Application of ICTs in Teaching-Learning Process

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Abstract

ICTs are making dynamic changes in society. They are influencing every aspects of human life. Application of ICT tools in Teaching-Learning Process has changed the total scenario of teaching learning process. Teaching–Learning Process is not now limited within the boundaries of classrooms. ICTS are making major differences in the teaching approaches and ways students are learning. This article discusses the meaning & definition of ICT, various components of ICT, ICT in education, benefits of ICT in Education, benefits of ICT in teaching–learning process. The main thrust of this article is how ICT tools are helpful in classroom transaction. Use of various Web 2.0 technologies for making teaching–learning process more interactive and interesting are also discussed in this article.

Key Words: RFID technology, Blog, Wiki, Social Media, Mobile learning, Video conferencing, CAI, CAL, Smart board.

1. Introduction: The present era is the age of Information Communication Technology .Due to the advent of ICT & IT, life has become easier. During the last few decades, there has been a tremendous growth in the use of ICT in all fields such as industries, businesses, societies, lives of people and education.

Now the educational institutions all over the world are integrating ICT with the teaching – learning process in order to provide knowledge and skills to the learners to meet the challenges of educational environment. Jeelani (2011) rightly remarks, "It is only through education and the integration of ICT in education that one can teach students to be participants in the growth process in this era of rapid change".

In Watson's (2001) description, ICTs have revolutionized the way people work today and are now transforming education systems. As a result, if schools train children in yesterday's skills and technologies they may not be effective and fit in tomorrow's world. This is a sufficient reason for ICTs to win global recognition and attention .Kofi Annan , the former United Nations secretary general ,points out that in order to attain the goal of Universal Primary Education by the year ; 2005 we must ensure that information and communication technologies unlock the door of education systems. This indicates the growing demand and important place that (ICTs) could receive education.

Since ICTs provide greater opportunity for both teachers and students to adjust learning and teaching to individual needs, so it is necessary to integrate ICT application in School education.

But introduction and integration of ICTs at different levels and various types of education in a developing country like India is the most challenging undertaking .Failure to meet the challenges

would mean a further widening of the knowledge gap and deepening of existing economic and social inequalities among the developed developing countries.

2. Meaning and Definition of ICT: ICT means Information Communication Technology. It has three parts Information, Communication and Technology.

Information is the summarization of data. Technically data are raw facts and figures that are processed in to information

Communication is a process which disseminate information and Knowledge .And Technology is a mode or media through which information can be disseminated.

So ICT is the technology required for information processing and spreading.

ICTs are technologies such as radio and the newer digital technologies like computers, satellites, mobile phones and the internet.

ICTs are electronic collection, editing, storage, distribution and presentation of information.

ICT is the means in which people interact with their colleagues around the world, exchange their ideas, information, messages and co-ordinate each other through variety of technological means.

3. Components of ICT: ICT includes communication devices and applications like computer, hardware networks, software, mobile technology, satellite communication, video conferencing, RFID Technology, WI-FI zone, pen drives, Internet, www, Web2.0 and Social media etc.

Satellite communication: The age of satellite communication dawned in 1962 with the launching of Early Bird, the first communication satellite. The two big international satellite systems Intelsat and Intersputnik began operating in 1965 and 1971.India launched a satellite for communication called INSAT and for Education purpose EDUSAT was launched in the year2004.INSAT -4CR was launched on 2 September 2007 by GSLV_F04. IT is a replacement satellite for INSAT -4C which was lost and destroyed.

Video conferencing: It is a two way communication system .Ii is also called teleconferencing, is the use of television video and sound technology as well as computers to enable people in different locations to see, hear and talk with one another. It can still consist of people meeting in separate conference rooms or booths with specially equipped television.

World Wide Web: The World Wide Web, known as www, w3 or simply the web, is one of the several internet resources developed to help, publish, organize and provide access to information on the Internet. The web was first developed by Tim Berners Lee I 1989 while working at CERN, European Particle Physics Laboratory in Switzerland.

RFID Technology: Radio Frequency identification is the wireless use of electro-magnetic fields to transfer data, for the purpose of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Some tags are powered by electromagnetic induction from magnetic field produced near the reader. Unlike a Barcode, the tag does not necessarily need to be within line of sight of the reader, and may be embedded in the tracked object.

Now a day's RFID can be used library circulation operation and theft detection systems. RFID – based systems move beyond security to become tracking systems that combines security with more efficient tracking of materials through the library, including easier and faster charge and discharge, inventorying, and material handling (Boss 2004). This technology helps librarians reduce valuable staff time spent scanning barcodes while charging and discharging items.

Advantages of RFID:
1. It reduces staff time.
2. High Reliability.
3. Minimal human intervention.
4. High speed inventorying.
5. Long tag life.
6. Automated material handling.

Disadvantages of RFID:
1. High cost.
2. Accessibility to Compromise
3. Removal of exposed tags.
4. Exit gate sensor (reader) problem.
5. Lack of Standard.

Web 2.0: The term was coined by Tim O' Reilly at the O' Reilly Media. Web2.0 describes World Wide Web sites that use technology beyond the static pages of earlier web sites. Although web2.0 suggest new version of www, it does not refer to update to any technical specification, but rather to cumulative changes in the way web pages are made and used.

It allows users to interact, collaborate and chatting with each other both synchronously and asynchronously. Social Media, Blogs, Wikis, Video sharing are all based on Web2.0 Technology. With web2.0 tools, users can communicate around the world with a nominal cost. It allows population to correspond and spread ideas with each other rather than receiving the information from a single source.

Blog and Wikis: Blogs and wikis are fundamentally web2.0 and their global proliferation has enormous implication for libraries and also in teaching –learning process.

Blogs may indeed be an even greater milestone in the history of publishing than web pages. They enable the rapid production and consumption of web based publications. Blogs are HTML for the masses. A Blog is also known as web log or personal log is a web based publications consisting primarily of periodic articles. Blogs contains posts some time similar to journal entries , from a person or a group. The post are dated and listed in reverse chronological order. People can comment on posts as well as provide links to related sites, photos and blogs.

Wiki is an online collaborative writing tool. A wiki is a collaborative web space where anyone can add content and anyone can edit content. That has already been published (Richardson, 2006).Wikis are designed to help groups collaborate, share and build online content and are especially useful for learners who are separated by time and place. Wikis present an approach to group writing and editing that is more efficient than forwarding e-mail attachments with tracked changes, a method that supports only one editor at a time and can create issues with students having multiple and conflicting versions of the same document.

The word 'wiki' was derived from the Hawaiian phrase "Wiki Wiki" and means quick or swift. Wikis are quick to set up and easy to learn and edit. They offer valuable features such as visual editors; addition, editing and deletion of content; page versioning; communication; subscription feeds; search boxes; unstructured tagging and contributor statistics.

Types of wikis: Wikis are available through a wide variety of services and open source software tools and generally fall into three categories, each with its own set of strength and limitations:
   . Free wiki services

- Fee – based wiki services
- Self –hosted wikis (Noushad, 2012)

Free wiki services are available at no cost through wiki provider , such as Google Docs (http://docs.google.com)

Fee-based wikis are also hosted and accessed from the wiki services web server. These services offer expanded features based on the type of subscription you select.

Self hosted wiki software can also be installed directly on a personal or campus controlled service space. A variety of free, open source wiki software is available for down load from internet, for example; Media wiki (www. Mediawiki.org/wiki) and Twiki (www.twiki.org/). (Noushad, 2012)

Social Media: Social media are perhaps the most promising and embracing technology. They enable messaging, blogging streaming media and tagging .Some most commonly used social media are MySpace. Face book, Del.icio.us,Frappr and Flickr networks that have enjoyed massive popularity in web 2.0. It is based web2.0 technology. MySpace and Face book enable users to communicate with each other, Del .icio.us enables users to share web resources and Flickr enables the sharing of pictures. Frappr is a bit of a blended network, using maps, chat rooms and pictures to connect individual.

4. Role of ICT in Education: Information Technology can provide a medium for teaching and learning and contribute flexibility to course provision.

The valid uses of information Communication Technologies are:
- Distance learning via electronic networks.
- Open learning through students controlled learning pathways.
- The process of changing teaching and learning styles by using a narrow range of Information Technology based facilities.

Presently there are four areas of education namely: Teaching, Learning, Curriculum and Educational programme. ICT has been added essentially in the 21st century as the fifth potent area of education (Sampath, 2011). According to the revised Draft on National Policy Information Communication Technology in school education (prepared by the Department of School education literacy, MHRD in 2011) ICTs are all devices, tools , contents, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realizing the goals of teaching learning , enhancing access to and reach of resources, building capacities, as well as management of educational system. This will not only include hardware devices connected to computers and software application but also interactive digital content, Internet and other satellite communication devices, teleconferencing, video conferencing, web–based content repositories, interactive forums, learning management system and management information system.

ICT make education system more productive, interesting, give more powerful instruction and also able to extent the educational opportunities to masses and creating information –rich learning environment.

ICT has made the class-room transaction more interesting. It has extended the teaching learning process beyond the boundaries of classroom. Students are now able to use laptop computers and wireless networks anywhere in campus. A computer allows high speed information exchanges to occur with individuals within the institution as well as around the world. ICT brings the outside world in to the classroom teaching learning process, makes the things more realistic and thus helps the learners to understand the abstract thought very clearly.

ICT can improve the quality of higher education by promoting experimentations, researches and innovations, adopting the new strategies in the teaching –learning process and integrating the new information with the best practices. In 1998 UNESCO world Education Report stressed the importance of ICT in higher education to generate quality education. Recently ICT has become significant tool in the field of education. ICT stimulates the learners to acquire quality research through team work, time management, analytical thinking, global consciousness, basic communication, problem solving and guided instruction (Singaravelu and Muthukrishnan, 2007).

ICT has also played a vital role in providing distance education very effectively. IT provides online delivery of courses, online assessment and online design courses to large no. of students at a time. The IC –based system like digital libraries; online courses, audio and video conferencing contribute significantly to the area of E- Learning and have opened a new era in the area of E-Learning.

4.1. Application of ICT in Education in India: In India, application of ICT in Education was started few years back and it has touched the every aspect of human life and it has become a vital part of our daily life. Presently ICT in India has greater potentialities and a promising future because our country possesses one of the largest ICT workforces in the world and there is a growing awareness building among the educationists, stakeholders on the emerging role of ICT in enhancing the process and out-come of education

In 1975-76, Satellite Instructional Television Experiment, a Satellite based educational programme was introduced in India and the programme related to health and hygiene were telecast to more than 2000 villages covering six states of India. The INSAT satellites were land mark in the history of Indian educational Technology. The Educational television broadcasts started through INSAT satellite in 1982 in Orissa and Andrapradesh and after that they were extended to some other states like, Bihar, Maharastra and Uttarpradesh. Now INSAT cover whole country and a Variety of educational programmes are being telecast by it, as the vital aim of the IINSAT is to bring the rural people into national mainstream. Another Satellite, EDUSAT, a satellite for Education purpose was launched in 2004.

The National Policy on Education 1986, as modified in 1992, stressed the need of Educational Technology to improve the quality of education. The Curriculum Framework (2005) also highlighted the significant role of ICT in School Education. Sarva Shiksha Abhijan (SSA)- a mission of the Indian Government to achieve the UEE , also stresses the importance of ICT in educational sector and the Central Advisory Board of education (CABE) also in its report on Universal Secondary Education-2005 featured the comprehensive use of ICT as one of the most important aspects of schooling . Presently the government of India has taken various initiatives to integrate ICT in educational sector to facilitate information dissemination and communication in every area of education.

Our Prime Minister, Narendra Modi said that Information Technology is becoming the growth engine which has the potential to transform India into a Knowledge Economy and Society.

Even though computer have been introduced in schools in India, The education system has largely not been influenced by the potential for pervasive change intrinsic to ICTs .Hence a proposed increase in the spending on ICTs in school education from less than Rs. 1000 Crore in the 10th Five year plan to more than Rs. 6000 crore in the 11th five year by MHRD could reflect an urgency to harness ICTs for systematic change in the education sector.

In the 12th five year plan, special stress has been given on enhancing facilities in schools especially on ICT .The stress laid on implementing ICT in elementary level by replacing the

erstwhile Computer Aided Learning (CAL)under SSA which would include provision of networked computers, accessories and an Internet connection in a phased manner .Development of Pedagogically appropriate e-content in local language and a variety of software tools to serve the school curriculum have also been given special emphasis . This will focus to enable students and teachers to access wide variety of resources indispensable integrated in classroom available in the digital format, store over, efforts to made to the cost-effective and efficient ICT solution have also given special emphasis.

4.2. Benefits of ICT application in Education:
The benefits of ICT application in education can be summarized as bellow:
- ICT increases the access to education.
- It improves the quality of education by developing new ways of interaction and also makes teaching –learning process more interesting.
- It provides equal opportunities to the large number of learners to obtain education and information.
- It provides specialized tools for learners with visual, hearing or mental impairment, so that they learn and acquire knowledge at their own pace.
- It provides support to each and every school in sharing educational / learning experiences with the different schools throughout the country.
- It enables the distance education system to be more effective.
- It helps in promoting technology literacy to every citizen and especially to young stars.
- It provides opportunities for lifelong educations.
- It enhances the teacher's quality both in terms of teaching and research.

4.3 ICT in Classroom Instruction: The systematic use of ICT tools in classroom instruction makes the teaching learning process more effective and highly interactive. It has shifted the teaching –learning process from teacher – centered learning to student centered learning. Research has shown that high level of student and instructor satisfaction can be produced in ICT enabled learning process.

But the effective and efficient use of ICT depends on technically competent educators /teachers. They should be able to appreciate the potentiality of ICT and have positive attitude towards ICT.

The effective and efficient use of ICT in classroom instruction depends on:
a) ICT literacy of Teachers
b) Effective use of ICT hardware and software for teaching –learning activities
c) ICT – based pedagogy, online support, networking and management.
d) Adopting best innovative practices in the use of ICT.

4.4. Various ICT tools used in Classroom Instruction: The following are some of the technological tools used in teaching –learning process. These are, Computer-Aided Instruction (CAI), Computer –Assisted Learning (CAL), LCD projector, PowerPoint Presentation, Smart board, E-mail, Discussion forum, Wikis, Blogs Social Media, YouTube, CCTV, Video conferencing , Teleconferencing , Google earth, Google Maps , School tube, Teacher Tube, Flicker, Classroom 2.0 Ning etc.

Computer-Aided Instruction: Computer, as an aid to the instruction, involves a set of programming Instruction which is used in the teaching –learning process to develop certain skills among the learners. Here, the computer is used to present, drills, practice, exercise and tutorial

sequences to the students, and some time to engage the students in a dialogue about the substance of the instruction .It appears that computer is used as teaching aid for a teacher. So Computer – Aided Instruction is a type of Instruction which is used to achieve the objectives of the Instructions.

CAI work as a teaching aid and it facilitates psychological based learning, self- pacing and individualized instruction on the part of the learners.

In CAI, the role of the teacher has changed from the traditional method of delivering lecture to a supervisor or a guide. NO computer can replace a teacher , a teacher, a' teacher 'role is very important in the process of teaching – learning .In CAI , the teacher has to play so many roles like computer engineer, lesson writer and a system operator, as CAI needs the services of the aforesaid experts.

Computer assisted learning: Computer Aided Learning is the use of computer to aid or support the education or training of people. It is one of the several terms used to describe this application of computers. Other terms include Computer Assisted Instruction, Computer- Based and Computer – Managed Instruction.

The term Computer Assisted Learning covers a range of computer –based packages which aim to provide interactive instruction usually in a specific subject area, and many predate the internet .These can range from sophisticated and expensive commercial packages to applications developed by project in other educational institutions or national initiatives to simple solutions developed by individuals with no funding or support to tackle a very local problem.

CAL represents the next phase in the use of computers in education in which an attempt was made to correct the negative aspect of CAI.CAI is to convey 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 you through textbook and discussion in the classroom.

LCD Projector: An LCD projector is a type of video projector for displaying video, images or computer data on a screen or other flat surface. It is a modified version of over-head projector or slide projector. To display images, LCD (Liquid- crystal display) projectors typically send light from a metal –halide lamp through a prism or series of dichloric filters that separate light to three polysilicon panels –one each for the red, green and blue component of the video signal. As polarized light passes through the panels, individual pixels can be opened to allow light to pass or closed pixels can produced a wide range of colors and shades in the projected image.

It is used as teaching aid in classroom transaction for displaying image, chart, PPT etc.

Power point presentation: Slide presentation software such as Power Point has become an ingrained part of many instructional settings. Particularly in large classes and in course more geared toward information exchange than skill development.

With the help of MS Power Point , teacher can create interactive slide containing , text , art, animation and audio and video element related to classroom lesson. This will make the classroom interaction more interactive and effective. It can be a highly effective tool to aid learning. PPT also helpful for hearing impaired students.

Potential benefits of using Power Point Presentation are :
. Engaging multiple learning Styles.
. Increasing visual impact.
. Improving audience focus.
. Increasing spontaneity and interactivity.
. Enriching curriculum with inter-disciplinarily.

Smart Board: The smart board is an interactive white board that uses touch detection for user input (for example, scrolling and right mouse –click) in the same way as normal PC input devices. The white board accepts touch input from a finger, pen or other solid object .Smart board can be used in classroom instead of blackboard or whiteboard. The smart board 800 series interactive whiteboard introduced a "Flick and Scroll "feature. The smart **Board** interactive white board operates as part of a system that includes the interactive white board, a computer, a projector and white boarding **software** either Smart Notebook collaborative learning software for educator or Smart Meeting Pro Software for Business. The components are connected wirelessly or via USB or serial cables. A projector connected to the computer displays the desktop images on the whiteboard.

Use of Smart Board in classroom:

Smart board is also called touch board is one of the world's largest manufacturer of interactive white boards and they have coined the term smart board.

➢ It can be used as teaching aids.
➢ Teacher can use smart board by sharing lesson plan and ideas with each other , through internet .
➢ Smart board also has games for children which can be played by teacher on interactive white board for making students motivate towards lesson.

E-mail: E-mail is a most popular and excellent web-based media. Teacher can use E-mail for various purposes specially for delivering some web-based services. The most easy and convenient method to access the web sources is the E-mail. Some faculty use E-mail and discussion lists to cover basic issues so that classroom time can be devoted to discussion and highly contentious issues.

Discussion forum/News Group: They are on-line discussion groups on many topics of varied interest. Discussion allows open exchange of messages on a topic of common interest. Electronic – based discussion groups can alter the classroom structure and dynamics. The absence of face to face interaction can make students alienated, and hostile. Through computers the images can be display data from external sources. It can access data quickly to reach the desired segment. It makes the classroom transaction more interesting and also removes the monotonousness of traditional classroom situation.

Blogs and Wikis: Blogs and wikis are based on web2.0 technology. These are asynchronous mode of communication. Authoring a blog, maintaining a blog or adding an article to an existing blog is called blogging. Individual articles on a blog are called blog post, post or entries.

Wiki is an online collaborative writing tool. Wikis are designed to help groups collaborate, share and build online content and are especially useful for learners who are separated by time and place.

Some Educational use of Blog and Wikis are:

Blogs:
➢ The can be used to inform students of classroom requirements, post handouts , notices homework and assignments or act as a question and answer board.
➢ It provides conversation between batch mates in larger classes.
➢ It provides new chancels of information and knowledge from anywhere anytime.

Wikis:
➢ It enables and promotes group collaboration ,editing and revising
➢ It maintains and builds a repository of content and material.

➤ Empower learners through a more democratic , open philosophy of learning and sharing
➤ Help students experience the messiness of group collaboration, problem solving and critical thinking.
➤ A wiki can be used as a presentation tool in place of conventional software, and students are able to directly comment on and revise the presentation content.
➤ Wikis can be used to map concepts. They are useful for brainstorming, and editing a given wiki topic can produce a linked network of resources.
➤ Teacher can use wikis as a knowledge base, enabling them to share reflection and thoughts regarding teaching practices.

Social Networks: Social Networks is an interactive media, which is based on Web2.0 technology. Among all the social media, Face book is the most populous media. People can share information, upload photos/videos post comments etc. on social media. It is a synchronous way of communication. People can instantly communicate with each other.

Use of social media:
➤ Students can use social media to discuss class related topics with their peer-mates and with their teachers.
➤ It helps student's experiences the messiness of group collaboration, problem solving and critical thinking.
➤ Teacher can use this media to inform students various class related topics, post handouts, notice etc.
➤ It provides Synchronous communication between learners and teachers and provides new channels of information and knowledge from anywhere anytime.

Google Earth: Google Earth makes Google Maps in 3D visual, 3D Globe for your computer that includes traditional mapping, layered terrain, cultural landmarks etc. Teachers in all content areas can use can use Google Earth for numerous interactive lessons. Maps and explorations can be built, shared, saved and exported into movies and other presentations.

Google Maps: It provides information about standard maps direction, as well as real time traffic information in majors' cities, satellite views, and saved maps and directions. It is an essential tool for both teachers and students can use it for a wealth of digital storytelling ideas. It helps the students in creating directional maps that provide a narrated vacation trip or a recreational of an historic explorer's path across the world etc.

Teacher Tube: It is an educational Social video sharing site for teachers. Most of the school blocked YouTube but not Teacher Tube. The Structures are same as YouTube. User can watch, subscribe, create and share free instructional videos through Teacher Tube. Teacher tube is an online collection o0fb home –grown video content, housed in a web site. It is also a great place to share video of your own snippets of instruction so that your students can see you demonstrate lessons. (Thiyagu, 2013).

Flickr: Flickr is a Social Media. Flickr enables the sharing of picture. It is a social photo sharing sites. User can view comment and subscribe to photo streams, establish private groups for photos, and use the photos in numerous ways under creative common license. Teachers can establish banks of thousands of photos, very easily categorized by topic and need , so that students pull from these photos for various classroom projects.

Classroom 2.0 Ning: This is a social networking site for educators. Ning is commercial web sites that offer user- generated social Networks. Students spend countless hours in social Networks connecting to friends, creating original work, chatting, sharing photos and so on. (Thiyagu, 2013)

Twitter: Twitter is a micro blogging tool. Twitter offers a way for user to micro blog in short 'blast' on any topic that the micro blogger's readers would be interested in knowing more about .Twitter can be used by teachers to set up 'class blasts' that are sent out to students at any time about current topics , timely events or question etc. In addition, teachers can use Twitter easily to send out class- wide announcement and can distribute these short blasts of information via web, e-mail or cell phone text message. Receivers can choose the same formats in which formats in which to receive these.

Class tools: It creates free web-based educational games, activities and diagrams using Flash but with an easy to use interface, host them on your own blog, web site or Intranet. Teachers and Students can create their own tutorials, demonstrations, diagrams, animation on class tools. (Thiyagu, 2013)

Mobile learning : The term M- Learning stands for mobile learning., which means learning with the help of hand held technology such as Mobile Phone, Laptop and other portable devices, Mobile is a portable device , M-learning is convenient as it is accessible virtually from anywhere. M-Learning means, 'acquisition of any knowledge and skill through using mobile technology anytime, anywhere that result s in alteration of behavior (Tejwani & Silviya Thomas, 2013). Now days, Smart Phones are available in the market and they have most common features like laptop and computers, and they are relatively less expensive than Laptop and Computer. M- Learning also brings Strong portability by replacing books and a note with a small RAM's filled with tailored learning contents. It can download a PDF File or E-books with the help of Android or Windows Phone and store it in its RAM.

Use of M-Learning in classroom transaction:
   ❖ Teacher can record their lecture and upload it as a podcast and can share their link with their students. Students can use this link while studying or for references.
   ❖ Through text messaging with teachers , students can clarify their doubt related to classroom lesson while reviewing the lesson, and teacher can answer them instantly or in the next class or can direct them to the reference sources where they can meet their query.
   ❖ Teacher can create short list of salient points like history dates, exam hints, short summaries etc. which can be shared with students through messaging.
   ❖ Mobile dictionary can be used by the students to build vocabulary.
   ❖ Teacher can allow their students to take 5 mi8nutes to study the National Geography using Google Maps.
   ❖ Mobile phone makes it easy for the Students to discuss class related topics with their peer-mates and their teachers in social media/social networks.
   ❖ Mobile learning allows group learning of students when they are working same projects.
   ❖ Teacher can ask a new question related to the subject taught in the class and let their students to find out answer from internet sources by using Mobile phone and to see how quickly they find out the answer. This will enable to know how well they understand the topics.

Advantages of M-learning:
- ❖ Mobile devices are cheaper than desktops or laptops.
- ❖ M-learning can be used anywhere anytime including schools, colleges, offices, homes etc.
- ❖ Fast & easy accessing of information
- ❖ Motivates the students with multimedia facilities .
- ❖ Enhances and compliments traditional teaching styles.

Disadvantages:
- ❖ Devices may become outdated quickly and students have to keep combating obsolescence.
- ❖ Mobile Network has limited bandwidth.
- ❖ With the help of Mobile Network people can download file but cannot print out the material.
- ❖ Mobile learning can create eye sight problem also.
- ❖ Loss of Data may occur due to discharged batteries, low storage capacity of devices.

Smart class and Blended learning also make classroom transaction highly interactive .Blended learning can be thought as a new pedagogical approach that combines the effectiveness and socialization opportunities of classroom with the technologically advanced active learning possibilities of the online environment .Where as Smart classrooms technology enhanced classrooms that foster opportunities for teaching and learning technology, such as computer specialized software, audience response technology, networking , and audio/visual capabilities. The smart classrooms demands learning initiative that assist educators to make ICT integral to learning.

Use of above mentioned technologies in teaching–learning will make the teaching –learning process more interactive and effective. All the process of learning is crossing the boundaries and barriers. For using ICT tools in teaching –learning institution must reconstruct their organizational structure. With the gaining speed of technological progress, Information Communication Technologies are opening up new facilities for learners and have played a significant role in teaching learning process. Therefore it is high time for the teachers to get an awareness of these resources for future academic growth.

4.5. Benefits of ICT in Teaching Learning process:
- ❖ ICT can make the teaching learning process more interactive and effective.
- ❖ It helps in motivating the students towards their lesson.
- ❖ Learners can learn and work at their own pace just with little guidance from the teachers.
- ❖ ICT enables the learners to interact with the teachers, peers and experts on various issues outside the classroom.
- ❖ Learners can get various information very quickly.
- ❖ IT also helps the teachers to evaluate the learner's progress and proficiency in certain skills.
- ❖ It can also remove the monotonousness of traditional classroom system.
- ❖ Encourages contact between students and faculty through social networking tools, blogs, wikis, text message etc, especially those students who are shy and unable to speak out in face-to- face classroom settings.

4.6. Problem faced in implantation of ICT in Teaching –Learning process in Indian Context:
- ❖ Lack of proper infrastructural development in rural areas.
- ❖ Lack of Skilled and trained teacher in primary and secondary schools in remote areas where most of the primary schools are run by single teacher.

- ❖ Lack of proper funding is another problem, mostly found in developing country. ICT implementation in teaching learning process needs widespread investment which is not possible for developing country, though India is trying their level best to reach the elevation but still it is on the process.
- ❖ Underpinning educational planning
- ❖ Frequent power cut problem. Most of the village schools are still starving for proper electrification.
- ❖ Lower bandwidth capacity than developed country.
- ❖ Language barriers: An estimated 80% online is in English Language. A large proportion of educational software produced in world market are in English. Where as in developing country like India Where English proficiency is not high especially outside the cities.
- ❖ Lack of ICT awareness among the mass. Now it is high time for the people to change the mindset and accept the new technology for their future academic growth.

5. Conclusion: Transition, Transformation and Revolution is the scenario of today's educational system. Application of ICT in education and teaching learning process has changed the traditional system of learning to modern ICT based learning. Teaching- learning process is not now limited within the boundaries of classroom. The modern technologies including new web 2.0 has changed the total scenario of teaching learning process. ICTs are making major's difference in the teaching approaches and the ways students are learning. ICT–enhanced learning environment facilitates active collaborative, creative, integrative and evaluative learning as an advantage over the traditional method. Several surveys are showing that ICT use in education system of developed nations is comparatively advanced than ICT used in education system of developing countries. ICT use in education system of developing countries is also facing some challenges. ICT introducing innovative pedagogies in to the classroom, creating network among educational institution, improving overall standard of education by reducing the gap between the quality of education in urban area and rural area, initiation of smart school with objectives to foster self-paced, self-assessed and self-directed through the application of ICTs, and developing ICT policy for education and training.

There is a consensus that the development of any country depends upon the quality of education programme offered to citizens. ICTs, despite of their known limitations, are believed to be beneficial in this regard. The computer and the internet are especially useful to enhance student engagement in learning and positively impact student's performance and achievement.

Role of teacher is very much important in teaching learning process. Teacher is the main pillar of teaching –learning process. Teacher is the facilitator of learning. ICT cannot replace the teacher; it can aid the teacher in the process of teaching and make the teaching–learning process more interactive. The effective use of ICTs in teaching learning process also depends on teacher's ICT competency and skill. So the teachers have to realize that if the students are to achieve a high level of competency and competitiveness, they have no other choice but to adopt technology as an integrated tool in the field of education.

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