USE OF ICT AS A BROADER CONCEPT IN CLASSROOM SETTING FOR AN EFFECTIVE AND EFFICIENT TEACHING-LEARNING PROCESS

Meena Sharma

Vice Principal, G.B. college of Education, Rohtak (Haryana)

Jasbir Singh

Research Scholar, Dept. of Education, M.D. University, Rohtak

Abstract

A major paradigm shift in Instructional method is seen to respect the challenges present in today's society, for a student to be competitive in a global market, we can no longer rely simply on traditional educational strategies: To meet these demands, one must supplement or replace traditional methods of Instructions with innovative educational experiences. Some strategies include co-operative, discovery and inquiry learning activities; however, to facilitate these methods, technology should be used as a tool to enhance a child's educational experience by creating a variety of methods to meet special needs. An innovative technology method involves using concept mapping to provide students with opportunities to reflect upon their content understanding and relate conceptual understanding to real life. It is time to move beyond the walls of our classroom to join forces with other institutions & societies to revitalize education. The present paper focus on the use of technology in teaching - learning process that will greatly contribute to meet students needs for learning. Now there is a need to think globally and act locally.

Keywords*- ICT, Innovative Technology and Teaching Learning Process.*

Introduction:

Globalization and advancements in technology are driving changes in the social, technological, economical, environmental and political landscape at a rate and magnitude, that is too great, and too multiple to ignore. The technology that has become so pervasive in our daily lives is still outside our comfort zone in the school environment. In order to thrive in a digital economy, students will need digital age proficiencies. It is important for the education system to make parallel changes in order to fulfil its objectives, teaching with technology, in this regard is one of the most critical issue in the present global era. Technology in acquiring knowledge and still is an extremely essential component of education and training at all levels, whether primary, secondary, higher and professional courses.

In the field of education, teaching has taken on a gradual transformation where student are no longer restricted to learn the basics of reading , writing and arithmetic ,but they are prepared to face the world with all that have learned in school. Educational system around the world are under increasing pressures 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 21st century

The National Council for Teacher education (NCTE) is a statuary body set up under the National Council for Teacher Education act, 1993 to facilitate planned and co-ordinated development of the Teacher Education System in the country and for regulations and proper maintenance of norms and standards in the Teacher Education System.

NCTE's contribution to the quality of teacher education has provided the platform for Teacher Education Institutions to reap the full benefits of ICT in teaching – learning process. The presence of technology in school has increased dramatically and prediction is that this trend will continue to accelerate and technology facilitates learning so that student learns area to a deeper level. It is used to provide opportunities for students to apply knowledge in real world context and engage in active participation, exploration and research activities.

Role of technology in Higher Order teaching thinking skills

Higher order thinking is the ability to work through new challenges with understanding and empathy and rise to meet those challenges. Higher order thinking by students involves the

transformation of information and ideas. The transformation occurs when students combine facts and ideas. There are three main ways if communication technology (ICT) in teaching thinking skills:

- ➤ **As tutor or teaching machines: -** Software can be designed to initiate, resource and frame a discussion just as a teacher can. In this way they can construct their own understandings together, but in a way that is directed towards the curriculum goals by the computer software.
- ➤ **As Mind tools: -** Mind tools scaffold different forms of reasoning about content. That is they require students to think about what they know in different, meaningful ways
- ➤ **As a support for learning conversations: -** Conversation network can allow students to engage directly in knowledge creation with others who are not physically present. The computer can be used as a support and resource for the communication processes of teaching and learning.

Technology plays a very key role in encouraging autonomous learning and supporting diverse needs of students. In a technology rich environment one must remember that educational focus is on learning and instruction goals instead of the technology itself, because technology is merely a tool or vehicle for delivering instructions. In the past decade, the practice of project based learning (PBL) has evolved into a more formally defined teaching – technology strategy. Project based learning has gained a greater foothold in the classroom, students become more engaged in learning when they have a choice to dig into the computer, challenging and sometimes even messy problems that resemble real life.

Project based learning is a comprehensive instructional approach to engage students in sustained, cooperative investigations. It focuses on the central concepts and principals of a discipline, involves students in problem solving investigations and other meaningful tasks, allows students to work autonomously to construct their own knowledge. Technology skills are not learnt just for the sake of learning but in a PBL environment, there is a purpose for learning. Students make effective use of information technology as they produce a product, presentation or performance students can see stimulations of interacting systems that enhances deeper understanding of concepts. Technology allows for a shared workspace from which students gather, ask questions and construct their knowledge based on their findings. Research indicates that a hand on inquiry based instruction is generally more effective than

traditional didactic presentation in improving problem solving ability. These benefits are advanced when technology is used in meaningful way in projects.

Technology Integration is understood as the usage of technology seamlessly for educational processes like transacting curricular content, students working on technology to do authentic tasks. The pervasive use of technology in all spheres of life generates demands on the institutions to adopt way that help indicate skills among students through the use of Internet. The internet is a vast resource and it is growing at an ever increasing rate. Internet serves as a technical – communicational tool such as search engines, online conferencing, video conferencing, E conferencing, Internet forums as web forums, blog and wiki – websites, E Journal, digital libraries, E learning etc.

ROLE OF ICT IN EDUCATION

Technology has entered each and every aspect of human life. Whenever we think of education whether it is formal or informal use of ICT in learning process makes learning permanent. ICT is being recognized as a vehicle of success and growth of the nation and helps the society.

What ICT is? ICT stands for Information communication and Technology. The term ICT refers to a form of technology that is used to transmit, store, create, display, share or exchange information by electronic means. ICT is the diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information. Technology has an ability to transcend the barrier of time ICT is often categorized into two models that are:

1. Broadcast Technology

2. Digital Technology

1. Broadcast Technology– This includes using Radio, T.V for agriculture and rural development, non formal education. Most commonly used broadcasting technologies are EDUSAT, IGNOU programmes, Gyan - Darshan ,Educational channel, Gyan-Vani, UGC – Higher Education Television project (HETV)

2. **Digital Technology –** It includes E – Communication via internet, such as desktop computers, LCD projectors, radio, T.V. The example of digital technology are Wikipedia, E - learning, M - Learning, U – learning.

Technology Tools for Teaching and Training (T4) in Education

The teaching tools for teaching and training (DOT – EDU T4) project seeks to assist the education departments in the Indian States. DOT - EDU T4 has creative, interactive, multimedia tools in audio, video and software formats that established new standards for education quality while delivering education services on a large scale and reaching out of girls and other vulnerable population using a multi channel approach to English, Maths, Science, Social Science and life skills, dot EDU T4 provides both content and pedagogical training and support for teacher as well as subject specific instructions directly to students. In this way dot EDU T4 helps state government to increase equity and access across almost 3,00,000 primary schools that serves a population of 42 million children. Dot – EDU T4 is an association award of dot – EDU, a leader – with - associate's award designed to help developing countries around the World, use the power of technology to improve educational system. Students even at the elementary school levels are able to acquire an impressive level of skills with a broad range of computer software. Today's college students are also able to annotate and share notes with study – groups participants by using cloud - based tools such as ever note and Google drive. These power full tools enhance collaboration by allowing students to access their notes from any drive, add comments and track changes.

For research work, students are also using free tools such as Wikipedia, twitter and face book, while Wikipedia is typically not allowed as an official source; it is frequently used to find other resource. Student can took up a topic using Wikipedia and other refer to an article's cited work for additional source material

Technology usage in the classroom is not merely the usage of gadgetry, rather a systematic approach to the academic processes. There are a variety of ways by which technology can be made use of in the class. Following are some of the ways to enhance the teaching – learning process by using technology efficiently:

1) **Computer Assisted Instruction (CAI)**

CAI refers to the application of computer software to address the students' needs. CAI is a type of educational program designed to serve as a teaching tool. CAI program use tutorial, drills and question – and – answer sessions to present a topic and to test the students' comprehension. CAI programs enable 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 which lend themselves to an element of drill – and- practice.

2) **Computer Assisted Learning :**

Computer- assisted learning conveys a vast amount of information in a very short period of time. It is a powerful method of reinforcing concepts and topics; it enable student in a very powerful way to comprehend complex concepts.

The term Computer – Assisted learning (CAL) Covers a range of computer – based packages, which aim to provide interactive instruction usually in a specific subject area.CAL packages are digitally stored , so , it may be reproduced without error as many times as required. This provides a convenient option to check on students' performance by checking on the correctness of response to the CAL exercise. The incorporation of multimedia elements such as images, sounds and video clips in CAL packages provide more.

3) **Computer -Based Testing** (CBT), also called e- exam, Computer based or computer- administered testing, is a method of administering tests in which the responses are electronically recorded and assessed or both. CBT is particularly well suited to test consistency of multiple – choice – questions which can assess automatically, reducing labour and cost.

Use of information communication and technology in education

ICT implies telecommunications involving the combination of networks, Satellites, telephones, radio, television and the like. ICT resources involve not only hardware (equipment) but also software (programmes), people, education, government and association/collaboration resources.

In fact the state – of – art technology is currently being used in schools to integrate the senses and thoughts with feelings and actions. Such schools are called smart schools.

The smart schools

A need is felt to make students and teachers better equipped to enter the workforce, the use of technology is a standard practice. The present era puts forth the concept of a digital classroom and 'smart schools' which are locally ground yet has a global outlook. Thus ICT in education along with our traditional modes can be used for developing Teaching – Learning Material (TLM) which makes the classroom environment lively and conducive to learning.

ICT can be used in our classroom in following ways:

- **Multimedia –** Tools provide a wide range of sensory stimuli. The animations, stimulation, software packages to teach various subjects, speech, music, multimedia network, image enhancements etc create visual realities.
- **Community Resources –** An electronic community allows students to engage in dialogues with each other. Their teacher, experts and teachers in different parts of the country and the world.
- **Individualised instruction –** Technology can be used for individualised instruction in order to bridge the gaps between the teaching style and the learning styles. In an ordinary classroom with one teacher, it is difficult for the teacher to respond and provide feedback to each student. The Programmed Instruction models as suggested by Skinner can be used to provide learners learn at their own pace and give immediate feedback.
- **Digital Devices –** The digital devices like cameras, scanner can be used for instructions. The other digital devices like digital blackboards, electronic pens and touch screens etc, can also be used to enhance learning.

Audio Visual and Animations

Audio visuals, video conferencing, short-animations etc can be used in teaching – learning process. To illustrate the chapters/ topics of the respective subjects can be taught by Power Point Presentations. The Central Institute of Educational Technology (CIET) a constituent unit of NCERT also provides educational video and audio programme for various stakeholders at school education level.

Personal Digital Assistants (PDA)

The PDA wireless devices are used as an e- Learning tool allowing the learners to access information anytime, anywhere. It is observed that, there is a shift from E- learning to M-

learning (which includes learning via mobile computation). The use of Bluetooth and Infrared technologies has made it possible to transfer information in fraction of seconds.

Online materials

The online materials used in the educational settings are as listed below:-

- Data Base- data base is a good source of materials put up by government, libraries and educational institutions. It contains extensive information on graphic interface, websites, electronic page layout, graphics, multimedia and animated designs along with various websites.
- Journals – there are many E- Journals available on the web. Online journals are a good source of information for helping learners to complete projects, assignments and other research work.
- Software libraries and digital libraries – These libraries contains programmes that a learners may download to their own computers. The software library includes e books, interactive CDs and teaching tools.
- A School website – A school website is an innovative way of creating learning environment as well as involving the society in the same. The major components of the classroom websites are the home page which is linked to the student page, parent page, teacher page, teaching philosophy page and professional page.

Above mentioned are the ways in which technology can be used in educational setting. Technology when used in teaching the curricular subjects, it helps the students, see the unseen, to test theoretical concepts and communicate effectively. ICT has also made a remarkable contribution to the field of distance education making it possible to learn anytime, anywhere

Software for Research

ICT has helped transform not only teaching but also in research. Following are some of the software applications useful for research:

- **SPSS (**Statistical Package for Social Sciences) – These statistical tools include modules for performing classification, regression and other types of statistical analysis. They provide advanced visualisation and graphic capabilities, which enable

to see patterns in data and share insight with colleagues and the scientific community at large. In addition to statistical analysis, data documentation is also a feature of this software

- **Math Soft MathCAD –** MathCAD is used to perform, document and share calculations and design work. The unique MathCAD visual format and Interface integrate standard Mathematical notations, texts and graphs in a single worksheet – making MathCAD amenable for knowledge capture, calculation reuse and engineering collaboration.

- **The Papyrus Bibliography System and Knowledge Manager –** is the popular software used to manage large bibliographic. It can be used to provide each bibliographic reference in a standard and uniform format. It stores and cross – links references, notes and graphic images. This software links the bibliographic references to the internet and import bibliographic references from anywhere.

- **SAS** (Statistical Analysis System) Software – From traditional analysis of variance and predictive modelling to exact methods and statistical visualisation techniques, this software runs statistical processes like variance, regression, mean, median, mode and Standard deviation. It is capable of running complex multivariate analyses also. SAS can produce repeatable codes that is easily documented and verified for leagal and government compliance issues.

Today there is an abundance of techno resources but the applicability of each resource depends on the teacher. The teacher must decide the learning resource that will be most efficient keeping in mind –

- ➢ The student profile
- ➢ The subject being taught
- ➢ The specific topic
- ➢ The objective of teaching that particular content matter

The use of new technologies in the classrooms has offered new insights into the role of teachers in promoting learning. It can stimulate teachers to think about the process of learning whether through a fresh study of their own subject or a fresh perspective on students' learning. When teachers learn to use a new technology in their classrooms, they model the

learning process for students: at the same time they gain new insights on teachings by watching their students learn.

Conclusion

Thus we can say that Educational systems around the world are under increasing pressure to use innovative methodology. Such innovative methodologies should be integrated in the teaching- learning process. This integration will help to make parallel changes in educational system in order to fulfill their objective which is one of the most critical issue in the present global area. When we talk about these methodologies ICT is understood as a tool of making learning permanent. So there is need to equip all to enter in workforce and the use of technology is a standard practice.

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