revolutionized the entire concept of education, learning and research by offering new opportunities and challenges in creation and dissemination of information. Information and communication technologies have brought new possibilities to the education sector, but at the same time, they have placed more demands on teachers.

The teachers now have to learn how to cope with computers in their classrooms, how to compete with students in accessing the enormous body of information-particularly via the Internet and how to use the hardware and software to enhance the teaching/learning process. Unless teachers are fully comfortable with new approaches to teaching inherent in ICT integration, providing students with computers and educational content alone will have limited impact on the teaching and learning process, it is also essential that teachers understand that ICT – based education only changes their role, rather than minimizing or eliminating their role altogether.

Conclusion

ICT has a positive impact on students' performances in school, showing a rapid increment in scores compared to those without ICT training. In addition, this article showed that ICT drastically enhances the teacher's understanding and execution of the lesson at hand. Pupils consider ICT tools very helpful as it aids them to grasp assignments easily, prerequisite to students with special needs or difficulties.

References

Aleksandra A., (2012) *the impact of ICT on Educational Performance & its Efficiency in selected EU and OECD countries & non parametric analysis* MPRA Paper No.39805. Retrieved from: http// www.en.Wikipedia.org /wiki/E-learning on 02/04/2013.

Crane, Beverly E. (2009). Using Web 2.0 Tools in the K- 12 Classroom. *Neal-Such man Publishers*, Inc. Retrieved from http://www.en.Wikipedia.org/wiki/E- learning on 02/04/2013.

Kurbel, Karl (2001). A Completely Virtual Distance Education Program Based on the Internet - Case and Agenda of the International MBI Program "; in: Hansen, R.R. et al. (Eds.), *Proceedings of the 8th European Conference on Information Systems* -ECIS 2000,A Cyberspace Odyssey, Vol. 2; Vienna, Austria, July 2000, pp. 1363-1367.

Kumaravel, R.Karpaga and Padama, B.,(2008) E-Learning and Knowledge Globalization initiatives in India. Presented in International Conference eon Internationalization of Higher Education, *Lovely Professional University*, Jalandhar (Pb).Pp-368-381

Kumar Sanjeev (2008) E-Learning as Digital Learning in New Era:Advantages and Drawbacks.Pp-106-107.

Websites

https://www.franchiseindia.com/education/ICT -and- 3D-Animation

www.education.vic.gov.au/school/teachers/support/Pages/elearningcurriculum.aspx

Dillischools.com. Retrievedfrom http://www.dillischools.com on 23/10/2012.

E-classin E-Learning: E For Education E ForEnlightenment. Retrieved from http://www.e-class.in/ parents/e-learning-education -enlightenment/ on 11/10/2012.

http://smartclasses.co.in/smart _learning.html

http://www.indiastudychannel.com http://www.academia.edu