Teaching and Learning: The Role of Role of ICT

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Abstract

Information and communication technology (ICT) in teaching and learning means making the effective use of ICT to teach the subject matter in a more interesting manner to make learning easy and fast for the students. The use of ICT in teaching learning have changed the whole concept of education and had proved to be a great benefit both for teachers as well as the learners. ICT usage in teaching gives an opportunity to the teacher and learner to get acquainted with the new innovation and become contributors to its use in education. Knowledge is expanding rapidly and modern technologies are demanding teachers to learn how to use these techniques in their teaching and students gain a lot by learning through these technologies. They also get an opportunity to share their knowledge with others through ICT. This paper throws light on the benefits of ICT usage in teaching and learning

Keywords: Information and Communication Technology, computer, teaching, learning

INTRODUCTION

The main purpose of education is to enable people in the community to function successfully in both the workplace and in society. One of the important parts of educating individuals is helping them understand themselves. Due to increasing importance of ICT in society it becomes important to identify the possible barriers and barriers for improving the quality of learning. Although teachers acknowledge the value of ICT in schools, they continue encountering barriers in integrating technology into learning process (Balanskat, Blamire &Kefala, 2006). The end of the 20th century and beginning of the 21st century has witnessed very exciting changes, one of them being in the field of information and communication technology. Education is the most powerful tool for change and hence it must train the minds of those being educated to cope with the change. All concerned with education must realize that in the fast-changing world of today, the students have to be prepared to cope intelligently with the social, economic and technological changes.

The educational environment is changing rapidly as a consequence of ICT (Information Communication Technology) and will continue to change. The world of today is often called as the **Age of Communication and Information.** Modern Information and Communication Technologies have created a **'Global Village'**, in which people can communicate with others across the world as if they were living next door.

MEANING OF ICT

ICT is defined as a "*diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information.*"

ICT is an acronym that stands:-

- ❖ Information
- ❖ Communication
- ❖ Technology

Information

The nature of information (the "I" in ICT) covers topics such as the meaning and value of information; how information is controlled; the limitations of ICT; legal considerations.

Management of information covers how data is captured, verified and stored for effective use; the manipulation, processing and distribution of information; keeping information secure, designing networks to share information.

Communication

The 'C' part of ICT refers to the **Communication** of data by electronic means, usually over a distance. This is often achieved via **networks** of sending and receiving equipment, wires and satellite links.

Internal Networks usually referred to as a Local Area Network (LAN), this involves linking a number of hardware items (input and output devices plus computer processing) together within an office or building.

The aim of LAN is to be able to share **hardware** facilities such as printers or scanners, software applications and data. This type of network is invaluable in the office environment where colleagues need to have access to common data or progress.

External Networks Often we need to communicate with someone outside our internal network; in this case we will need to be part of a **Wide Area Network (WAN).**The internet is the ultimate WAN-it is a vast network of networks.
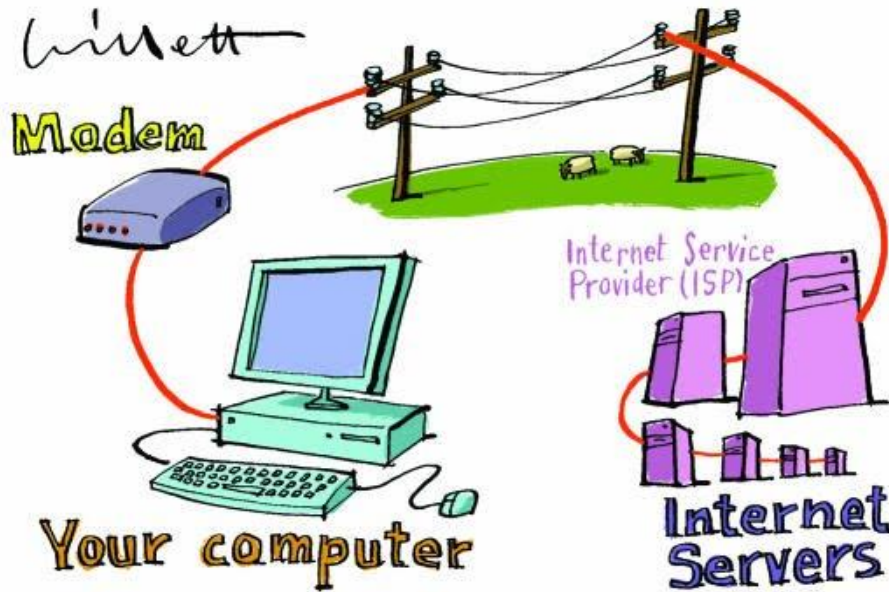
Technology

The word 'Technology' can also be used to refer to a collection of techniques. In this context it is the current state of humanity's knowledge of how to combine resources to produce desired products, to solve problems, fulfill needs or satisfy wants. It includes technical methods, skills, processes, techniques, tools and raw materials.
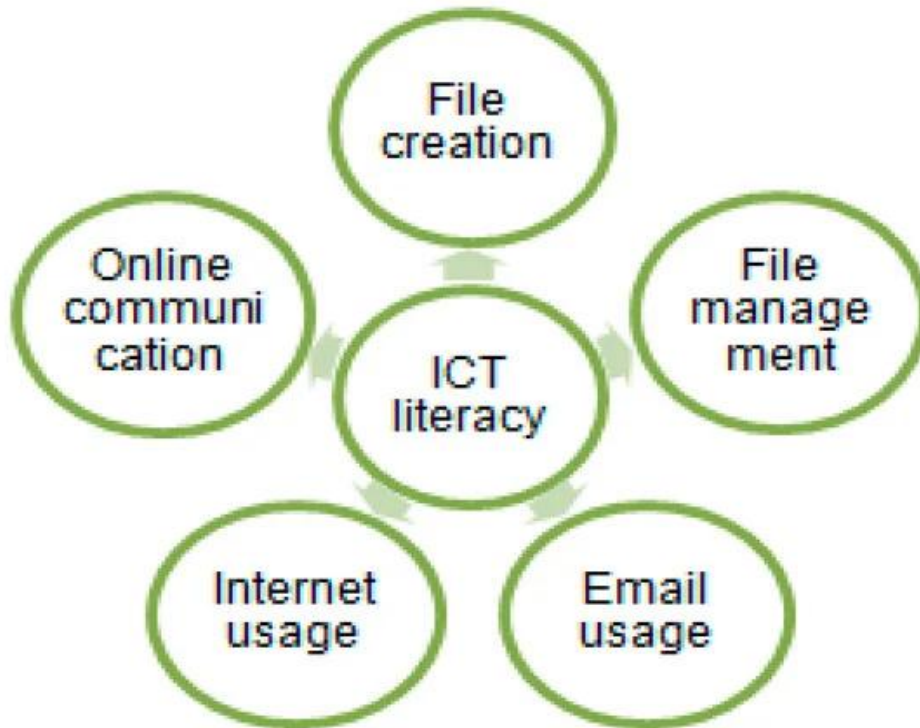
ICT is effective in both helping teachers and students with their subject areas, by offering both group and individual learning activities. The educational teaching based on technologies, including films, stimulation, storage of data, the utilization of databases, mind mapping, guided discovery, music, and the World Wide Web (www), provides numerous fascinating approaches to improve the learning process and result in better outcomes for the learning (Finger & Trinidad, 2002). As also, students will profit from integration with ICT since they are not restricted to the limited curriculum and resources, rather they are given opportunities to explore concepts in a technology-based course that incorporates hands-on activities. Another advantage of employing the gamification strategy is that it allows teachers to arrange lessons in an effective, innovative, and engaging manner that results in students' active learning. According to previous studies, using ICT in the teaching would assist students in better absorbing the learning, and it will also help students to make more creative use of that learning (Finger & Trinidad, 2002; Jorge et al., 2003; Young, 2003; Jamieson-Procter et al., 2013). ICT covers any product that will store, retrieve, manipulate and transmit or receive information electronically in a digital form e.g. personal computers, digitial television, email and robots. So ICT is concerned with the storage, retrieval, manipulation, and transmission or receipt of digital data. It is also concerned with the way these different uses can work with each other.

This technology is similar to a technology or piece of equipment used to support the collection, storage, retrieval, use, transmission, manipulation, and dissemination of information, and which also enhances the user's ability to comprehend, make decisions, and solve problems. Thus, ICT may be defined as technologies that make information accessible via telecommunication. Both information technology (IT) and communication technologies are a kind of ICT, although IT focuses on technical uses of ICT, whilst communication focuses on non-technical purposes.

This includes the **Internet,** wireless networks, cell phone, and other communication mediums. It can be shown in the following diagram.

Tools and Equipments and Support Material of ICT

The Modern Information and Communication Technologies are different from that of Traditional and Communication Technologies

The Traditional ICT Includes:

- Printed media like text-books, resource books, news items, journals and other books.
- Graphical instructional aids like maps, pictures, charts, diagrams etc.
- Verbal information and ideas.
- Three dimensional instruments like radio, tape-recorder and puppetry.
- Audio-visual hardware equipments like radio, tape-recorder, television, slide projectors, overhead projectors, motion pictures, teaching machine etc.

The Modern ICT Includes:

- E-mail, Internet and World Wide Web (www).
- Audio and Video Conferencing.
- Multimedia personal computer and laptop.
- Multimedia projector (LCD or DLP).
- Local Area Network (LAN), Wide Area Network (WAN) and Metropolitan Area Network (MAN).
- Digital Video Camera.
- Digital Libraries.
- Interactive Video Disk (IVD) and Interactive Remote Instruction.
- Computer Data Base and Data Processing Mechanism CD, ROM and DVD. Tele text, video text, Interactive Video Text.
- Application software like word processing, spread sheets i.e., power-point, simulation and speed recognition.

Comparison of Traditional Pedagogy and ICT-enabled Pedagogy

ICT Learning: ICT is a vital teaching tool that may interest students on several levels and assist teachers by making their jobs significantly easier. ICT does not guarantee good learning. They may be absorbed in their web-based activities, but have little long-term gain from their concentration. All

activities, whether they school, out-of-school, or non-ICT, should challenge students' cognitive abilities and help them learn better.

It is difficult to disentangle motivation from enabling students to reason at a high level and encouraging them to become self-sufficient learners—all these things are inextricably intertwined. The ultimate goal of these three initiatives is to establish a strong learning atmosphere.

- ➢ Activities have a clear aim and relation to what's being studied.
- ➢ New knowledge is dependent on existing information.
- ➢ It varies in presentation.
- ➢ Activities create an inquisitive state.
- ➢ students want to learn and try out new things
- ➢ Students can observe their accomplishments and development.
- ➢ Work gives pleasure to the pupils.
- ➢ It has been demonstrated that pupils have a favorable impression of themselves as learners.

ICT-supported Learning Encourages

- ➢ Students, teachers, and specialists may work together without regard to location.
- ➢ By offering individuals the opportunity to work with others from diverse cultures, it gives students a chance to learn about people from different cultures.
- ➢ Information manipulation, and the implementation of physical products to solve real-world problems, are both supported by this tool.
- ➢ It is thematically and holistically structured in terms of teaching and learning.
- ➢ Students administer and diagnose the test.

Traditional Learning

- ➢ Activities are prescribed by teachers, variation of the activities are less.
- ➢ It is for homogenous groups.
- ➢ It is teacher-directed and summative.
- ➢ It is discipline-based approach.

Benefits of ICT in Education

ICT is a teaching tool. Its potential for improving the quality and standards of pupils' education is significant.

General Benefits

- ➢ Flexible modes of content presentation and delivery.
- ➢ Enables greater leaner autonomy.
- ➢ Unlocks hidden potential for those with communication difficulties.
- ➢ Enables students to demonstrate achievement in ways which might not be possible with traditional methods.

ICT benefits for Students

- ➢ Computers can improve independent access for students to education.
- ➢ Students with Special Educational needs are able to accomplish tasks working at their own pace.
- ➢ Visually impaired students using the Internet can access information alongside their sighted peers.
- ➢ Students with profound and multiple learning difficulties can communicate more easily.

- Students using voice communication aids gain confidence and social credibility at school and in their communities.
- Increased ICT confidence amongst students motivates them to use the Internet at home for school-work and leisure interests.
- Opportunities for individualized problem solving.
- Opportunities to use multiple technologies.

ICT benefits for Teachers, Non-teaching Staff

- Reduces isolation of teachers working in Special Educational needs by enabling them to communicate electronically with colleagues.
- Supports reflection on professional practice via online communication.
- Improve skills of staff and a greater understanding of access technology used by students.
- Enhances professional development and the effectiveness of the use of ICT with students through collaboration with peers.
- Materials already in electronic form (for example, from the Internet) are more easily adapted into accessible resources such as large print or Braille.

ICT benefits for Parents

- Use of voice communication aids encourages parents to have higher expectations of children's sociability and potential level of participation.

Barriers in the Expansion of ICT

- ❖ **Technophobia** i.e. a conservative attitude towards new media and technology. Both new and veteran teachers feel inadequately prepared or exhibit indifference to use computer in their classroom.
- ❖ **Paucity of funds.** Funds are required not only for computers, but for creation of additional infrastructure and employing trained people. This common trend of "dumping" computers, leads to a massive wastage of scarce resources for education.
- ❖ **Shortage of Trained Personnel** There is absence of sufficient number of trained personnel. Problems will be more serious if teachers will not get themselves trained.
- ❖ **Lack of Proper Software** In India, there is a wide diversity in languages and dialects. Software is mainly available in English and not different scripts language.
- ❖ **Time** With fewer computers available in an institution, student and teachers have very less time available to develop and practice skills of using computer.
- ❖ **Infrastructure** In most of the schools, the teacher pupil ratio is 1:60. The existing infrastructural facilities are insufficient to meet the demands of the large students population.
- ❖ **Lack of adequate Workshops** In India, there is lack of adequate workshop to maintain the hardware use in ICT.
- ❖ **Continuous updating and Renewal of Courses and Training Programme** Every 18 months, the ICT market changes. By the time we will be able to implement the ICTE program in all secondary schools, trained teachers and implemented programs are likely to become outdated.

Strategies for Promoting use of ICT in Education

- ❖ Accepting new role for teachers in the classroom from that of a lecturer to that of a **facilitator** and **resource-mobilizer.**

- ❖ **Staff development** that is individualized to the needs of the teachers-both in service and pre-service.
- ❖ Readily available **technical assistance.**
- ❖ **Administrative** support for utilization of new technologies.
- ❖ **Accessibility** of new technologies, computer, etc. to both teachers and students.
- ❖ Involvement of teachers in planning classroom uses of state wide technology school, college and university for a statewide interoperable electronic **information highway** accessible to all classrooms and learning environments.
- ❖ Government must promote educationally sound applications of technology and development of software and video programs that meet educational content standards.
- ❖ ICT will be especially effective when combined with other technologies and linked to high education standards.

ICT Competencies for Teachers

- ❖ Competency in the use of computer.
- ❖ Competency in the use of multimedia personal computer, laptop and book.
- ❖ Competency in the use of multimedia projector.
- ❖ Competency in the use of digital video camera.
- ❖ Competency in the use of digital libraries.
- ❖ Competency in the use of e-mail, internet and worldwide.
- ❖ Competency in making use of ICT relevant to the modern age of e-learning, m-learning, virtual classrooms, online education and distance learning.
- ❖ Competency in the participation and organization of computer, mediated conferencing-video and audio conferencing.
- ❖ Competency in developing and making use of the video text, tele-text, interactive video text, interactive video disk and interactive remote instruction.
- ❖ Competency in training the students for making use of ICT.

Conclusion

ICT has emerged as a significant contributing factor to excellent teaching and learning. It has had a significant impact on the way teaching and learning is done. As a result, the students exhibit significant interest in learning using ICT. The teachers may have many things to do, but, there are certain things which assist in encouraging adoption of ICT in teaching and learning, and these items should be encouraged in some manner. Outside of these, there are many issues that stand in the way of successful integration of information and communication technologies in teaching, learning, and practice. If teachers and school teachers believe in the benefits of ICT, then they will be able to teach students about the true value of ICT in education, which will allow for both teaching learning and for students to benefit.

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