Technology advancements in Educational Institutions amid COVID19 Pandemic: An Overview

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ABSTRACT: The impact of COVID19 on Indian economy can be seen through Unemployment ratio, GDP contraction, financial instability etc. Government faces a huge decline in revenues and incomes. This has changed the work culture, livelihood patterns, health and our food systems. However the economic activities have started but the process or the working style now has changed and various technologies are upgraded and implemented to make the system smooth and safe. The technological advancements in various educational institutions are discussed hereby that are helping in framing a solution that is acceptable to all along with health safety. The article also highlights the importance and role of Information Communication Technology in educational institutions for present situation and future preparedness. The Information Technology improves quality of teaching as well as learning. Various IT based software projects are being implemented by the Government to improve the quality of education system.

Keywords: COVID19, Information Communication Technology (ICT), Artificial intelligence, Internet.

I. INTRODUCTION

Education is the backbone of a nation. It facilitates learning, acquisition of knowledge, skill building, beliefs etc. So it is very important to a nation to have a strong education system and without the appropriate and strong technology systems it seems difficult. COVID19 pandemic has a great impact on every sector and education is one of it. The schools, colleges, Universities are remaining closed, every educational institution is trying to devise a way to streamlineall this so that the most valuable time of the students/research scholars can be utilized. In view of this these institutions are using ICT technology based methods for online teaching, delivering lectures and providing course contents to the students at their homes through the help of internet. Institutions of national importance such as IITs (Indian Institute of Technology) are doing great in this field. IIT Kanpur has developed virtual classroom system 'Mobile Masterjee' in the backdrop of the disruption in normal classroom teaching owing to Covid-19 lockdown. The many other research centers of education institutions are making efforts to find out the ways to develop a system that can be used in these institutions for learning, studying and skill development without visiting the schools, colleges or engineering institutions.

II. TECHNOLOGIES THAT TAKEN UP THE EXISTING SYSTEMFOR REMOTE EDUCATION

1. Online Classes/Examinations

When no normal classes can be held at schools, colleges then online classes delivered though different platforms to cover the course syllabus and examination at the semester end were conducted through online mode for students and result declaration/result cards distribution goes through the same channel. For example: https://e-student.org/ portal is designed to meet all these requirements of educational institutions.

2. E-Learning resources

Before going to E-Learning it would be better to define Database and Cloud Computing first. A Database is a collection of related records/files. Cloud computing facility provides the access of applications and data from any location and from any internet connected device. A dedicated database for education e-books and learning material can be seen almost at every educational institution. With the help of Cloud Computing this database resource can be accessed by student from any point. For the purpose of security and to prevent misuse of data, user credentials can be set by the institution [1].

3. Distance Learning programs

Distance learning is a type of education programme in which course material is either provided through electronic medium or sent by courier to the aspirants or candidate. The candidate needs to appear in the examination and assignments or projects are submitted through electronic medium which may be a dedicated link of a website or email.

6. Digital devices

Digital devices such as attendance system for faculty or students, computer aided microscopes that is capable of

storing data on server and can be accessed anytime by the students of science field or research scholars for their experiments.

7. Mobile Applications

Smartphone use in India is increased at a very fast rate. The smartphone users in India will cross 490.9 million by the year 2022. Mobile phone is a handy tool which can be carried easily and may be very useful for learning or information purpose also. The various apps developed for smartphone are [2].

— Google Classroom
— Duolingo
— Remind
— Photomath
— SoloLearn
— Quizle and many more..

III. ONLINE ADMISSION AND COUNSELING

Admissions to the educational institutions have been changed from offline or physical visit to online mode. "Eduleap" developed by the iTech India is a software program for online admissions. It works for Schools, Colleges and Engineering institutions as well. Likewise a number of software programs are being developed by institutions for smooth functioning of their business activities.

IV. ONLINE RESULS AND SCORECARDS

Digitally verified scorecards and e-Certificates are available for students or participants. The authenticity of the same can be verified through QR codes printed on them. Result display on websites or sending through registered emails is also very common now after the COVID19 pandemic.

V. WEBINARS/TRAININGS/WORKSHOPS

The trend for online training or webinars and workshops increased upto a great extent after COVID19 pandemic. The training/workshops those were conducted offline now converted to web based technology. Some popular platforms providing this facility are:

— Zoho.
— Go To Webinar.
— Adobe Connect.
— ON24.
— Zoom Video Webinar.
— Blue Jeans Events.
— Big Marker.
— Live storm.

VI. FACULTY DEVELOPMENT PROGRAM

The workplace is changing, and the Information Systems that educational institutions use today will evolve to systems with Web services tomorrow. The administration preparing tomorrow's workforce are becoming partner with IT companies that can give them affordable access and services to those tools today. AICTE has launched various schemes for faculty development or training such as [4]:

- AICTE-Faculty development program (FDP)
- AICTE- National Initiative For Technical Teachers Training (AICTE - NITTT)
- AICTE-Quality Improvement Programme (FOREIGN UNIVERSITY)
- AICTE- Technical University Joint Training Programs For Teachers
- AICTE- Technical University Joint Training Programs For Librarians
- AICTE-Professional Development Scheme

VII. E-LIBRARY

In COVID19 time the students are not able to come to educational institutions due to lockdown or restrictions imposed by Government or authorities so it is a best way to provide the Library facility through web technology. E-Libraries development has significantly helped a lot in this case by providing the e-Books and e-Journals etc. to all the users that can be accessed easily through login credentials. Open access also provided to some e-Books where no credentials are required to access the resource [5].

VIII. ONLINE CURRICULUM DEVELOPMENT

Curriculum development is a step-by-step process which is used to create improvements in the courses offered by a school, college or university. The new discoveries have to be roped into the education curriculum as things are changing every day and every hour. In teaching or training organization plans Information Technology is being used now-a-days which is helping management level for decisions related to curriculum development. Management Information System and Decision Support System provided by Computer Science technology is better and efficient way for this [3].
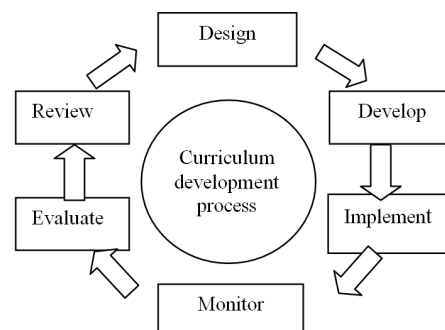
IX. ELECTRONIC-FEE DEPOSITION AND FELLOWSHIP DISTRIBUTION

As the each and every activity is going virtual in

educational institutions so why not fee deposition and fellowship distribution. Also inspired by the Digital India initiative, all the institutions of state or the central government are implementing digital transactions for any financial activity happing at their end. This not only makes it convenient for the students but also provides the transparency in Accounting System of an organization.

X. CONCLUSION AND FUTURE SCOPE

As we have observed that ICT has been implemented by the educational institutions as the demand of time and various experiments to make more improvements in the existing systems aregoingat different institutions for education sector so that the study of students does not hamper at time such as COVID19 pandemic. World is changing day-by-day and we need more research programs for building a better tomorrow for our education system. Although most of the technologies used in education system are mentioned and discussed over here but there are lots of experiments and research programs are going on for technology advancement which can be covered up in the future research related to the topic.

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