COVID-19 REDEFINING EDUCATION- PROSPECTS AND CHALLENGES IN INDIA

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"Progress is impossible without change and those who cannot change their minds cannot change anything."

George Bernard Shaw

Abstract: COVID-19 pandemic has upended the world and the education sector was the first to be disrupted. The immediate closure schools and colleges and with little choice, are embracing the e- learning platform like never before and the results are encouraging, meaning that once this crisis is over, the learning's from online education could be a small silver lining in a cloud of darkness. COVID-19 has prompted educators globally to rethink the conventional mode of education. Online learning becomes the new normal. The pandemic, upending all predictions, has led the world to conduct a huge experiment with online classrooms. Educators globally faced the major challenges in its role of supporting remote working, e-teaching, online collaboration, video streaming, etc. Online learning is entirely a different scheme/plan of teaching –learning than face-to-face learning, and educators seem to find themselves scrambling. Challenges may be hard but it can be managed provided there is clear directives from leadership, effective and timely training of teachers, dedicated and determined teachers, a helping mind to continue learning, better prepared for the next emergency, discussing the challenges being faced and good planning for the future. The huge potentialities of digital technologies are now forcing most of the organizations to go electronic so that there is a sustainable future. In this paper an attempt has been made to present an overview of e-learning, discuss the various e-learning tools for diverse learners, as there is a huge section of the population not Internet users, as well as its prospects and challenges.

*Keywords***: e-learning, online learning, synchronous & asynchronous learning platforms, LMS.**

INTRODUCTION

The outbreak of COVID-19 pandemic between late 2019 and early 2020 in China has had a colossal impact on lives and habits of the people all over globally. The wide spread of the virus in most of the countries has led to unprecedented health crisis, and this effect will have a severe impact on the economic and social structures for a long time. There has been an urge to value social distancing and lockdown measures adopted to limit the spreading of the infection has led to a shift in the realization and supply of a large number of services. To mention a few, the embracing remote working solutions, the shift to online classes and an increased practice of home delivery services. India witnessed the first case of COVID-19, which originated from China, on 30 January 2020. And a nationwide lock-down of all educational institutions was declared on 16 March 2020, by the union government.

On 22 March, 2020, the Government of India decided to completely lockdown 82 districts in 22 states and Union Territories of country where confirmed cases had been reported till 31 March, 2020. The restrictions were extended to impose remote working for all public offices, closing schools, and classes at schools, colleges and universities by the government immediately. Ever since and still Lockdown 4.0 people are permitted to leave from home only for emergencies and urgent needs and working from home and in some cases offices and services are working with 33% of staff. These restrictions narrowed people's mobility, while remote working, E- learning, online collaboration platforms, learning management systems, grew enormously along with on-line leisure solutions, like gaming and video streaming etc. The various E-learning tools nowadays available have been in demand among the educators for its efficient use.

Thus an attempt has been made to describe a variety of enabling technologies that can facilitate E-learning.

1. E-LEARNING AND ONLINE LEARNING- A BREAKTHROUGH

The winds of change provided by E- learning and online learning turned out to be a blessing in disguise for E- learning adoption in the education sector. Educators all over the world had to quickly move to some form of online teaching. Online learning and E-learning has been indispensable to meet this latest challenge.

Access and usage to video-conferencing tools, as well as to learning management systems, have spiked tremendously as teaching and learning continue within the virtual corners of their online classrooms. Online learning has been a great means towards continuous learning. It seems like the new normal is about online learning and having the digital platforms and tools to support and enable learning.

Free access to their services is being offered by many online learning platforms. The world's most highly valued EdTech company, BYJU'S, seen an increase of 200% in the number of new students using its product, since it has announced free live classes on its Think and Learn app, BYJU's**.**[1]

1.1. SWAYAM – the flagship portal of the government

The SWAYAM platform has witnessed 5-fold increase during the lockdown period. Presently, about 26 lakh learners are enrolled in 574 courses accessible on the SWAYAM platform, according to MHRD. Similarly, there has been rise in viewership of the SWAYAM Prabha DTH TV channels (with over 6.8 lakh people) ever since the lockdown began. There has been increased usage of the **National Digital Library** and has seen an foot-fall of 14, 51,886 times in the lockdown period, besides about 22,000 daily strikes previously.

1.2. E-LEARNING PORTALS OF MHRD

Due to the need of the hour, demand and the number of students taking up digital learning, MHRD has also scaled up the accessibility of a variety of e-learning platforms. DIKSHA, e-pathshala, National Repository of Open Educational Resources, Senior Secondary Courses of NIOS, and NPTEL are the most popular e-learning portals of MHRD. An increased foot- fall during the lockdown period has been witnessed in higher education among the college students in the portals like IGNOU Courses, UGC MOOCS courses, Shodhganga, ShodhShuddhi, VIDWAN, e-PG Pathshala, also Virtual experiments (Virtual Labs), Open Source Software for Education (FOSSEE), Robotics education (e-Yantra), and Learning programming (Spoken tutorial) etc**.** are some other ICT initiatives.[2]

2. E-LEARNING: A PERSPECTIVE

Teaching in the internet age is e-learning basically. E-learning is a learning system which is based on formalized teaching but with the help of electronic resources including the internet, intranet, extranet, LAN, satellite broadcasts, &audio video tapes. On the other hand, online courses are curated courses that are delivered on self-paced consumption models.

2.1. TYPES OF E-LEARNING-

The E- Learning is of three types:
1. **Web supplemented courses**- (e.g. course outline and lecture notes online, use of email, links to external online resources.)
2. **Web dependent courses:** students are required to use the Internet for key "active" elements of the programme- e.g. online discussion, assessment, online project/collaborative work-but with significant reduction in classroom time.
3. **Mixed mode**- students are required to participate in online activities e.g. online discussions, assessment, online project/collaborative work, as a part of course work, which replace part of the face-to-face teaching /learning. Significant campus attendance remains.

2.2. E-LEARNING APPROACHES

Approaches to e-learning: **self-paced** and **facilitated/instructor-led.**

Usually, e-learning courses combine both the approaches. Learners are completely independent and alone in self-paced courses while in facilitated /instructor-led e-learning courses, different levels of support is provided by the tutors and instructors and there is collaboration among learners.

2.2.1. Self-paced e-learning

The self-paced e-learning courseware, also called Web-based training (WBT), offered to the learners can be complemented by supplemental resources and assessments. The courseware can be accessed by the learners from an online platform or on CD-ROM which is housed on a Web server. Depending on their needs and interests the learners learn at their own pace and also define suitable learning paths. Instructors do not track the learners through the process. The course is developed by framing the learning objectives, using different media elements such as text, graphics, audio and video. Thorough explanations, examples, interactivity, feedback, glossaries, etc. are used to give total learning support. Normally e-mail-based technical support or e-tutoring is offered. Learners' actions can be tracked in the central database if it is presented through an Internet connection.

2.2.2. Facilitated/instructor-led e-learning

The facilitated/instructor-led e-learning course is led by the facilitator through an online platform. The curriculum is designed in such a way that it integrates activities and the elements of the content in a chronological syllabus. For individual study, the E-learning content is built-in with instructor's lectures, collaborative activities among learners and individual assignments.

Various communication tools like e-mails, discussion forums, chats, polls, whiteboards, application sharing and audio and video conferencing are used by the instructors, facilitators and learners to communicate and work together. An exercise or assessment is used at the end to measure learning.

3. E-LEARNING COMPONENTS

Approaches of E-learning can come in a variety of e-learning components-

3.1. E-learning content

It can include:

a. **Simple learning resources-**These resources are non-interactive, can be quickly developed and if goes with the defined learning objectives and designed in a structured way, they can be a valuable resource. These resources are in the form of a documents, PowerPoint presentations, videos or audio files etc. Learners are able to only read and watch these materials.

b. **Interactive e-lessons-**These are interactive e-lessons in a linear sequence of screens which includes text, graphics, animations, audio, video and interactivity in the form of questions and feedback. It also provides additional information on specific topics, suggested readings and various links to online resources. Basically a Web-based training.

c. **Electronic simulations**— Simulations are highly interactive forms of e-learning and a specific form of Web-based training .It enables the learner to learn by doing, creating a learning environment that simulates the real world. The learner is immersed in a real world situation and responds in a dynamic way.

d. **Job aids**- These are technical glossaries and checklists which usually provides instant answers to specific questions, thus helping users accomplish the job tasks.

3.2. E-tutoring, e-coaching, e-mentoring-It is for individual support and feedback to learners through online tools and facilitation techniques.

3.3. Collaborative learning-Collaborative activities like working together on a common project, knowledge-sharing and discussions learners make use of various social software, such as chats, discussion forums, and blogs etc.
Online discussions
To facilitate communication and knowledge-sharing among learners synchronous and asynchronous online discussions are designed. Learners learn by exchanging their ideas about the course /comment /contribute to group learning by sharing their knowledge.
Collaboration
Collaborative project work assigned to learners where the task is performed by collaborating with one another.

3.4. Virtual classroom-An e-learning experience where the teacher/facilitator teaches a group of learners remotely and in real time by using a combination of materials (e.g. PowerPoint slides, audio or video materials). It requires appropriate technology both for the learners and the providers (e.g. software for the virtual classroom and good connectivity).[3]

4. COMMUNICATION TECHNOLOGY
E-learning technology can be synchronous or asynchronous.

4.1. Synchronous

These events take place in real time and require two people both of them to be present at a given time. Chat conversations and audio/video conferencing etc. are the examples of synchronous activities

4.2. Asynchronous

Time independent events are asynchronous. An example of asynchronous e-learning is a self-paced course as online learning takes place at any time. Some asynchronous communication tools are email or discussion forums etc.

Synchronous learning is distinguished from self-paced asynchronous learning, in which students' access intermittently on demand. Table 1 compares synchronous e-Learning to asynchronous e-Learning.

TABLE1. Synchronous e-learning versus Asynchronous e-learning.

Synchronous vs. asynchronous E- learning		
	Distinctive features	**Examples**
Synchronous E-learning	❖ Real – time ❖ Live ❖ Usually scheduled and time specific (but can be impromptu) ❖ Collective and often collaborative ❖ Simultaneous virtual presence (with other learners and facilitators or instructors) ❖ Concurrent learning with others	❖ Instant messaging ❖ Online chat ❖ Live webcasting ❖ Audio conferencing ❖ Video conferencing ❖ Web conferencing
Asynchronous E-learning	❖ International access or interaction ❖ Self –paced ❖ Individual, or intermittently collaboration ❖ Independent learning ❖ Usually available any time ❖ Recorded or pre- produced	❖ Email ❖ Threaded discussion ❖ Boards ❖ Web based training ❖ Podcasting ❖ DVD ❖ Computer based training

4.3. Blended learning

A combination of synchronous and asynchronous learning experiences istermed as "blended learning". Blended learning can be helpful where there is use of mixed online and face-to-face training, and commonly to the approaches to course design and delivery that combine different modalities (e.g., self-paced Web-based training, followed by classroom instruction, accompanied by printed job aids, and supplemented by virtual classroom follow-up sessions). This can be at a **course level:** for example, mixing synchronous sessions and asynchronous e-Learning modules or at the **session level:** for instance, integrating self-paced exercises within a live virtual classroom session.

5. UTILIZING FRIENDLY LEARNING TOOLS

It is important to select learning tools that is helpful to the learners in constructing knowledge, finding and processing information, expressing understanding and evaluating learning effects in concrete ways and collaborating with peers.

Friendly learning tools should be taken into consideration when choosing learning scenarios. Tools selected should be appropriate and quick to:
   a)   aid teachers efficiently create and manage resources, release notices and manage students;
   b)   help students obtain resources, participate in learning activities;
   c)   facilitate teachers and students interact in real time; and,
   d)   help teachers, parents and organizations understand students' learning performance and make timely interaction. [4]

5.1. Learning Platforms/Tools

An interactive and engaging learning platforms /tools are required both for the educators and learners for an effective online learning. Adequate security measures must be in place to guarantee that the work/posts of the students are not exposed to external viewing. The learning platforms /tools should be able to monitor student activities thoroughly, particularly when there are less or no scope of face-to-face interactions.

Various tools that can facilitate teachers at all levels to quickly set a smooth online teaching learning is shown in Table 2.

TABLE 2.The classification of learning tools.

SYNCHRONOUS LEARNING PLATFORMS	ASYNCHRONOUS LEARNING PLATFORMS	ASYNCHRONOUS COURSE MANAGEMENT PLATFORMS/LMS SOFTWARE
ZOOM GO TO Meeting SKYPE Join me Google Hangouts i Meet Big Blue Button ez Talks Polvcom Webex meeting Adobe connect JITSI DTH- 2-way communication.	Emails Discussion Boards or Forums Blogs Podcasts Wikis e-portfolio SMS MMS	Edmodo TED ED Kahoot Google classroom Connect EDU Blackboard SumTotalsystem Moodle Mentimeter

SUBJECT TOOLS-KALZIUM, STELLARIUM, GEOZEBRA, PHET, COLARADO, QUIZIZZES, FREEMIND, etc.

5.2. Low End Solutions Useful During Emergencies

There are about 600+ million Internet users in the country and the rest are not Internet users. Therefore there is a need to have low end solutions during emergencies. The various low end digital technologies solutions which can be used are:

   1)   CPD (continuous professional development) for Teachers /Educators on ICT.
   2)   2D solutions: Telegram, Whatsaap.
   3)   DD, AIR, SWYAM, SWAYAM PRABHA.
   4)   Creating and running of MOOCS for students and teachers.
   5)   Creating OER, BLOGS, e-Groups for teaching learning process and also continuous professional development of teachers.
   6)   IVR System (Interactive Voice Recording System) for counseling and higher education.

6.   CHALLENGES /SHORTCOMINGS

Teachers are now posed with new challenges and huge burden as engaging in an online class has a whole set of new requirements. Teachers needs to rethink and redesign the course, requires to determine new strategies for teaching, how to engage the students

and assess their work. Use of synchronous and asynchronous learning can be opted, course material and lectures can be made accessible online; and enable students to work at their own pace.

The potentialities of digital technologies are immense. By using the digital technology certainly good content can be developed and delivered anywhere, anytime, from one- to- one, one -to- many, and many-to-many. But there are certainly some shortcomings.

6.1 Shortcomings of E-Learning for Learners

a. The online classes may create a digital divide among high tech, low tech and no tech students.
b. The infrastructure for supporting the software to participate may not be affordable for students.
c. Students may not be technology savvy to navigate the online education.
d. Self- motivation of students.
e. Student retention during the online classes.
f. Too much engagement (communication +content+ delivery+ motivation).

6.2 Shortcomings for E-Learning for the Teachers

a. Teachers need to be computer literate and skilled to use e-learning tools.
b. In recorded lectures for open access, teachers may not know who their audience is.
c. Not always it may be possible to interact with the students, gestures cannot be understood and connect with their immediate queries.
d. Not all the topics might be taught using e-learning tools that require hands-on-training and field trips.
e. Teachers need to be provided with latest infrastructure and software for creating online content.

6.3 Pedagogical Challenges

a. Physical separation between student and teacher.
b. Different from teaching that is connecting and linking.
c. Use of technology to connect teacher, students and curriculum.
d. Not always availability of two-way communication, initiate discussion.
e. Mundane classes.
f. Scope of teachers motivating the students.
g. Feasibility of field trips.
h. Practicum in the laboratory.
i. Conducting co-curricular activities.

6.4 Socio-Economic Challenges

a. Does online teaching take care of the socio -economic difference of the students?
b. Do students face challenges in understanding of the content without personal contact of the teachers?
c. Do the students have the affordability of the necessary infra-structure (internet connection; band-with for online classes to run; computer or high-end hand-phone to support online classes)?
d. Does on-line mode of teaching and education able to reach socio-economically backward students from the rural areas?
e. Does online teaching discriminate among the high tech-low-tech and no-tech?

7. PROSPECTS OF E-LEARNING

Most of the premier Indian education communities and also abroad use this method .The academic landscape has been democratized and anyone with internet connection can have access to world class academic resources from leading universities of the world and in India.

Online courses are slowly finding wider acceptance due to the unexpected impact of pandemic as institutions of higher education worldwide adopt massive open online courses, or MOOC. These are lectures often offered by top universities, such as Harvard and MIT. The advantage of these is that students can listen, interact and learn online anytime or anywhere in the world.

Several Universities too are offering digital versions of traditional college programme. Khan Academy, EdX, Udacity, Future Learn are other popular learning options besides Coursera.

The various digital initiatives have been launched at national level by the Ministry of Human Resources Development (MHRD), Govt. of India [5, 6], which includes:

a) Digital Education
Over the years the MHRD in India has developed excellent digital educational content which are available on various platforms e.g. DIKHSA, SWAYAM, Virtual labs, e-PG Pathshala and National Digital Library to name a few.
There are many students who do not have adequate access to digital means of education. To help students in the remotest areas and to bridge the digital divide, extensive use of TV channels- SWAYAM PRABHA, a group of 34 DTH channels, and Radio including Community Radio has been made available.

b) PM eVIDYA

Soon launching of Prime Minister eVIDYA programme to bring all e-resources on a common platform. This will include:

i. ONE NATION ONE DIGITAL PLATFORM'

All educational e-resources will be brought on one platform under the concept of One Nation One Digital Program, with easy navigation through single integrated search.

ii. ONE CLASS ONE CHANNEL

There will be one dedicated TV channel per grade for classes 1 to 12, to provide quality educational material. The PM eVIDYA programme is expected to benefit nearly 250 million school children.

iii. ONLINE PROGRAMMES IN UNIVERSITIES

About one hundred top ranked Universities in the India are soon going to start full-fledged online programmes. 'Permissible online component in Conventional, Open and Distance modes of education being enhanced from 20% to 40%.

iv. SWAYAM MOOCS COURSES

SWAYAM MOOCS courses are being mapped with university curriculum and Higher Education Institutions are being encouraged to make it part of curriculum.

v. REGIONAL LANGUAGES

The e-learning resources are being prepared in eight regional languages.

vi. DAISY

Study material for the differently abled is being developed on Digitally Accessible Information System (DAISY) and in sign language.

vii. MANODARPAN

Manodarpan is an initiative by the Ministry of Education for psychosocial support of students, teachers and families for their mental health and emotional wellbeing. A National Helpline has been set up to provide counseling.

Other ICT initiatives are: Robotics Education (e-Yantra), Open Source Software for Education (FOSSEE), Virtual Experiments (Virtual Labs) and Learning Programming (Spoken Tutorial), National Academic Repository (NAD), and National Knowledge Network (NKN) etc. Such courses offer a lot of flexibility, personalization and convenience for the learners'.

The followings are the private learning Apps:
1. BYJU- Learning application with large repositories of educational content tailored for different grades and learning levels (33 million users overall; 2.2 million annual paid subscribers).
2. Vedantu (20 million users overall).

Educators are also engaged with various e- learning tools e.g. Zoom, GoTo Meeting, Join Me, Webex meeting, Discussion forum, Wikis, Blogs, Edmodo, Kahoot, Mentimeter, Moodle, etc.

8. CONCLUSION AND SUGGESTIONS

The shutting down of educational institutions worldwide during the spread of COVID-19 made millions of learners being excluded from the learning process. As such online learning, an alternative approach is being used to continue the ongoing education and maintain the undisrupted teaching and learning.

However, several challenges are faced worldwide according to the literatures and experts during the application of online learning worldwide.

For example:

a) Unreliable internet connection when thousands of learners are learning simultaneously.
b) Lack of digital skills to teach and learn online among many educators and learners.
c) Difficulty in finding suitable online resources by some educators/instructors.
d) Lack of online learning competencies, such as adaptation, independent study, self-regulation, and self-motivation, the key to successful online learning amongst several learners.
e) Overlooking of the essential characteristics of online learning like adaptation, independent study, self-regulation, and self-motivation and resorting to only direct instructions by some educators, thus leading to an unexciting experience in the learners.

Based on the above experiences and for a sustainable development adopting 'anytime -anywhere' education is essential and the following essentials of effective online education in emergencies is suggested.

a) Establish student teacher community using Google classroom or any other suitable platform.
b) Make available recorded lectures over you tube.
c) For better student interaction using friendly tools for video conferencing viz. Zoom, Google Hangout, Google Meet can be practiced.
d) Digital Library- a rich digital repository to provide seamless access to information for students and teachers.
e) E-learning is a boon to add to our education and knowledge and is a subject of interest. Learners should be made safe and confident explorers of the online world.

f) A tool from Google "Be Internet Awesome" -curriculum should be undertaken by all the online users to understand the digital safety fundamentals.

g) Spark learning with Google G -SUITE for Education. It supports to encourage the teachers and students for collaboration, creativity, and critical thinking and is freely accessible. Teachers can manage assignment, curriculum, and track the progress of the children.

h) Teachers and students can be motivated to enroll in online certification courses: various certification portals include: NPTEL, Udemy, Coursera, Edureka, SWAYAM, E -PG Pathshala, e-skill India etc.

E- Learning and online learning as a means to deliver instructions to students during emergencies is the concern right now. Every child has the right to education. It is now required that all educational institutes as well as the Universities provide accessible learning experiences to all, even those in the remote areas and without internet or cable-TV. Further inexpensive devices should be developed to make available offline digital learning resources for learners, particularly in the remote areas. Practitioners should consider diverse mode of accessibility while developing various digital teaching/ learning resources. This will help to achieve accessibility, functional diversity and e-inclusion in educational settings. Access, Equity & Quality should be the 3 cardinal principles of online education. E- learning is going to be the future of education and this is the only way to connect with the students.

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