



## Mediations in Teaching-Learning through ICT

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**Abstract:** *As society changes, the skills that students need to be successful in life also change. Basic literacy skills of reading, writing and mathematics are no longer sufficient. Our students need to master those basic skills as well as read critically, write persuasively, think and reason logically, and solve complex problems. And to achieve the above we need to first transform our teacher education system only then, we can cope up with the modern needs of the learners.*

*In order to thrive in a digital economy, students will need digital age proficiencies. Therefore, our educational system must understand and embrace the 21<sup>st</sup> century skills within the context of rigorous academic standards. Accelerating technological change, rapidly accumulating knowledge, increasing global competition and rising workforce capabilities around the world make 21<sup>st</sup> century skills essential.*

*To be well-versed in the above skills means that the individual can communicate effectively, analyse and interpret data, engage in problem solving, ensure security and safety. ICT plays different roles at different teacher-education stages. At higher level it talks of generating and using electronic information resources like e-journals, e-conferences, e-libraries etc. while at primary stage it talks of establishing learning resource centre equipped with audio-visual equipment like T.V., VCR, projectors etc.*

*Training in the following aspects needs to be given impetus:*

- Computer Assisted Instruction (CAI)
- Computer Assisted Learning (CAL)
- Computer Based Testing (CBT)

*Recently ERP has emerged as a new management and planning system which is actually being used by various organisations and institutions. It provides a platform between the educator and the educatee. It offers lots of avenues and options to be used in the teaching-learning process. The system provides a transparency between the system and the student.*

*To optimize the use of ICT a variety of changes needs to be brought about: shifting pedagogies, redesigning the curriculum and assessment, and providing more autonomy to the institutions. Also, functioning technical infrastructure, investment in terms of time, adequate support system and sharing of learning are very much required.*

**Key Words:** *Computer Assisted Instruction (CAI), Computer Assisted Learning (CAL), Computer Based Testing (CBT), ERP (Enterprise Resource Planning)*

### 1. INTRODUCTION :

“The richness of the technology permits us to provide a richer and more exciting learning environment... our concern is the new understandings and new capabilities that are possible through the use of technology.” Duffy & Cunningham

Globalisation and advancements in technology are driving changes in the social, technological, economical, environmental and political landscapes at a rate and magnitude that is too great, and too multiple to ignore. And with the imposed living conditions due to COVID-19, we had to quickly jump to the new technology era. This development has been drawn few years earlier.



The presence of technology in schools has increased dramatically and predictions are that this trend will continue to accelerate. Now the classes are being conducted in online mode through various virtual platforms. When used with effective instructional practices, technology can facilitate learning so that the students learn to a deeper level. Educational systems around the world are under increasing pressure to use innovative methodologies and integrate new information and communication technologies (ICTs) in the teaching and learning process, to teach students the knowledge and skills they need in the 21<sup>st</sup> century. With emerging new technologies, the teaching profession is evolving from an emphasis on

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**2. CRITICAL ARENAS OF ICT :**

Representative of the ICT literacy skills are the following critical arenas (Kay and Honey, 2005):

- **Communicate effectively**

Pupil-teachers must have a range of skills to express themselves not only through paper and pencil, but also audio, video, animation, e-mail, websites, blogs, social networking etc.

- **Analyse and Interpret Data**

They must have the ability to compare and choose the data available in web-based ad electronic formats.

- **Engage in Problem Solving**

They must have an understanding of how to apply what they know and can do to new situations.

- **Ensure Security and Safety**

They must know and use strategies to acknowledge, identify and negotiate 21<sup>st</sup> century risks.

**3. ROLE OF ICT AT DIFFERENT TEACHER-EDUCATION STAGES :**

**Table: 1 Role of ICT as per the objectives at different stages**

Teacher Education Stages	Objective	Role of ICT
<b>Primary level</b>	All round development new observational skills. Habit formation	Establishing learning resource centre “equipped with audio-visual equipment like T.V., VCR, projectors etc.
<b>Secondary level</b>	Integrated & holistic approach; inculcating social cultural aesthetic. Moral & scientific values, responsive & transparent evaluation	Multicultural setting, training of cooperation among teachers. Skill training in undertaking action research online conference, seminars & expert discussions
<b>Higher level</b>	Empowering teachers to guide learner for self-study, reference skills, critical thinking, adopting various methods such as project work & tutorials. And to develop research attitude.	Electronic information resources e-journals, e-conferences, Bulletin board services, Global classroom, e-libraries.
<b>In-service training level</b>	To know existing educational policies, curricula & syllabi, skills for effective transaction of curriculum and new developments.	Audio-video teleconferencing. Collectively with the concerned agencies like NCERT, SCERT, NCTE, UGC, CUBE etc. Training in computer & higher learning opportunities through correspondence.



#### 4. TECHNOLOGY IN THE CLASSROOM :

During the recent years the computer technology has increasingly marked its presence in the education field. When used with instructional practice, technology facilitates learning and develops conceptual understanding beyond just recall. Technology can be used to provide opportunities to apply knowledge in real world contexts and engage in active participation, exploration and research.

Use of technology in education is not merely the usage of gadgets and computers but rather a systematic approach to the academic processes.

There are a variety of ways in which technology can be used in the classroom. So, teacher educators as well as pupil-teachers should be given training in the following applications:

##### I. Computer Assisted Instruction (CAI)

This refers to the application of computer software to address students' needs. It is a type of educational program designed to serve as a teaching tool. It enables students to work at their own pace and have been found to be effective in the teaching of basic arithmetical skills and certain other subjects.

It incorporates functions such as:

- Assessing student capabilities through a pre-test.
- Presenting learning material which learners can navigate through.
- Providing drills.
- Assessing student progress through a post-test.
- Keeping record of scores and progress of the learners.

##### Benefits:

- Economical
- High interaction interface
- Lessons and assignments can be repeated as frequently as a learner wants.

##### II. Computer Assisted Learning (CAL)

It conveys a vast amount of information in a very short period of time. It is a powerful method of reinforcing concepts and topics first introduced to students through textbook and discussion in the classroom. It covers a range of computer-based packages, which aim to provide interactive instruction in different subject areas.

##### Benefits:

- Scalability: A package can be reproduced as many times as required. Many students can use a single resource.
- Interactivity: It involves students with the learning processes with various tasks requiring actions and depending upon the actions appropriate feedback is provided leading to the next task/ lesson.
- Automation of Assessment: It allows to keep record of each exercise/ lesson in a log file which in turn provides a convenient option to check and compare the performance of the learner.
- Alternative Learning Methodology: An alternative for students not comfortable with the traditional methodologies.
- Sustains Learners Interest: It incorporates elements such as images, videos and background sounds to keep hold of the attention of the learners.
- Self-paced Learning: It helps learners to proceed at their own pace which in turn helps in achieving personal learning goals.
- Skill Practice: It provides intensive skill practice depending upon the learner's individual needs.

##### III. Computer Based Testing (CBT)

This is also called e-exam, computerized testing and computer administered testing. It is a method of administering tests in which the responses are electronically recorded and assessed. This system enables teachers to author, schedule, deliver and report on tests and exams.

##### Benefits:

- User Friendly: Learners themselves can take tests repeatedly as drill and practice.
- Authentic Assessment: It provides for an authentic assessment of the learners. Instant feedback provides learners with the correct answers.
- Security: It protects tests from unauthorised access.



## 5. IMPACT OF ICT ON DIFFERENT ASPECTS:

In order to integrate ICT in teacher education we need to understand its impact on the different aspects involved in an education system:

### Impact on Institutions

- Increased connectivity among teacher education institutions.
- Differentiated instruction.
- Enriched simulation training.
- Systematic, organised, informed and updated institutional functioning.
- Availability of learning resources for the teaching and learning work.
- Enables sharing of Best Practices across the globe.

### Impact on Teacher-Educators

- Helps in keeping oneself updated. It is an effective tool for acquiring and sharing information resources.
- Helps in dissemination of ideas to a large mass.
- Shifted the focus of teachers and teacher educators towards self-learning and life-long learning.

### Impact on Teaching-Learning Process

- Made the whole process more efficient.
- Broadened the horizon of the teaching-learning process. Now that the process is not bounded by the boundaries of the classroom.
- Reach has been increased.
- A rich pool of resources has been generated and shared simultaneously.
- Individualised learning can be achieved efficiently.

### Impact on Educational System

- Assists in managing the system processes effectively and efficiently.
- Data-base can be created, cared, repaired and shared easily.
- Offers a wide variety of management structures.
- Sharing of practices has become a big motto in our education system and this has been facilitated by ICT.
- Different educational systems and structures across the globe are available with attached efficiencies and deficiencies.

### Impact on Curriculum

- Curriculum has been enriched in this era of technology as a result of the availability of a wide variety of choices.
- Designing, managing and implementing, all the three aspects have been taken care of by ICT.
- Actually more than curriculum, it is the transaction which gets affected. ICT offers a variety of innovative methods and tools to effectively and efficiently transact the curriculum.
- Some of the new methods and strategies are Blended Learning, Flipped Classroom, Project Based Learning, etc. Also, it helps with the gradual release of responsibility of learning.

## 6. ENTERPRISE RESOURCE PLANNING (ERP) :

Enterprise resource planning (ERP) is business process management software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources.

In today's world of information and technology we cannot segregate our education system from it. As kids today are more into technology, so why not explore and employ that interest of them into our education system and reap the benefits. ERP can prove a system to connect and establish a common platform between the educator and the educatee. It offers lots of avenues and options to be used in the teaching-learning process. The system provides a transparency between the system and the student. The student can access the notes of the class which he might have skipped or just for revision. They can submit their assignments and also test through this system.



### Resource for Educatee

Students and parents get the notification right into their phones regarding the exam, class, results, fee and various other formal notices issued from the institution time to time. This way they keep themselves updated with the various happenings in their institution.

### Resource for Educator

The system helps in keeping the track of the student performance in different tests and examinations, all at one place. The teachers need not to do the lengthy and complicated manual calculations in order to compare and see the relative performance of a student or a number of students. They just have to select the data and choose from the options as to how they want to analyse the data.

They can also keep track of their leaves and apply online from anywhere (just through the app in the phone or any computer system).

### Resource for Educational Organisations (Both Schools and Colleges)

This system can prove a useful tool for any organisation in terms of providing all the necessary technical support. This can in turn help in maintaining and managing all the database of the organisation/ institution.

Further, this system provides a single access point for the administration staff, managerial staff, teaching and non-teaching staff, students and parents. All the data and information can be stored at one place with access to all the stakeholders making the whole system transparent and functional.

## 7. CONCLUSION:

It becomes vital for teacher training colleges to incorporate 21<sup>st</sup> century skills in their curriculum so that future teachers are equipped with skills and strategies to promote 21<sup>st</sup> century skills among their students.

Self-learning skills can be achieved through the integration of ICT as it offers various options to replace various outdated methodologies.

- Shifting the responsibility of learning to the learner itself. (which is very much desired as per the aims of education)
- Helps in teaching students the process of learning.
- Content can be discovered and explored, not rote-learned.
- Information is accessed and stored in the form of multiple resources.
- The role of the teacher becomes that of the facilitator only.

These skills and practices can be rooted in day-to-day teaching-learning process. Change in teaching approach from teacher-centric to student-centric needs these skills to be imbibed in both teachers and students.

Technology integration would develop the capacity to train future teachers to engage their students more deeply in their learning broaden the learning environment and make authentic connections between the curriculum and the community in their future classrooms. It also includes giving teacher-educators regular opportunities to engage in discussions and inquiries, around issues at the core of their work and the lives of the students.

Strategizing and planning effective integration of technology would lead to transformation catering to the needs of present day world.

### ***Training is the Key***

*Teacher training and continued, on-going relevant professional developments are essential if benefits from investments in ICTs are to be maximized.*

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