

Role of ICT in education system

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India has a billion plus population of the youth and hence it has a large formal education system. The demand for education in developing country like India has skyrocketed as education is still regarded as an important bridge of social, economic and political mobility.

The learners of 21st century definitely have different types of educational aspirations and demands. Education systems- schools, colleges- need constant upgradation of teaching- learning technologies and skills in the emerging world of Information and Communication Technologies (ICTs). Framing the policies, adopting innovative strategies and models by the Government to meet the learner's new demands is essential. India had recognised the importance of ICT in education as early as 1984.

According to UNESCO- integrating technology into education can help bring quality education to everyone, everywhere- a key goal of the Education for All initiative. The citizens of the future must be equipped with sufficient knowledge to keep up with the technological advances and demands of the 21st century.

Education- A tripolar process

According to B.S Bloom, education is a tripolar process. Its components are-

- Educational objectives(Teaching),
- Learning experiences(Learning),
- Change in behaviour(Curriculum)

ICT has been added essentially in the 21st century as the *fourth component* of education.

The widely accepted definition of learning with technology include the internet, satellite broadcasts, audio and video conferencing, chat room, e-bulletin boards, web casts, computer based instruction CD-ROMs, TV lessons, interactive radio counselling, 3G phones, webcam wall. The ICT widens our horizons and opens access to new areas of education thereby making teaching learning an active process which connects to real life.

The new ways of teaching and learning are underpinned by constructivist

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theories of learning and constitute a shift from teacher centred pedagogy to one that is learner centred. Research has shown that the use of ICT can catalyse paradigmatic shift in both the content and pedagogy.

Rationales for introducing ICT in education

The three main rationales for introducing ICT in education are as follows-

Rationale	Basis
Social	Perceived role that technology now plays in society and the need for familiarising students with technology.
Vocational	Preparing students for vocations that require skills in technology.
Pedagogical	To utilise technology in enhancing learning, flexibility and efficiency in curriculum delivery.

Technology caters to the different levels of students' intelligence simultaneously. Though working with other classmates during teaching hours provide the best opportunity to learn but there are still a large number of students who can't think their best at that time. For this category of students, technology can provide the best opportunity of learning.

Some students learn by doing, some by reading and some by observing. This kind of variation in learning capability creates a rather large hurdle for educators to overcome in their attempts to reach and engage all learners. Technology has facilitated the learner by catering to the varied styles that the learner possesses.

Teachers are the shapers of the modern world. Before the induction of technology in education, teachers had to spend many nights developing lessons, trying their hand at drawing 3D visuals for the students. There was hardly any time left with the teacher to study or relearn. With the advent of technology, the educator can now devote quality time to research.

ICT-An effective tool

ICT can be used as an effective tool in the process of education in the following ways-

- Audio, video and CD-ROMs based on programmes are convenient to use and are affordable. These facilitate imaginative presentation of intricate concepts and issues which are otherwise difficult to visualise by a student.

- As an educational medium, radio has been used successfully to share enriched information with the community. Interactive radio counselling in India has been used successfully by IGNOU, New Delhi, to promote active teaching learning.
- Educational TV offers unique option for taking education at the door step of the people. Realising the importance of this medium of education, CBSE has adopted it as a subject at the school level from academic session 2010-11.
- Computer as a learning tool promotes interactivity in teaching and learning. Internet combines various media technologies and creates a new virtual world. It offers a global open platform for information storage and communication. Moreover, its 3-D version acts as a glorified blackboard! Teachers and learners no longer have to rely solely on printed tools and other materials in the libraries for their educational needs.

A comparison between a traditional pedagogy and emerging pedagogy enabled by ICT

Characteristics	Traditional pedagogy	Pedagogy enabled by ICT
Main objective	Cognitive, understanding objective.	Understanding and creative objective.
Integrative	1.No link between theory and practice. Separate subjects. 2.Individual teachers.	Integrating theory and practice. Interdisciplinary subjects. Team of teachers.
Nature of subject matter	Discipline based, structured and organised.	Thematic, unstructured and open ended.
Presentation of subject matter	1. Whole class instruction. 2. Little variation in activities. 3. Pace determined by the programme.	1. Working in teams 2. Heterogeneous group. 3. Self pacing
Method employed	1. Subject centred and teacher dominated. 2. Apply known solutions to problems.	1. Learner centred emphasising problem solving & discovery approach. 2. Find new solutions to problems.
Motivation	Extrinsic	Intrinsic
Evaluative	1. Teacher centred 2. Summative	1. Student centred. 2. Diagnostic.

Advantages of ICT

The following advantages of technology highlights its importance at different places in education system-

- ICT is *anytime, anywhere, anyone* provider of all levels of education.
- ICT makes possible learning characterised by a time lag between the delivery of instruction and its reception by learners.
- Access to relevant material is simplified.
- New approaches to learning and offering a framework for assessing student's progress and teacher effectiveness.
- Teaching can become more effective through the use of ICT tools and techniques.
- It can enhance and compliment traditional teaching styles.
- Individualised support is available for the learner through individualised interactive material.
- Student's perspective and their reactions can be easily seen which helps the teacher to improve their teaching.
- It ensures the connection of educational institutions and curricula to the emerging networks and information resources.
- To reach the target group with limited access to conventional education and training.
- Increasing the cost effectiveness and capacity of education and training systems.
- ICT does not create any inequality (gender, caste, colour, country, religion) in providing education.
- ICT is paperless or less paper, chalk and blackboard free and thus environment friendly.

Indian Government's initiatives for e-learning

The Indian Government is quite optimistic in proliferation of e-learning and ICT. The following are a few of the Indian Government initiatives for the development of e-learning in the country- National Programme on Technology Enhanced Learning (NPTEL), National Mission on Education through ICT, National Knowledge Network, Sakshat Portal, e-Gyankosh, Edusat(2004), Vidya Vahini (2002), Network of Teacher Education Resource Centers (NTERCs)

Significant disadvantages of ICT –

While many educational experts tout the advantages of incorporating technology into the curriculum and the classroom, technology can sometimes hinder learning and educational process. Some of its significant disadvantages are as follows-

- Because of connection problems, downloading issues and other difficulties can obstruct implementation of a technology aided lesson in the classroom. Teachers sometimes avoid using it simply because of lack of time.
- Teachers have not been adequately trained in the implementation of technology in the classroom. While technology is fun and can add interest for the students, it is not fully integrated until students are learning from technology and not just with technology.
- There is a real danger that ICT can further marginalise groups already excluded or on the edge of educational practices and innovations.
- Given current budgetary and resource constraints, a widespread investment in ICTs in education is probably not possible in most developing countries. Moreover, the cost of upkeep and maintenance can be too great to maintain.
- Experience shows that electronic educational resources are not directly related to curriculum and to assessment methods used to evaluate educational outcomes.
- There is a loss of affective qualities, communication skills and interactive abilities between students and teachers and students to peers. These skills are not necessary in a classroom of computers where individuality is the component of learning. Aside from learning, conflict resolution and socialisation used to be two prominent reasons children came to school.

There is a worldwide need for integrating ICT into education in order to improve the pedagogy to reflect the societal change. The main goals of ICT adoption in the education field are reducing cost per student, making education more affordable and accessible, increasing enrolments and improving course quality.

The integration of technology in to education by no means dilutes the authority the teacher. On the contrary it has changed the role of the teacher from a facilitator to a navigator.

A developing country, like India taste success in real terms only when its exponential economic growth matches with its educational growth- which is only

possible with the integration of ICT in education.

"We can do it better, more consistently, and in the end, it will cost us less because the students that we produce will be superior to those without technology experience", Major Owens.

References

- Barron,A(1998), Desining Web-based training. British journal of Educational Technology, 29(4),355-371.
- Kanwar,Asha(2010), Expanding Human Learning Through Technology, Leaders speak, *Digital Learning journal*, India; January
- Mason, R. (2000), 'From distance education to online education', *The Internet and Higher Education* 3(1-2),63-74
- MHRD Document on National mission on Education through ICT website www.education.nic.in
- Ministry of Human Resource Development, India, 2007 Viewed 10 October 2007, <http://education.nic.in/>
- NIC-Webconnect, <http://weblearning.nic.in/>