

## **INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN EDUCATION - A THEORETICAL POINT OF VIEW**

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### **ABSTRACT**

Today's society is witnessing the continuous growth of Information Communication Technology (ICT) as a computer-centric lifestyle. This includes the rapid integration of computers in modern classrooms. ICT helps teachers incorporate effective strategies for using technology in the classroom, and it supports the development and distribution of free and open digital educational content. However, there are challenges associated with the use of ICT in education, such as potential moral decay and the hindrance of basic mental arithmetic skills. Despite these challenges, ICT plays a crucial role in improving access, quality, and cost of education. It expands access to education, improves its quality, reduces costs, and creates employment opportunities within the education system. ICT also enhances learning through interaction, collaboration, and flexible access to information resources.

**Keywords:** Education, Digital communication and Technology

### **1. INTRODUCTION**

ICT, which stands for Information and Communication Technologies, is essential for providing digital access to information. In education, the use of ICT can greatly enhance the delivery of information, leading to improved learning for students and more effective teaching methods. It also offers various benefits to both teachers and students, including virtual experiences and digital communication and information sharing. The prevalence of computers in classrooms reflects the computer-centric lifestyle of today's society. ICT enables the integration of audiovisual and telephone networks with computer networks, simplifying cabling, signal distribution, and management, and bringing about significant economic incentives. ICT includes a wide range of communication devices such as radio, television, cell phones, computers, and satellite systems. It also includes services like video conferencing and distance learning, which allow access to education across different countries. ICT has the potential to improve education by providing universal access, equity, quality learning, and professional development for teachers. To fully benefit from ICT, it should be integrated into teaching methods, especially for literacy and math. Combining ICT with writing improves results compared to traditional methods or ICT alone. However, there is still a widespread issue of improper implementation of ICT, despite increased funding and technological advances. Limited evidence suggests that teachers and tutors are not effectively utilizing computers to enhance teaching and learning practices.

### **IMPACT OF EDUCATION IN ICTS**

- ❖ ICT as Objective
- ❖ ICT as a Tool in Education
- ❖ ICT provides Computer Aided Instruction
- ❖ ICT as a Medium for Teaching and Learning

**ICT as Objective-** The ICT is divided into various courses based on their goals, purposes, and areas of application. The teaching methods vary depending on the students' level. Education equips students with the necessary skills to use ICT in their education, future careers, and social lives. In the field of education, ICT has had a significant impact on the curriculum of schools and colleges by incorporating it as a subject of study. For instance, universities and tertiary colleges like KCA offer ICT as a field of study in different professional disciplines such as Information Technology, Computer Science, Software Engineering, Data Communications, Computer Engineering, Management Information Systems, Mobile Computing, and many others. This has resulted in the emergence of ICT-related professions in both the education system and the industry. The use of ICT in various application areas is greatly influenced by the ICT itself.

**ICT as a Tool in Education-** ICT is a useful tool in various aspects such as assignments, data collection, communication, and research. It is commonly used regardless of the subject. Nowadays, higher learning institutions have shifted from traditional paperwork to electronic submission of coursework and assignments. However, the lack of knowledge among teachers regarding social, ethical, and legal issues related to digital technologies is a concern. To address this, teacher training programs should focus on preparing teachers to use technology, particularly the Internet, in a safe and ethical manner. This will enable teachers to guide students on engaging and educational learning experiences with the assistance of technology.

**ICT provides Computer Aided Instruction-** CAI has been observed to have a small positive impact on student performance in multiple-choice, standardized tests in certain subjects. Computer Aided Instruction (CAI), which assists students in self-study or provides tutorials on computers, has demonstrated a slight enhancement in student test scores in reading and math skills. However, it is uncertain whether this improvement directly translates to better student learning outcomes.

**ICT as a Medium for Teaching and Learning-** ICT has revolutionized the delivery of education. It serves as a means for both teaching and learning, enabling teachers to instruct and learners to acquire knowledge. Various forms of ICT have been embraced in education, such as computer-assisted learning, web-based learning, computer classes, online training, distance education, e-learning, virtual learning, digital training, and more.

#### **ICT TOOLS FOR TEACHING AND LEARNING**

- Desktop and laptop
- Projector
- Pen drive
- Scanners
- DVDs and CDs
- Flash discs
- Web boards
- Interactive white board
- Tablets

#### **2. PROBLEMS FACED BY USING ICT IN EDUCATION**

ICT education has negative effects on moral values. These effects include exposure to inappropriate content, invasion of personal privacy, becoming targets of sexual predators, encountering pornography, facing harassment, stalking, or scams, and sharing harmful or abusive material.

Moreover, the use of ICT hinders the development of basic mental arithmetic skills as students heavily rely on electronic tools like calculators. Additionally, students often engage in excessive copying and pasting instead of actively learning and taking their own notes, resulting in ethical issues like plagiarism.

Furthermore, depending on spell check and grammar features of software like Microsoft Word reduces literacy skills as it discourages critical thinking among students.

- Access and Infrastructure: Disparities in access to technology and reliable internet connectivity can result in unequal educational opportunities. Educational institutions in rural or underprivileged areas may lack the necessary infrastructure to support the integration of information and communication technology (ICT).
- Digital Literacy: Both students and educators may require training and support to effectively utilize ICT tools for learning and teaching. Proficiency in digital literacy skills is crucial for navigating online resources and platforms.
- Cost and Maintenance: The implementation and maintenance of ICT infrastructure, software, and devices can be financially burdensome for educational institutions, particularly those with limited budgets.
- Security and Privacy Concerns: Ensuring the security of student data and safeguarding online learning platforms are vital considerations when incorporating ICT in education.
- Technological Obsolescence: The rapid advancements in technology can render ICT tools obsolete, necessitating frequent updates and replacements.
- Distractions and Misuse: Students may be susceptible to distractions when using digital devices for educational purposes, and there is a risk of technology being misused for non-educational activities.
- Teacher Resistance: Some educators may exhibit reluctance in adopting ICT in their teaching practices due to a lack of training, comfort, or familiarity with digital tools.
- Digital Divide: Disparities in access to technology and digital resources can exacerbate existing educational inequalities, impacting students' ability to engage in digital learning.

#### **3. SUGGESTIONS FOR ICT IN EDUCATION**

ICT is extremely important in education and has three main areas of impact: access, quality, and cost. It has completely transformed education by making knowledge more accessible, improving the quality of education, and lowering costs.

With the help of virtual, e-learning, online, and distance learning, ICT has made education available even in remote areas. Additionally, it has opened up job opportunities within the education sector, benefiting both academic and non-academic staff.

- Interactive Learning Platforms: Engage students in the learning process by utilizing interactive online platforms and educational software. This can include virtual labs, educational games, and multimedia resources, providing a dynamic and engaging learning environment.
- Digital Content Creation: Foster students' creativity and understanding of the subject matter by encouraging them to create digital content such as presentations, videos, and multimedia projects. This allows them to demonstrate their knowledge in a unique and interactive way.
- Online Collaboration Tools: Facilitate group projects and peer-to-peer learning by utilizing online collaboration tools. Platforms like Google Workspace and Microsoft Teams can be used to enhance communication and collaboration among students, promoting a collaborative and inclusive learning environment.
- E-Learning Resources: Supplement traditional classroom instruction by providing access to e-learning resources such as digital textbooks, online courses, and educational websites. This allows students to explore additional materials and gain a deeper understanding of the topics being taught.
- Virtual Field Trips: Take students on immersive virtual field trips to historical sites, museums, and other relevant locations using virtual reality (VR) and augmented reality (AR) technologies. This provides a unique and interactive learning experience, bringing the curriculum to life.
- Personalized Learning: Tailor the learning experience to individual student needs and progress by implementing adaptive learning platforms. These platforms customize the content and pace of learning, ensuring that each student receives personalized instruction and support.
- Teacher Professional Development: Support teachers in effectively integrating ICT into their teaching practices and curriculum development through training and professional development opportunities. This empowers educators to utilize technology in a meaningful way, enhancing their teaching methods and student outcomes.
- Digital Assessments: Administer quizzes, tests, and assignments using online assessment tools and platforms, providing immediate feedback to students. This allows for timely and targeted interventions, promoting continuous learning and improvement.
- Blended Learning Models: Create a blended learning environment by combining traditional classroom instruction with online learning components. This caters to different learning styles and preferences, providing a flexible and inclusive learning experience.
- Data Analysis and Visualization: Teach students how to use ICT tools for data analysis, visualization, and interpretation, fostering critical thinking and analytical skills. This equips students with valuable skills for the digital age and prepares them for future academic and professional endeavors.

#### **4. CONCLUSION**

In conclusion, Information and Communication Technologies (ICT) have the potential to greatly improve the education system. They offer new ways for interactive learning, personalized instruction, and access to a variety of educational resources. However, there are challenges that need to be addressed for successful integration of ICT in education. These challenges include limited access and infrastructure, digital literacy requirements, cost considerations, and security concerns.

To fully benefit from ICT in education, it is important to prioritize equal access to technology, provide adequate training and support for educators and students, and ensure responsible and effective use of digital tools. By overcoming these challenges, ICT can have a transformative impact on the quality and availability of education for learners of all ages. Additionally, ICT helps students and teachers access a wide range of current learning materials. It enriches learning through audio, video, images, text, and animation. It promotes learning through interaction and collaboration, and provides students with enhanced access to information resources beyond the classroom.

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