



## Information and Communication Technologies: The most effective tool in teaching- learning science in the New Normal Era of COVID 19

**S Rehan Ahmad\***

Assistant Professor, Dept of Zoology, H M M College for Women, Kolkata, India

\*Corresponding Author E-mail: [zoologist.rehan@gmail.com](mailto:zoologist.rehan@gmail.com)

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### ABSTRACT

*The pandemic situation caused by the evolution of the Coronavirus (COVID 19) has unnerved usual activity of people in a turmoil leading government to shut down educational institution temporarily as a measure to stop the spread of the novel corona virus. As COVID-19 is primarily transmitted from symptomatic people to others who are in close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated objects and surfaces therefore lockdown was the only answer to this worldwide calamity. Educational institutions of India are ensuring learning never stops amid COVID-19 therefore there is a need of redefining and restructuring of teaching learning trends in the global emergency. Consequently information technology the use of system for storing, retrieving and sending information especially through computers and telecommunications are being used to continue the education procedure. Communication technology including networking, internet access and website development is getting impetus in the on-line education sector. Teacher across the country are moving to on-line classes as an alternative educational deliverance method to ensure learning never stops. COVID-19 has accelerated the on-line education sector. Educators are getting an opportunity to prove their effectiveness and efficiency in developing new strategies in transacting lessons through on-line mode for teaching specially science subjects . The lockdown period has hastened the use of digital technology which has forced the students to make far more modification as learning has been in face to face communication in classroom situation.*

**Keywords:** Information & Communication Technology, Educational technology and Science Subjects.

### INTRODUCTION

Throughout the world more than 1.5 billion students are affected by school and university closures due to the COVID 19 outbreak so the challenges that the educational institutions are

facing is a global problem. The situation forced the education sector to shift their basis through on-line and virtual platform across the world with the help of information and communication technology.

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Information Technology (IT) is the use of computers to store, retrieve, transmit and manipulate data or information. IT is considered to be a subset of Information and Communication Technology (ICT). An information technology system (IT system) is generally an information system, a communications system or, more specifically speaking, a computer system including all hardware, software and peripheral equipment. Communication Technology is also known as information technology. It refers to all equipment and programs that are used to process and communicate information. Professionals in the communication technology field specialize in the development, installation, and service of these hardware and software system. Educational technology refers to the use of tools, technologies, processes, procedures, resources, and strategies to improve learning experiences in a variety of settings, such as formal learning, informal learning and non-formal learning.

### **Objectives**

- i) To assess use of Information and Communication Technologies in teaching – learning process.
- ii) To improve the effectiveness of teaching learning process via blended learning

### **MATERIALS AND METHODS**

Educational technology is a field of study that investigates the process of analyzing, designing, developing, implementing, and evaluating the instructional environment and learning materials in order to improve teaching and learning. It is important to keep in mind that the purpose of educational technology is to improve education. One must define the goals and needs of education first and then we use all our knowledge, including technology, to design the most effective learning environment for students.

Educational technology means to improve education. Technology should assist learning processes and increase performance of the educational systems as it regards to usefulness and effectiveness.

Instructional technology can also be seen as a process of solving educational problems and concerns, which might include motivation, discipline, the drop-out rate, school violence, basic skills, critical thinking, and the whole list of educational concerns. First, the problem is identified, an analysis of the factors of the problem is made, and possible solutions to the problem are presented. Then, the student population and the curriculum are analyzed. The next step is to select the most appropriate instructional strategies for the particular situation. Next, instructional materials and resources are selected that are suitable for the curriculum and the mode of instruction chosen. Finally, the program is implemented, evaluated, and revised as needed in order to meet the stated goals for school improvement. On-line education is a type of education where learners use their computers or mobile with the internet connection to have an access to education. Online education is electronically supported learning that depends on the internet connectivity for teacher student's communication and the circulation of class material.

Teachers can use the on-line facilities of audio, video, text, animations, virtual classroom environment and live chats. Mobile networks have been the preferred platform. Nowadays teachers are working with the computer, various software applications, camcorders, digital cameras, scanners, the Internet, satellite, interactive TV, audio and video conferencing, and so on.

### **Equipment Use**

Today a teacher should know the use of Digital camera, scanner, camcorder, CD-writer, computer, modem, printer, VCR, LCD projector, laser-disc player, and others.

### **Multimedia Integration**

Teachers should know how to create and find graphics, images, audio files, video files, and animations. Import these multimedia objects into their presentations and learning materials. Teachers should be made to understand how and why the integration of multimedia helps them to teach and how it helps students to learn.

### **Audio and Video Conferencing**

Teachers should know the technique to incorporate audio and video conferencing into the educational process. Teachers should understand how these can affect the process of learning.

### **Some of the common Digital Learning Management Systems are**

Personal learning pathways with micro-lessons to address gaps in knowledge, challenge students and promote long-term memory retention are called **Century Tech**.

Connects teachers with students and parents to build classroom communities is **Class Dojo**.

Tools and resources to manage classrooms and engage students remotely, offering a variety of languages is known as **Edmodo**.

Arabic language online education with resources for school learners and teachers is **Edraak**.

Open learning platform with a collection of learning resources to support literacy and numeracy is **Ekstep**

Helps classes connect remotely, communicate and stay-organized is **Google Classroom**.

Community-driven and globally-supported open learning platform is **Moodle**.

Arabic language online learning platform hosting educational video lessons that correspond with Egyptian and Syrian curricula is **Nafham**.

Matches individuals with personal tutors for 12-16 week sessions conducted via video conferencing platforms, available in English and Turkish is **Paper Airplanes**.

Tools to support instruction, learning, grading, collaboration and assessment are **Schoology**.

Enables the creation of collaborative and sharable digital learning portfolios and learning resources is **Seesaw**.

Tools to turn Microsoft Office software into an education platform is **Skooler**.

### **Massive Open Online Course (MOOC) Platforms**

Online courses from experts, available in English, French, Spanish, Italian and Portuguese known as **Alison**.

Course catalogue accessible for free for teachers in order to support lifelong learning

and professional development is **Canvas Network**.

Online courses taught by instructors from well-recognized universities and companies are known as **Coursera**.

Free online professional development courses for teachers in English, French, Italian and other European languages that exist is known as European **SchoolNet Academy**.

Online courses from leading educational institution are known as **EdX**.

### **SWAYAM**

Government of India has also taken initiative to digitalize education to take the best teaching learning resources to reach out to the most disadvantaged faction. **SWAYAM** is a programme started by Government of India and designed to achieve the three basic principles of Education Policy of access, equity and quality. **SWAYAM** seeks to link the digital divide of the students who remain untouched by digital revolution. In order to ensure best quality content produced nine National Coordinators have been appointed they are: **AICTE, NPTEL, UGC, CEC, NCERT, NIOS, IGNOU, IIMB, NITTR**. Courses available through **SWAYAM** are available free of cost to the learners however students wanting completion certificate after examination is chargeable.

### **Drawbacks of the On-line Education**

The method the learning community are familiar with the teaching, learning and assessment methodologies, are affected by the lockdown period or closure of educational institution for such a long time. Only a selected few of private and government institutions could implement online teaching methods.

The deprived and underprivileged sections have totally shut down for not having access to on-line setup causing disruption in the society. It is affecting students, teachers and parents of these schools as they are going through lot of anxiety and stress as they are missing the chance of continuing education process. There is a digital divide in the world. UNESCO has stated that 43% of students are still outside the preview of on-line education.

This is a serious issue of concern for the education policy makers.

### CONCLUSION

The teaching learning community should be acquainted with the use of Tools, guides, MOOCS and other resources for the progress and expansion of the on-line learning. It can be concluded that the teachers should make the maximum use of the existing collection of software and apps and pedagogical solutions to facilitate on-line learning for the students in this pandemic situation.

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