**USE OF ICT IN CLASSROOM**

**Introduction**

Classroom is a place where learning is produced with effective communication between teachers and students through different media. A class with only textbooks as print media and verbal information from teacher is now transformed to the one with multimedia tools, computers, internet, digital libraries, etc. The former used traditional tools of communication whereas the later is equipped with ICT. The origin of ICT has tremendously reshaped the classroom and teaching and learning that happen there. This has resulted in transforming our industrial society into information and knowledge society. ICT is viewed as a “major tool for building knowledge society” (UNESCO, 2003). Today’s learners learn through constructive activities instead of simply listening to their teachers. These kinds of learners require classrooms that are flexible, encouraging, motivating, supportive of individuality, interactive, fear and anxiety free, etc. These things are provided through ICT. The education system based on ICT can provide better opportunities to extend its access to wider range of people in our society. It has the potential to make better classroom, to improve students’ learning and to integrate better teaching methods.

**Concept and Meaning of ICT**

ICT stands for Information and Communication Technology which is a generic term which includes technologies which are used for collecting, storing, editing, processing, creating and transmitting information from one source to another in various forms. It is a combination of IT (Information Technology) and CT (Communication Technology) where former denotes usage of electronic equipment for storing, analysing and transmitting information and later means a process of sending, receiving and exchanging information. IT is defined as the technology used to manage information and ICT is defined as the technology used to manage information and to aid communication. ICT is a comprehensive term which combines both IT and CT for effectiveness, efficiency and innovation.

According to UNESCO, ICT is a “diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile satellite, video-conferencing, etc.).” It is clear through the definition that it consists of a variety of tools and its main purpose is to store, manipulate, create, and disseminate information. AICTE (All India Council of Technical Education) states, “ICT tools can be used to find, explore, analyse, exchange and present information responsibly and without discrimination. ICT can be employed to give users quick access to ideas and experiences from a wide range of people, communities and cultures. ”

**Classification of Tools of ICT**

As per the words given by UNESCO, ICT uses diverse set of tools and resources. It consists of combination of hardware, software, multimedia and delivery systems. The tools are multimedia PCs, laptop, notebook, multimedia projector, CDs, DVDs, Digital videos, still camera, Internet and its tools as emails, browsers, websites, search engines, social networking, chats, etc., Computer Assisted Instruction, Computer mediated video/audio conferencing, digital libraries, e-books, electronic publications, hyper media, etc. These tools of ICT are broadly classified in four parts:

1. **Informative Tools:** These tools are the applications to provide and collect large amount of information in different forms such as text. These can also be called as passive repository of information. There is no real life experience.
2. **Situating Tools:** These tools provide nearly direct experiences through observation and practice. Simulation, gaming and virtual reality are the example of situating tools.
3. **Constructive Tools:** It denotes the general purpose tools for constructing own knowledge, manipulating information and visualizing students’ comprehension. MS Word, Power Point Presentation, etc. are part of this tool. It helps in increasing students’ creativity.
4. **Communicative Tools:** As the name suggests, it facilitates communication of ideas, information, knowledge, etc. It includes email, electronic bulletin boards, chat, teleconferencing and interactive white boards, etc.

**ICT in Teaching and Learning**

ICT changes classroom teaching through its potential as a source of knowledge, a medium to transmit content, a means of interaction and dialogue (Sharma & Koli, 2014). “Classrooms are serving as places of collaboration and discovery where ICT and audio visual aids are being integrated into the teaching-learning process” (Haydar, 2017) for creating student centred and interactive learning environment. In the field of education, its presence is not new. But with technological advancement, it has become the agent of revolution in education system. ICT is about enhancing the teaching learning process through integration of different information communication technologies using different hardware and software tools to effectively manage the teaching learning process. This includes the computing and communications facilities and features that support and facilitate teaching learning and a range of activities in education from delivery of content to assessment of learners. “Innovative use of ICT is defined as the use of ICT applications that support the educational objectives based on the needs of the current knowledge society” (Drent & Meelissen, 2008).

It has been concern of every teacher to improve and facilitate teaching learning in classroom for enhancing the quality of learning experiences of the students. As a result, technology entered into classrooms which can be used “to facilitate the acquisition of skills such as critical thinking, independent learning, communication and lifelong learning involving analysis, synthesis, evaluation and organization of information” (Haydar, 2017). It helps students taking responsibility of their learning and constructing their own knowledge.

When it is used in teaching and learning, it should aim at developing higher order thinking skills among learners which are essential element of 21st century skills. It should help students move from lower skills of knowledge and understanding to higher skills of evaluation and creation.

When it is used for classroom learning, it should be ensured that learners are engaged through multisensory delivery, active learning, cooperative learning, opportunities for communication and providing motivation. Before using ICT in classroom, these two questions must be asked to oneself such as:

* Who are your learners?
* What is your content of teaching?

Effectiveness of ICT depends upon its selection and usage according to the nature of content and learners and their learning styles. Different content asks for different tools and resources. Some needs simple explanation, but other may need demonstration. Its usage should be according to the learners’ needs and their styles of learning.

**ICT Integration in School Education in India**

ICT and its potential was witnessed and documented in the National Policy of Education, 1986 and Programme of Action, 1992, where it was stressed to employ educational technology to bring improvement in the quality of education. Two centrally sponsored schemes namely Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) emerged in India for social transformation and national progress. It paved the way for more comprehensive scheme Information and Communication Technology in Schools (ICT @ Schools) in 2004 as a window of opportunity to the learners in the schools of India to bridge the digital divide. It was further revised in 2010 to provide opportunities to build students’ capacity on ICT skills and to make them learn through computer aided learning process. The role of ICT is highlighted in NCF-2005 also. Department of School Education & Literacy, MHRD has framed National Policy on ICT for School Education with latest draft revision in 2012. It promotes ICT enabled processes in order to improve accessibility, quality and efficiency of the school system.

**Benefits of ICT**

Talking about the benefits of ICT, it can be said that it is one of the major skills of 21st century learning. ICT is equally effective in both conventional and distance education system. It has the potential to innovate, accelerate, enrich and deepen skills to motivate and engage students to help in relating school experiences to work practices, create economic viability for tomorrow’s workers, as well as strengthening teaching and helping schools change (Lemke & Coughlin, 1998; Davis & Tearle, 1999; Yusuf, 2005; in Haydar, 2017). The other benefits of ICT in classroom are given in the following points:

* To provide learning opportunities at any time and at any place.
* To increase learners’ interest in teaching-learning process
* To provide equity in access to quality education
* To provide effective communication channel for geographically dispersed learners
* To customize programmes as per the individual learners’ needs and requirements
* To provide lifelong learning opportunities
* To bring flexibility in learning
* To aid in understanding of difficult concepts and processes
* To enrich learning experiences through multi sensory learning
* To provide opportunities for authentic learning & assessment
* To encourage interaction and students’ participation in classroom teaching and learning
* To guide students’ learning
* To make teaching learning process cooperative enterprise
* To help in unleashing creativity of learners. They are not mere receivers of knowledge but active constructors of knowledge with creativity and critical thinking
* To cater different learning styles
* To create anxiety free and stress free environment
* To promote self study/sense of responsibility towards their learning/active learning
* To help in transforming the teacher centred instruction to learner centred approach to teaching and learning
* To provide immediate access to rich resource material from a large number of sources

**Challenges of using ICT**

In spite of all benefits, ICT poses some challenges or limitations which are given in the following manner:

* Lack of facilities, materials and equipment and favourable conditions for its usage.
* Ignorance about the use and advantages of ICT.
* Lack of provisions to train teachers for required ICT skills. “The challenge is not simply improving the infrastructure of schools but cultivating an urge and capacity and confidence of teachers in using ICT” (Haydar, 2017).
* Fear and apprehension among teachers regarding losing their dominance over teaching.

C**onclusion**

In conclusion, it can be said that ICT transforms the teaching learning process from teacher-centred, textbook and product-oriented to more student-focused, rich interaction based and process-oriented. This results in bringing creativity, critical thinking, cooperative and self-confidence in learners and makes them competent with 21st century skills, knowledge and attitude. These skills are developed through the application and integration of ICT and its modern tools in classroom. These tools have fundamentally changed the processes involved and exercised in the field of education. Undoubtedly, ICT helps in enhancing the teaching learning process.

**Objectives**

The main objectives of this module are to acquaint the students about the:

1. concept and meaning of ICT;
2. classification of the tools of ICT;
3. significant role of ICT in teaching and learning;
4. integration of ICT in school education in India;
5. benefits of ICT; and
6. challenges regarding the usage of ICT.

**Glossary**

1. **Information Technology (IT):** Information Technology (IT) denotes usage of electronic equipment for storing, analysing and transmitting information. IT is defined as the technology used to manage information.
2. **CT:** Communication Technology (CT) means a process of sending, receiving and exchanging information.
3. **ICT:** Information and Communication Technology is the combination of IT and CT. It stands for Information and Communication Technology which is a generic term which includes technologies which are used for collecting, storing, editing, processing, creating and transmitting information from one source to another in various forms. According to UNESCO, ICT is a “diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile satellite, video-conferencing, etc.).”
4. **Informative Tools:** These tools are the applications to provide and collect large amount of information in different forms such as text. These can also be called as passive repository of information. There is no real life experience.
5. **Situating tools:** These tools are the system that lay students in the environment. It provides nearly direct experiences through observation and practice. Simulation, gaming and virtual reality are the example of situating tools.
6. **Constructive Tools:** It denotes the general purpose tools for constructing own knowledge, manipulating information and visualizing students’ comprehension. MS Word, Power Point Presentation, etc., are part of this tool. It helps in increasing students’ creativity.
7. **Communicative Tools:** It facilitates communication of ideas, information, knowledge, etc. It includes email, electronic bulletin boards, chat, teleconferencing and interactive white boards, etc.
8. **Computer Literacy:** Computer literacy is referred to the knowledge and abilities to utilize computers and related technology efficiently and effectively. According to NCERT (2006), “Computer literacy is not so much about knowing the technical jargon, but rather learning to use computers in a meaningful way, that is, meaningful to children.”
9. **ICT @ School:** The Information and Communication Technology (ICT) in Schools was launched in December, 2004 and revised in 2010 to provide opportunities to secondary stage students to mainly build their capacity on ICT skills and make them learn through computer aided learning process. The Scheme is a major catalyst to bridge the digital divide amongst students of various socio economic and other geographical barriers (MHRD).
10. **NCF-2005:** NCF-2005 is a national curriculum framework published by NCERT. It provides framework for making syllabi, textbooks and school practices within the school education programme in India. This document focuses on constructivism and constructive teaching.

**Frequently Asked Questions (FAQs)**

1. **What is meant by ICT ?**

**Ans:** Information and Communication Technology is the combination of IT and CT. It stands for Information and Communication Technology which is a generic term which includes technologies which are used for collecting, storing, editing, processing, creating and transmitting information from one source to another in various forms.

1. **What is the definition of ICT given by UNESCO?**

**Ans:** According to UNESCO, ICT is a “diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile satellite, video-conferencing, etc.).”

1. **What types of tools are used for ICT?**

**Ans:** Informative, Situating, Constructive and Communicative Tools are used in ICT.

1. **What questions need to be asked while using ICT in classroom?**

**Ans:** Before using ICT in classroom, these two questions can be asked :

* Who are your learners?
* What is your content of teaching?

Effectiveness of ICT depends upon its selection and usage according to the nature of content and learners and their learning styles. Different content asks for different tools and resources.

1. **When ICT @ school was was launched?**

**Ans:** It was launched in 2004 and further revised in 2010.

1. **What was the advantage of ICT @ school scheme?**

**Ans:** It was launched with the purpose of providing opportunities to secondary stage students to mainly build their capacity on ICT skills and make them learn through computer aided learning process. The Scheme is a major catalyst to bridge the digital divide amongst students of various socio economic and other geographical barriers.

1. **How does ICT help education system?**

**Ans:** ICT is effective in both conventional and distance education system. It has the potential to innovate, accelerate, enrich and deepen skills to motivate and engage students to help in relating school experiences to work practices, create economic viability for tomorrow’s workers, as well as strengthening teaching and helping schools change. It helps in providing input rich learning environment. It makes students updated with the latest technological advancement.

1. **What are the benefits of ICT?**

**Ans**: ICT helps in:

* + - increasing their interest in teaching-learning process;
    - giving opportunities to learn at any time and any place;
    - providing multiple resources to the learners;
    - providing lifelong learning opportunities;
    - bringing flexibility in learning;
    - aiding in understanding of difficult concepts and processes;
    - enriching learning experiences through multi sensory learning; and
    - providing opportunities for authentic learning & assessment.

1. **What challenges do teachers face in usage of ICT?**

**Ans**: ICT poses some challenges or limitations which are:

* Lack of facilities, materials and equipment and favourable conditions for its usage.
* Ignorance about the use and advantages of ICT.
* Lack of provisions to train teachers for required ICT skills.
* Fear and apprehension among teachers regarding losing their dominance over teaching.

1. **How will technology help in teaching and learning?**

**Ans:** Technology is used “to facilitate the acquisition of skills such as critical thinking, independent learning, communication and lifelong learning involving analysis, synthesis, evaluation and organization of information” (Haydar, 2017). It helps students taking responsibility of their learning and constructing their own knowledge.

**References:**

* AICTE (2017). Use of ICT. Retrieved from https://www.aicte-india.org/education/IT-and-ICT
* Drent, M„ & Meelissen, M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers & Education,* 51, 187-199
* Haydar, S. (2017, May-June). Computers in aid of knowledge construction. *Teacher Plus,* 17-19
* Khan, S. H. (2015). Emerging conceptions of ICT-enhanced teaching: Australian TAFE context*. Instructional Science*, 43(6), 683-708
* Lemke, C. & Coughlin, E.G. (1998). Technology in American schools: seven dimensions for gauging progress. USA: Milken exchange on educational Technology.
* Mangal, S. K. & Mangal, U. (2017). *Essentials of Educational Technology.* Delhi: PHI Learning Private Limited
* MHRD (2016). Information and Communication Technology (ICT). Retrieved from https://mhrd.gov.in/ict\_overview
* NCERT (2006). Position Paper: National Focus group on Educational Technology. New Delhi: NCERT
* NIOS (2017). Planning for ICT integration in classroom transaction. Retrieved from https://www.youtube.com/watch?v=J0N2IC-S4NY
* Ogunji, J.O. (2013) Education and information communication technology (ICT) in Nigerian educational system: the journey so far. Journal of Qualitative Education, 9(3), 1-14
* Ray, P. K. S. (2012). *Educational Technology: Technology of Instructional Design Part II.* New Delhi: Dominant Publishers and Distributers Pvt. Ltd.
* Sangrà, A. & González-Sanmamed, M. (2010) The role of information and communication technologies in improving teaching and learning processes in primary and secondary schools, ALT-J, 18:3, 207-220 Retrieved from https://www.tandfonline.com/doi/full/10.1080/09687769.2010.529108
* Sampath, et al (1984). *Introduction to Educational Technology*. New Delhi: Sterling
* Sharma, I. & Koli, S. K. (2014). Educational Technology and Teaching Strategies. New Delhi: Arpan Publishers
* Yusuf, M. 0. (2005). Information and Communication Technology and education: analyzing the Nigerian national policy for information technology. *International Education Journal* 6(3), 316-321