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# ICT for Delivering Quality Teaching-Learning Process

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**Abstract**

*The objective of the present paper is to focus on information and communication technology (ICT) as a potent tool for delivering quality teaching-learning process in the classroom. The paper would highlight the initiatives and services of ICT in improving the quality of teaching and learning in the classroom for retention of knowledge and better academic achievement of learners. ICT as an integrated part of education plays a central role in teaching-learning process. Technological advancements in ICT make teaching-learning more interesting, engaging, relevant, lucid and resulting it in learner-centered activity. It helps in increasing students' retention, arousing curiosity and generation of high level of thinking. Various services offered by ICT in India such as teacher training programmes like Intel Teach, Microsoft Shiksha, Sakshat Portal of Government of India and initiatives like NPTEL, MERLOT etc. for enhancing quality of teaching-learning process. Use of ICT in the form of smart classes, programmed learning, interactive CDs and videos helps teachers in imparting knowledge very effectively and efficiently in the classroom. The various web based resources like virtual labs, e-learning and digital libraries helps learners to find solutions of their problems and explore the world of knowledge as per their own time, pace and place. This effort of ICT helps in making classroom conducive and congenial which thereby helps in better teaching-learning process in the classroom.*

***Keywords:*** *ICT, Conducive and Congenial, Quality Teaching-Learning.*

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## Introduction

In present times technological skills highlight the need to shift from the traditional teacher-centered pedagogy to more learner-centered methods as information and communication technology (ICT) becomes an important part of most organizations (Ghavifekr et al., 2016) . Use of computers in schools started in early 1980s and soon it becomes potent tool for education for the next generation (Bransford, Brown & Cocking, 2000), (Grimus, 2000) and Yelland (2001). Latest Up to date contextual technology offers many methods of enhancing classroom teaching-learning process (Lefebvre, Deaudelin & Loiselle, 2006) and (Ghavifekr et al., 2014). New technologies have the potential to update education across the curriculum and deliver various opportunities for efficient student-teacher communication in many ways which were not earlier possible (Dawes, 2001). ICT in education has the potential to transform teaching as ICT contribute to the creation of knowledge and skills based learner population through active, cooperative and collaborative learning. Due to ICT's numerous advantages in the education integration of these technologies in schools would be an important step in improving the quality of teaching-learning process.

ICT is used as an umbrella term that includes any communication device or application which encompasses radio, television, cellular phones, computers, laptops, hardware and software, satellite systems, internet and the various applications associated such as teleconferencing, videoconferencing, virtual laboratories, digital libraries etc. In general, ICT is defined as the integration of computers, internet and audio-visual system which enable users to access, store and transmit information in a digital form. It consists of informatics technology with other related technologies, specifically communication technology. The purpose of ICT according to Shavinina (2001), "consists just in the development of human mental resources which allow people to successfully apply the existing knowledge and produce new knowledge." ICT equips students as well as teachers with new tools and technologies that enable improved and better teaching-learning. Geographical distance no longer becomes barrier in obtaining an education. Meanwhile, it is no longer necessary for teachers and students to be physically in proximity, due to innovations of various technologies such as live chat, video chat, group chat etc. which allow for synchronous learning. ICTs in schools provide ample opportunities to teachers to transform their educational practices by providing learners with improved interesting up to date educational content thereby effective teaching-learning process. ICTs improve the teaching-learning process through the more creative and interactive educational materials that increase learner intrinsic motivation and facilitate acquisition of knowledge. The use of various multimedia devices such as videos, computer applications and smart classes make learning environment engaging and conducive hence, increase quality of education. ICTs have demonstrated potential to enhance the options, access, participation, engagement and achievement for learners.

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**Advantages of ICT are as follows**:

- It enhances the educational experience of learners who live in rural and remote locations.
- It helps learners who have special learning needs by providing various services and applications.
- It helps learners who have physical disabilities constraining their access to schools it helps learners who have dropped out and/or have kept themselves out of school for various reasons.
- It helps in aiming for academic excellence by providing numerous services and applications.
- It helps teachers as well as learners by providing them with world of knowledge which makes them independent on physical media such as printed textbooks.

With ICTs numerous advantages, one even has the ability to access and get in touch with subject experts, professionals of their fields of interest, around the world at any given time and at any place. Despite the providing many beneficial opportunities to the education by ICT, there is no substitute for formal schooling. The role of ICT is to support school education not to replace it, though the technology plays an appreciable role in meeting the needs of children who cannot go to a conventional school and demands of children with special needs. Access to ICTs applications and services ensures enhancement of traditional or formal education systems, enabling learners to adapt various approaches for better teaching-learning process.

**Initiatives of ICTs in School Education for Quality Teaching-Learning**

ICTs initiatives in school education for quality teaching-learning process focus on the following areas -

1. **Increased access to each learner:** ICTs can provide new, better and innovative approach to bring educational opportunities to greater numbers of learners of all ages, especially for those who have been excluded such as people in rural and remote areas, girl children facing social and community barriers, children with disabilities, children with special needs etc. In India, distance learning offered by institutions like National Institute of Open Learning (NIOS) and Indira Gandhi National Open University (IGNOU) have a combination of print, audio-visual learning material as well as traditional face-to-face interactions to deliver their content to learners.
2. **Enabling a vast knowledge network for learners:** With knowledge as the crucial input for productive and interactive communication process, ICTs various services such as video chats, group chats etc. contribute to the timely transmission of information and knowledge helping learners.
3. **Training teachers for conducive teaching-learning:** Usage of ICTs can help in training of teachers to accomplish the targeted tasks, updating knowledge and in enhancement of skills for better academic achievement of learners. ICTs provide opportunities for pre-service and in-service teacher training programs

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and for continuing education for teachers in a more convenient and flexible manner. The government of India has recognized the use of ICTs for teacher training programmes. Intel Teach across India & Microsoft Shiksha in India etc. are focused on using ICTs for training teachers.

4. **Broadening the availability of quality educational learning material:** Development of relevant, interesting, creative and good quality learning content is perhaps the biggest challenge in the educational space. In absence of quality content, the learning experience of students will not be significantly improved by the mere presence of ICT in classrooms. Quality content development is being focused and the Government of India has taken several initiatives in our country for creating e-learning material & digital repositories such as the Sakshat Portal (Govt. of India) and initiatives like National Program of Technology Enhanced Learning (NPTEL), the Multimedia Educational Resource for Learning & Online Teaching (MERLOT) seek to create quality digital content for different levels of education for learners.

ICT influences students' way of learning, it is concerned with how the students is taught and how they get learn the material are taught. Its process is student oriented. The integration of ICT in education would prepare the learners for lifelong learning as well as to improve the quality of learning. For this ICT provides services for facilitating teaching-learning process.

### Various Services Offered by ICT for Quality Teaching-Learning

Various services offered by ICT for quality teaching-learning process in the classroom for better academic achievement and for congenial conducive teaching-learning environment are as follows -

**Smart Classes:** smart classes are those classes which use all interactive modules like videos, presentations, audio, graphics and animations. Smart classes are smart enough in using laptops, computers, DVD or VCD players, projector, viewing screen, amplifier, speakers and smart boards. These smart classes are just like watching movies in theater. It attracts attention of the learners, develops curiosity and they can easily relate to them as they are connected to it because audio-visual senses of learners are targeted.

### Benefits of smart classes are as follows:

- Improve teachers' effectiveness, efficiency and productivity in class during teaching.
- Make learning easy and enjoyable experience for the learners.
- Make difficult and abstract concepts understandable to the students.
- Learning is permanent and hence improves academic achievement of the learners.
- Enable teachers to assess and evaluate learners' learning in class.
- Help in the retention of facts, information and knowledge.
- Students and teachers use the various resources available on internet for better understanding of subject.

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- Time saving for students and for teachers because smart boards have all the information stored in the memory and it can be presented anytime whenever required.

**Programmed Learning:** it is a term used to refer to the broader concept of auto-instructional method. The arrangement of tiny bits of knowledge into logical sequence is called the programme and its process is called as programmed learning. Benefits of it are as follows:

- Technique of receiving individualized instruction with or without the help of teacher.
- Programmed learning material is individualized, hence only one learner learns at a time on it.
- The instructional material is logically sequenced but broken into different small steps to deduce the complexity.
- Small parts are sequenced. Each frame under programmed material is linked to the next frame logically and naturally.
- A frame (small but meaningful segment of subject) is presented to the learner. Leaner is required to read, understand, listen and then respond actively to it.
- Programmed learning material is valid and verified.
- A learner has to make response continuously.
- Students are informed about their progress immediately whether their effort or response was right or wrong.
- Immediate feedback is given so students are reinforced for right responses which help in better learning.
- Programmed instruction provides remedial instruction after diagnosing the weakness and difficulties of students.
- Enhances the capacity of the learners to discriminate or to generalize and thus offers the learners an interesting and challenging prospect.
- Provides constant evaluation through the record of learners' response.
- Learners get an opportunity to learn by their own pace. Learning may occur at individual rate depending upon the learners' readiness, learning material and learning environment.

**Interactive CD'S and Videos:** it is an effective and efficient ways of delivering information, knowledge and content to the learners using distance education mode. Interactive CD's are one way because they store the recorded material and information while videos are two way video and audio communications between multiple locations at a single time. It is face to face connection technique. Interactive CD's and videos provide access to the education to those who lives at a remote places or special needs learners. Engages large group of learners (different communities, background, cultures, habits etc) to each other at a single time and enables them to learn simultaneously. Benefits of it are as follows:


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- Turns passive learners into active ones.
- Sharing any file, folder or presentation to show while discussing content with learners.
- Its purpose is to make learning easy without downloading any special software so technological problems does not get on the way during teaching-learning.
- Learners can join class anytime from any place from any mobile device. Hence learning according to the learners' time and need.
- The entire teaching-learning process can be recorded hence allowing learners to watch, review and understand learning material on demand.

**Virtual Labs:** website, software or application (app) for interactive learning based on simulations of real phenomena in an interactive environment. Experiment is set up on the virtual laboratory that is present on virtual space i.e., on internet to be accessed according to learners' need, time and pace. Benefits of the virtual labs are as follows:

- To provide access to the laboratories and experiments in various disciplines of science and engineering to the remote learners.
- The virtual labs help in providing real experience to the learners and hence cater the needs of undergraduate, post-graduate and research scholars.
- Helps in strengthening scientific concepts as it provides basic and advanced concepts through remote experimentation.
- Provides complete package to the learners where they can access the virtual labs, various tools, web resources, audio-video lectures, animated demonstrations and self-evaluation.

**e-Learning:** e-Learning is called as electronic learning utilizing electronic gadgets and technologies. Benefits of it are as follows:

- It is cost effective as learner does not have to purchase any stationary item such as books, notebooks, pens, pencils etc.
- It saves time as learners learn according to their time and need.
- Learning at any time and at any place depending upon learners' choice.
- It allows learner to learn at their own pace. Thus it ensures understanding of content without any stress or burden.
- Access on multiple devices such as laptops, computers, tablets and on mobiles.

**Digital Libraries:** type of library with digital text, audio material and video material where the students, teachers and professionals can access research material, course material and study material from any place at any time. It has collection of rare books, manuscripts, maps, exam papers, previous year entrance exam papers, documents such as

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magazines, articles, books, papers, images, sound files, videos, educational animated videos etc in an organized form available on the internet. It is freely accessible.

## Benefits of ICT for Teachers and Students for Quality Teaching-Learning

Following are the benefits for teachers and students for quality teaching-learning process in the classroom for conducive and congenial learning which results in better academic achievement are as follows -

### Benefits for teachers

- It facilitates sharing of resources, learning material and knowledge.
- It provides greater flexibility in time and place where learning tasks are carried out.
- It helps in gaining in literacy skills and confidence.
- It helps in easier planning and preparation of lessons and designing learning materials for learners.
- It helps in accessing up-to-date leaner and school data.
- It helps in enhancing professional image of teachers
- It helps during lessons as learners feel motivated to listen and grasp knowledge.
- It helps in greater collaboration between teachers in planning and preparing resources for higher quality teaching-learning process.
- It helps in more focused teaching as strengths and weaknesses of learners better analyzed through attainment of data.
- It helps in improving pastoral care and behaviour management through better tracking of students.

### Benefits for students

- It helps in increasing learners' motivation and engagement.
- It helps in arousing learners' curiosity.
- It helps in developing interest among learners.
- It helps in making children learn more and enjoy learning.
- It helps in gathering and consolidation information from various sources.
- It fosters cooperative learning.
- It makes learning easy.
- It helps in gaining understanding and knowing analytical skills including improvements in reading comprehension.
- It helps in developing writing skills (including spelling, grammar, punctuation, editing and re-drafting), also fluency, originality and elaboration as various ideas develops from various applications.
- It helps in encouraging self-regulated meaningful learning.

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- It helps in flexibility of anytime and anywhere learning' for learners.
- It helps in developing higher level learning styles and higher order thinking skills.
- It helps learners in a technology-enhanced stimulating learner-centered approach.
- It provides numerous opportunities to collaborate with people, experts, academicians etc. for knowledge enhancement.

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