Role of Information and Communication Technology (ICT) in Teaching and Learning Process

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ABSTRACT

Information and communication technology is an integral term associated with Information Technology and Communication technology. It involves the transfer of information using communication devices like TV, Radio, computers etc., There are 4 main types of ICT – Television, Radio, Telephone and Internet. ICT has played a great role in the educational arena and contributing major part in achieving educational goals. ICT in these days is a main tool in transforming the data successfully in the minds of learners utilising all the opportunities available, introducing them successful globally. It is a new concept till the end of 20th century and is a well known and enriching concept in these days.

Keywords: Integral, Technology, Globally, Pandemic, Substantial, Effectiveness, Efficiency

INTRODUCTION

Information and Communication Technology in Education, which is popularly known termed as 'ICT Education' is the mode of providing education that uses technology to support, enhance and optimize the delivery of information. Worldwide research has shown that technology-integrated education can lead to an improved student learning environment.

A report made by the National Institute of Multimedia Education in India revealed that an increase in the use of technology in education, integrating technology with curriculum has a significant and positive impact on student achievement. The results revealed that the students who are continuously exposed to technology in education have better 'knowledge', presentation skills, innovative capabilities, and are inclined to put forth more efforts in learning as compared to their counterparts without any exposure to technology.

ICT plays a crucial role in modern teaching and learning by enhancing engagement, improving access to information, and fostering collaboration. It allows for the creation of more dynamic and interactive learning environments, providing students with opportunities for personalized learning and the development of 21st-century skills.

Enhanced Engagement and Motivation:
ICT tools like interactive whiteboards, simulations, and multimedia presentations can capture students' attention and make learning more engaging. Gamified learning platforms and online games can motivate students and make learning more enjoyable.

Improved Access to Information and Resources:
The internet provides access to a vast library of information, research materials, and educational resources, complementing traditional textbooks and libraries. Online learning platforms offer access to courses and materials from around the world, enabling personalized and flexible learning.

Facilitated Collaboration and Communication:
Online collaboration tools, such as Google Classroom and Microsoft Teams, allow students to work together on projects, share ideas, and receive feedback from teachers and peers. Virtual forums and discussion boards provide opportunities for students to interact with each other and with experts from different locations.

Personalized Learning and Adaptive Instruction:

- ICT allows teachers to create individualized learning plans and tailor instruction to meet the specific needs of each student. Adaptive learning platforms adjust the difficulty of the material based on a student's progress, ensuring that they are challenged appropriately.

Development of 21st-Century Skills:

- ICT helps students develop critical thinking, problem-solving, and digital literacy skills, which are essential for success in the modern world.
- Students learn to use technology effectively, evaluate online information critically, and understand digital ethics.

Increased Efficiency and Productivity:

- ICT can streamline administrative tasks such as grading, record-keeping, and attendance management, freeing up teachers' time for instruction and planning.
- Online learning platforms can provide students with greater flexibility and autonomy in their learning, allowing them to learn at their own pace and on their own schedule.

As the world accelerates into the digital age, education is also undergoing a fundamental transformation. Information and Communication Technology (ICT) is central to this revolution, which is reshaping the way we teach and learn. In this article, we will discuss the astounding impact of ICT In Teaching and Learning, and education overall, revealing seven game-changing benefits that are changing classrooms around the world.

ICT in Teaching and Learning reshaping the educational landscape by eliminating geographical barriers, personalizing education, enhancing knowledge retention, and preparing students for the digital age. In addition, we will introduce you to the iPrep Digital Library, a game-changer in the world of ICT in education. Join us as we explore the future of teaching and learning in a world that is becoming increasingly digital.

ICT in Teaching And Learning
Information and Communication Technology (ICT) has emerged as a powerful force for enhancing teaching and learning in the traditional educational environment. ICT in teaching and learning refers to the use of technology, such as notebooks (such as Chromebooks and Primebooks), and tablets with learning applications, with or without the Internet, to improve the educational experience for both teachers and students.

It involves the implementation of various software applications and methodologies designed to enhance the quality and effectiveness of education. This integration seeks to streamline instructional practices, making them more accessible and effective for all stakeholders, going beyond mere hardware and software.

Extensive research supports the incorporation of ICT into teaching and learning, demonstrating its positive impact on student engagement, achievement, and overall learning outcomes. Simply introducing technology into the classroom is not sufficient; educators must utilize it to create dynamic and interactive learning environments. ICT provides educators with tools that facilitate personalized learning experiences, adapt to the unique needs of each student, and enhance knowledge retention. In addition, it improves the transparency of attendance and grading processes, facilitating communication among teachers, students, and parents. This comprehensive approach generates a more engaging, effective, and student-centered learning environment that prepares students for success in the digital age.

ICT in the context of Schools
In the educational context, Information and Communication Technology (ICT) pertains to the utilization of computers, tablets, and the Internet to facilitate the teaching and learning processes for both educators and students. ICT encompasses the deployment of software applications and methodologies aimed at enhancing the quality and efficiency of education. Essentially, ICT in schools endeavours to streamline instructional practices, rendering them more accessible and effective for all stakeholders involved.

Extensive research supports the integration of ICT in teaching and learning processes. It highlights its positive impact on student engagement, achievement, and overall learning outcomes. Let us have a look at one of them in the below section.

The digital component of ASER 2023 report attempted to gauge whether rural youth in India have the digital access and skills needed in a digitally driven world. A key component of measuring this is also ICT literacy and use of ICT tools in school can go a long way in improving digital access and skills of the rural Indian youth.

An example of an ICT tool for schools is a Digital Class, enabled with Digital board or a Smart board for teaching. Other examples are Learning Tablets with Digital NCERT Content.

Government research on ICT
Government research envisions the National Mission in Education through ICT in teaching and learning as a highly beneficial future initiative to enhance the educational experience for all learners in higher education institutions, providing the flexibility of access from any location.

During the XI five-year plan period, it was anticipated that ICT would play a pivotal role in increasing the Gross Enrolment Ratio (GER) in higher education by 5 percent.

The comprehensive principles of the education policy are access, equity, and quality.

These principles can be effectively served by ensuring connectivity to all schools, colleges, and institutions, as well as by providing students and learners with low-cost and easily accessible resources. The National Mission on Education through ICT (NMEICT) comprehensively addresses all three of these essential elements.

One of the primary objectives of the NMEICT is to bridge the digital divide, which refers to the disparity in proficiency in using computing devices for educational purposes between rural and urban teachers/learners. Additionally, ICT in teaching and learning plays a crucial role in empowering those who have yet to benefit from the digital revolution. The NMEICT also places a strong emphasis on adopting appropriate methods for e-learning and offers facilities for conducting experiments through virtual laboratories and online testing. This initiative is instrumental in training and empowering teachers to effectively utilize these new methods of teaching and learning, among other benefits.

Concept of ICT:
"ICT" means Information and Communication Technology and refers to the combination of manufacturing and services industries that capture, transmit and display data and information electronically (OECD 2002: 18; SAITIS 2000: 3)"20-Dec-2022. According to UNESCO "ICT is a scientific, technological and engineering discipline and management techniques used in handling information and application and association with social, economical and cultural matters".

American Library Association (1983) defined information communication technology (ICT) as the application of computers and other technologies to the acquisition, organization, storage, retrieval, and dissemination of information. The computers are used to process and store data, while telecommunication technology provides information communication tools, which make it possible for users to access databases and link them with other computer networks at different locations.

Rhine (2006) Information and Communication Technologies can be split into three components namely the technology part; information that the technology helps to deliver; and a communication process that the technology facilitates and serves as a medium for the information.

ICT (information and communications technology – or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term is somewhat more common outside of the United States. (Margaret Rouse 2005). From the above definitions we can elicit that ICT as the use of computers, laptops, and other electronic media to transfer the information in a successful way.

Role of Ict In Pandemic Times:
ICT became most essential platform at the time of covid 19 and contributed its assistance at full length. All the governments without hesitation took the help of ICT in making communication at all stages. It made an efficient work in providing actual information at regular times and made the public alert. It helped the government and non-government organisations to control the spread of pandemic.

Need of Study:

- This study enhances how effectively we can use ICT in achieving substantial goals in the field of education.
- It makes the people aware of its limitations and make them vigilant in its usage.
- It stress the importance of ICT at needy times and also makes public develop technologically.
- It identifies the problematic areas in its utility and shows a solution to rectify it.

Characteristics of Ict:

Information and communication technology has some characters which made it used by millions of people. Characteristics can by divided into three divisions basing on their character-Effectiveness, Efficiency and Innovative.

Effectiveness:

- In printed forms there is a possibility of errors but in ICT we do not find any errors and an information can be received or send in an accurate way.
- Since it is very faster and accurate, information can be gathered in no time and can achieve the required goals.
- Since ICT is a global platform it is more interactive then any other technology.
- Anything can be searched easily and accurately through ICT.
- As we get most accurate information through ICT worldwide, it is acceptable .

Effeciency:

- It is the most fastest means of communication
- It is cheaper and a person needed net connection and an electronic device to collect whatever the information he liked in no time
- ICT includes less paper work and it consumes with low power.

Innovative:

- ICT is ever changing and new products are obtained every time.
- New technological information can also be gathered though ICT

Role of Ict In Education:
With the advancement of technology, the methods of teaching also advances. We follow the new trends and methods adopted by many and as we always look for novelty.

- **Enhance effective teaching**: By using the laptops, computers, tabs etc, teachers can learn new pedagogical approaches and it helps in effective teaching. Learning lessons through ICT leaves a long lasting effect on the minds of students and they learn more and more knowledge.
- **Active Participation**: Students participate actively as ICT mode is very attractive and it derives concentration of the students. It provides students with the opportunity to exhibit their thoughts and opinions in the most effective manner.
- **Expands collaborative reading**: Technology expands the collaborative learning in the classroom. Students learn more by participating in groups and they can share their opinions and ideas with other groups actively.
- **Easy Student Evaluation**: When the examinations are conducted in Online, it is very easy to evaluate students and results can be given more accurately. It increases the students analysis in a perfect manner.
- **Better conceptual Understanding**: Understanding the concepts through online is more effective since everything is made through videos and animated pictures. Any concept in any subject can be easily found through ICT

Advantages of ICT:

- It minimises the burden on the teachers in transforming information to students
- It improves learning efficiency of learners and make them involve in effective way.
- It increases the motivation level of students and learning will be easy for them
- It covers all subjects and provides necessary information by one click.
- It enhances the learning capabilities of the learners and provides a good platform to prove themselves all the ways.

Limitations of ICT:

- It makes a clear division between those who are good at technology and who are not.
- It may be used to hack the information of the individual and the institutions.
- Introverts percentage may increase because of depending on ICT.
- Rumours may spread fast, keeping the ICT followers in a state of ambiguity and it may create a panic condition exclusively at the time of disaster movements.
- It may not help those who are not in vicinity of electronic equipments.

CONCLUSION

Every system has its own advantages and limitations. ICT has many advantages and it is helpful to all fields of life. Ever changing world needs new trends and techniques which is possible only through ICT. Most of the educational institutions from KG to PG are adopting ICT methods in their regular works. ICT simplifies the life living conditions and make the formation of Global families.

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