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**Dr. Sumathi S**  
Assistant Professor of  
Commerce, Government First  
Grade College KGF,  
Karnataka, India

## Outbreak of COVID-19 and realignment of online education in India

**Dr. Sumathi S**

### Abstract

COVID-19 pandemic crisis had a major impact on the education sector. Online teaching and the emergence of online start-up firms to cater to deliver the quality education was a global phenomenon. Viable option available during the crisis was online mode of delivery of the teaching. The present study is an empirical study of the online education and teaching approach surveying 50 faculty working in the higher education.

**Keywords:** Academic, pandemic, online education

### Introduction

With the COVID-19 -a novel corona virus disease spreading across the globe, many countries have ordered closure of all educational institutes. Educational institutions have come to a functional standstill since they had to protect their students from viral exposures, which are likely in a highly socializing student community (T. Muthuprasad, 2021) <sup>[15]</sup>. The education sector has been one of the primary victims of the COVID-19 pandemic.

The education sector in India has been disproportionately affected by the pandemic as physical classes remained suspended for most parts of 2020 even while other social institutions opened up and most social mobility restrictions were gradually lifted. In India, more than 276 million children have been out of school for extended periods since March 2020 due to school closures in response to COVID-19 (Basu, 2021) <sup>[2]</sup>.

The Government of India through its Ministries, viz., Ministry of Home Affairs, Ministry of Health, Ministry of Ayush and Ministry of Education took several initiatives to contain the spread of the virus and issued directives and advisories to educate the people about the gravity of the infection from Coronavirus and the measures to protect from it. Specific instructions were also issued to the universities and colleges by the Ministry of Education and the UGC in this regard. The University Grants Commission issued "Guidelines on Examinations and Academic Calendar for the Universities in View of COVID-19 Pandemic and Subsequent Lockdown" on 29th April, 2020 and then, on 6th July, 2020 (jain, 2020) <sup>[5]</sup>.

At present, physical classes at school and college levels have resumed in most states, albeit in lesser capacity than in the pre-pandemic times. During this one year of the pandemic, the learning process was disrupted in some way for 99 percent of the Indian student population (United Nations, 2020a).

According to the UNESCO report, COVID-19 has affected nearly 68% of total world's student population as per the data taken during 1<sup>st</sup> week of June 2020. Outbreak of COVID-19 has impacted about 1.2 billion students and youths across the globe by school and university closures. Several other countries have also implemented localized closures impacting millions of additional learners. In India, more than 32 crores of students have been affected by the various restrictions and the nationwide lockdown for COVID-19. Most Governments around the world have temporarily closed educational institutions in an attempt to control the spread of the pandemic COVID-19 (Ramakrishna, 2021) <sup>[11]</sup>.

### Digital infrastructure in India

The platform for E-learning and Digital Education depends upon ICT Infrastructure, Internet connectivity, access to Electricity and the like. There is an urban and rural divide with regard to Teledensity in our country.

**Corresponding Author:**  
**Dr. Sumathi S**  
Assistant Professor of  
Commerce, Government First  
Grade College KGF,  
Karnataka, India

Overall in the country, with only a minor difference in urban teledensity, there has been an increase in the number of telephone and broadband subscribers over the years in both

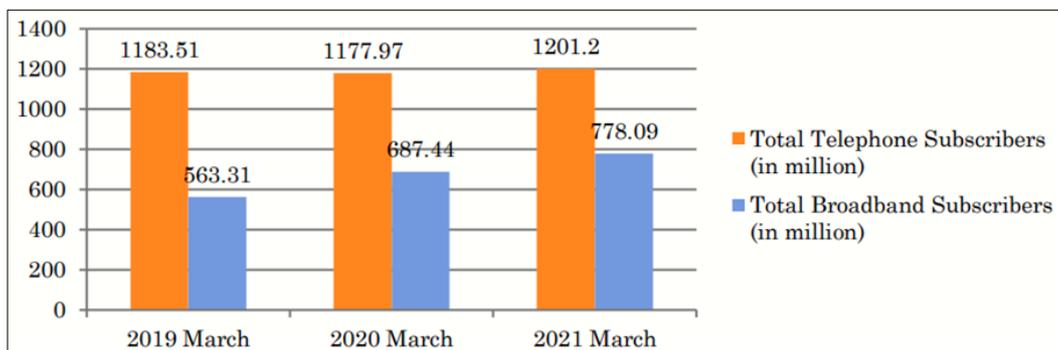
rural and urban areas. The Table 1 and Table 2 below give certain details as per availability in this regard.

### Internet connectivity



**Source:** Parliament Library and Reference, Research, Documentation and Information Service (Lardis). (2021). Education and E-Learning during COVID Times. Parliament Library and Reference, Research, Documentation and Information Service, 1 - 8

**Fig 1:** Tele-Density in India from April 2019 to April 2021



**Source:** Parliament Library and Reference, Research, Documentation and Information Service (Lardis). (2021). Education and E-Learning during COVID Times. Parliament Library and Reference, Research, Documentation and Information Service, 1-8

**Fig 2:** Total Telephone and Broadband Subscribers in India from April 2019 to April 2021

According to the report of the International Telecommunication Union (ITU, 2019, an agency of the United Nations), almost half of the earth's inhabitants (Around 3.6 billion people) did not even have access to the internet in 2019. As of March 2020, the Internet Penetration Rate (IPR) in Asia is the second last (55.10%) after Africa (39.30%), while the IPR in India is just 40.40 per cent compared to China (62.80%). Although about 78 percent of Indians have mobile phones, it is around 57 per cent in rural areas.

### Review of literature

(T. Muthuprasad, 2021) <sup>[15]</sup> focus on understanding Agricultural Student's perception and preference towards the online learning through an online survey of 307 students. The researchers explored the student's preferences for various attributes of online classes, to design effective online learning environment. Educational institutes across the world have closed due to the COVID-19 pandemic jeopardizing the academic calendars. Most educational institutes have shifted to online learning platforms to keep the academic activities going. However, the questions about

the preparedness, designing and effectiveness of e-learning is still not clearly understood, particularly for a developing country like India, where the technical constraints like suitability of devices and bandwidth availability poses a serious challenge (T. Muthuprasad, 2021) <sup>[15]</sup>.

(Ramakrishna, 2021) <sup>[11]</sup> highlights on major impacts of COVID-19 on HEIs in India. The spread of pandemic COVID-19 has drastically disrupted every aspects of human life including education. It has created an unprecedented test on education. In many educational institutions around the world, campuses are closed and teaching-learning has moved online. Internationalization has slowed down considerably. In India, about 32 crore learners stopped to move schools/colleges and all educational activities brought to an end. Despite of all these challenges, the Higher Education Institutions (HEIs) have reacted positively and managed to ensure the continuity of teaching-learning, research and service to the society with some tools and techniques during the pandemic.

(Mur Salim SK, 2021) <sup>[8]</sup> finds that Novel coronavirus (COVID-19) first infection on 30th January 2020 in the state of Kerala in India. (Wikipedia). On the 11<sup>th</sup> March 2020,

World Health Organisation (WHO) declared COVID-19 as a pandemic situation in the world. Then the Indian government announced the first time lockdown on 25th march 2020 for 21 days. The COVID-19 has affected the educational system in India, including the schools, colleges, and universities.

(Nambiar, 2020) [9] feel that Online education in India is at an early stage of development. In India, while this transition has been a mixture of both positives and negatives for most private universities, the government colleges and universities are still adapting. While technology makes things accessible and easier, it can also be limiting, especially in India, where many students face a challenge in terms of access to the internet. This in turn leads to issues with attendance and participation in online sessions, thereby

making the adaptation of online channels of education a challenge (Nambiar, 2020) [9].

(Deshmukh, 2020) [3] propounds that no one would have guessed that a virus-like COVID-19 would come and without differentiating, it will alter the lifestyle of people. Due to COVID-19, many changes came to our world and it took some time for everyone to adopt the new normal. The COVID-19 impact was everywhere, which resulted in the closure of schools and other educational institutions. Teachers who are all experts in blackboard and chalk, books and classroom teaching are really new to this digital teaching, but they are adopting the new methods and handling it like a pro to aid the students in the current position (Deshmukh, 2020) [3].

**Table 1:** Factors affecting failure of online classes

S. No	Themes	Sub Themes	Criteria	Example
1.	Technological constraint	Digital divide	Gap between the learners who have ready access to internet and computers and those who don't	"not all rural students have the privilege of internet and laptop"
		Data limit	Insufficient data pack to access the material/to attend the class	"online classes consume large amount of data which is difficult to afford"
		Poor connectivity	Interrupted internet supply that makes the learners difficult to learn	"dragging of classes due to network problem"
		Issues with the device	Lack of device or device incompatibility to the applications used for online classes	"Unavailability of gadgets with some of the students"
		Non-recordable videos	Online classes that cannot be downloaded or recorded for future learning	"videos that cannot be recorded or watched later pose difficulty in learning"
		Technical issues Virtual presence only	Low quality audio or video; low bandwidth No face to face interaction between the learners and teachers	"lack of voice clarity and poor signal strength" "only one-way communication and no scope for interaction"
2.	Distractions	Poor learning environment	Lack of congenial learning environment	"home environment is not suitable for learning as it leads to lot of disturbances from children and relatives"
		Noise	Distractions that deviate learner from learning	"two-way communication is loathsome as the voices from all the sides are raising"
3	Instructor's incompetency	Technophobia	Instructors fear of handling ICT's	"Lack of technical expertise of the teacher"
		Poor teaching skills	Inability of instructor to render the subject matter	"prolonged monotonous lectures with improper explanations"
		Unstructured content	clarity in course objective	"poorly designed content where classes are held for name sake"
		No follow up	Instructor doesn't take the feedback/online exams nor addresses their queries	"doubts cannot be cleared effectively compared to classroom environment"
4	Learner's inefficacy	Indiscipline	Irresponsible and unorganized behaviour of learner	"lack of discipline as no one is there to control the students"
		Student attritions	Reduction in the number of learner's attending the classes	"Poor attendance and students miss the classes without any reason"
		Unmotivated	Learner does not possess interest or enthusiasm in learning	"Lack of interest and laziness among the students to learn during vacations"
5	Health issues	Strain	Difficulty in concentration due to the harmful radiations from device used for online classes	"prolonged usage of mobile phone for classes causes headaches due to harmful rays"
		Worsening of existing health issues	Deteriorating the already existing health issues due to prolonged online classes	"continuous classes lead to worsening of migraine and backache"

**Source:** T. Muthuprasad, S. A. (2021) [15]. Students' perception and preference for online education in India during COVID -19 pandemic. Social Sciences & Humanities Open, 1-11

**Table 2:** Demographic details of the respondents

Demographic variables		Faculty
Degree	UG	35 (70%)
	PG	15 (30%)
Gender	Female	37 (74%)
	Male	13 (26%)
Place of Residence	Peri-urban	7 (14%)
	Rural	20 (40%)
	Urban	23 (46%)

The basic information about the sample faculty respondents is collected regarding the demographic details. The data collected indicates that 70% of the student respondents are from UG and 30% of the respondents belong to PG courses. Gender variable indicates that 74% of the respondents and 26% of the student respondents are female and male respectively. 14% of the faculty respondents belong to Peri-Urban area. 46% of the respondents indicate are from urban area. The representation from across all the regions is found.

**Table 3:** Technical requirements for online classes

Attributes		Number	Percentage
Communication medium for the class updates	Posting in university website	8	16
	Text message	10	20
	e-mail	5	10
	What's App	27	54
Preferred device for an online class	Desktop	21	42
	Laptop	5	10
	Smart phone	18	36
	Tablet	6	12
Source of internet	LAN	31	62
	Mobile data pack	14	28
	Wi-Fi	5	10

The faculty respondents were asked about the technical requirements for online classes. More than 50% of the respondents feel that Whatsapp is being used as communication medium for the class updates and 10% of

the respondents resorted to email. Smartphones and Desktop are more preferred devices for the online classes. The on-line classes need a strong source of internet. 62% of the faculty respondents feel that LAN is most sorted to.

**Table 4:** Structure of online classes

Attributes		Number	Percentage
Online class format	Live online classes	30	60
	Recordable Live class	10	20
	Uploaded contents at university website/ YouTube/ any other application	7	14
	Provision of reading material	3	6
Nature of Course material	Only Reading Material	5	10
	Video content along with reading material	32	64
	Only Video content	13	26
Nature of Video content	Suiting the requirement	14	28
	Using the PPTs and Whiteboard	15	30
	Using Whiteboard during the lessons	8	16
	Power Point Presentation	10	20
	Oral Lectures	3	6

The structure of on-line classes as preferred by the faculty respondents was collected from the faculty respondents. Live online classes for On-line class format are preferred by two-third of the respondents. 7 respondents feel that contents be uploaded to university website/ YouTube/ any other application. Video content along with reading material as a nature of Course material to be given in the online classes is felt by 64% of the respondents. Three-tenth of the respondents feel the importance of PPTs and Whiteboard in the online classes.

**Table 5:** Frequency and duration of online classes

Attributes		Number	Percentage
Frequency of the online classes	Alternate days	12	24
	As per the schedule to complete the syllabus	30	60
	Daily	5	10
	Fortnight	1	2
	Weekly once	1	2
	weekly twice	1	2
Duration of each class for online classes	30 min	10	20
	45 min	35	70
	more than hour	1	2
	1 h	4	8
Student retention time for online classes	2-4 h	10	20
	4-6 h	4	8
	6-8 h	4	8
	Less than 2 h	32	64
Break expected in between online classes	10 min	20	40
	15 min	21	42
	Less than 10 min	10	20
	More than 15 min	9	18

The faculty responses in respect of the Frequency and duration of online classes were collected from the sample respondents. 60% of the respondents feel that the classes will happen as per the schedule as decided for the completion of the syllabus. One-tenth of the respondents feel that daily classes need to be taken.

The feasible duration for the online classes is felt to be 45 minutes by 70% of the respondents. Majority of the respondents opine that the feasible duration to be between 30-45 minutes. The student retention is a huge challenge during the online classes. More than two-third of the respondents feel that the retention of the students expected is less than 2 hours. The break expected between online classes is between 10-15 minutes from more than 82% of the respondents.

**Table 6:** Plans and criteria for evaluation

Statements	Number	Percentage
Adapting to remote teaching	41/50	82
Creating digital content and evaluating the consumption of the same	42/50	84
Online evaluation of students	39/50	78
Conducting online examination	41/50	82

The online classes especially in higher education were a major challenge for the faculty and the college management. Adapting to remote teaching is opined by about eight-tenth of the respondents for the online education. The pandemic and the forced online education mode necessitated the teachers to create digital content to be available for the consumption from the students. The evaluation of the

students in a curriculum and as a part of pedagogy is upheld by 78% of the respondents.

**Table 7:** Bottlenecks in online learning

Constraint of on-line learning	Number	Percentage
Connectivity issues	42/50	84
Data insufficiency	45/50	90
Data speed	41/50	82
Lack of personal interaction	43/50	86
Lack of preferred device	44/50	88
Technophobia	42/50	84

The on-line learning and teaching had bottlenecks that had to be faced by the stakeholder group. The connectivity issues, data speed, lack of personal interaction, preferred device as constraints are upheld by about eight-tenth of the respondents.

### Post COVID-19 trends of higher education in India

Change is inevitable which has been forced upon the society due to COVID-19. The opportunities created by the pandemic COVID-19 will lead towards a better tomorrow. Tomorrow will be a new morning which will entirely be in our own hands. New technologies will certainly challenge the traditional paradigms such as classroom lectures, modes of learning and modes of assessment. The new trends will allow the education sector to imagine new ways of teaching learning and some trends may be pointed as below.

#### May encourage personalised learning

Learning may not be confined to classes or to any specific boundaries. Students may be the virtual learners with one teacher leading dozens of students in the new age. The learning modules may be modified to suit different learning styles and the learning contents may come from different sources to meet the learners' aspirations and needs. Students may pursue their learning in the new paradigm as per their choice. Many parents may be reluctant to send back their children to schools/colleges suddenly after the end of lockdown. Some poor family parents who have lost their livelihood during the pandemic may not be able to afford the expenditure to send their children to institutions.

This may lead to home education for another few months. Student safety and well-being issues are important deciding factors for students and their parents for movement to international institutions for higher study. New modes of social distancing will continue for quite some time and may effect on-campus face to face teaching learning. Most of the parents will prefer to find workable alternatives closer to their home and may restrict for less movement within the country due to the pandemic. The international education has also been affected by the crisis. Many international universities have been closed and are delivering all educational activities online. Many international conferences in higher education have been cancelled or turned into a series of webinars. So, the national and international student movement may be diminished.

#### Learning with social distancing may continue

All will maintain social distancing and avoid warm handshake, hug, personal greeting, and intimacy for a long time. Invisible restrictions may constraint the fun & joy of campus life. Sports, Gyms, tournaments may be in low gear for a longer period resulting less physical activities of

students. The need for social distancing may imply lesser students in each class.

So, most of the educational institutions may work in different shifts per day which may put more pressure on the teaching and administrative staff of the institution to manage. Learners from low-income families and disadvantaged groups are the more likely to suffer as they may not afford high-speed internet connection and required technical gadgets for online learning. It will widen the gap between privileged and unprivileged learners creating inequality.

Teaching learning may run with technology. More and more students will depend on technology and digital solutions for teaching learning, entertainment and connecting themselves with the outside world. Students will use internet technology to communicate virtually with their teachers and fellow learners through E-mail, Whatsapp, Video conference, Instant message, webinar or any other tool.

Artificial Intelligence (AI) may help teachers to deal with assessment, evaluation, preparing mark sheets and monitoring the performance of each student easily. AI may use digital platform extensively to reduce burden of examiner in handling examination and evaluation systems. If these activities are made simpler, the academicians would be able to concentrate more on course development, qualitative teaching-learning and skill development.

#### Demand for open and distance learning (ODL) and online learning may grow

COVID-19 has forced the human society to maintain social distancing. It has created more challenges to continue teaching learning by maintaining social distancing. To meet these challenges there is more demand for ODL and online modes of education and the same trend may continue in future also. Blended learning combines both face to face and online learning modes. COVID-19 has accelerated adoption of digital technologies to deliver education and encouraged the educational institutions to move towards blended mode of learning.

All teachers and students became more technology savvy. The traditional face to face mode with post COVID-19 technology mode will lead the education towards blended mode of teaching learning and it may transform the structure of the education system. In India, lots of students or their parents take education loans for higher education. If the employment market does not pick up, student debt crises may rise and create serious issue.

Students may face increased stress, anxiety and depression due to their student loans. There is no recruitment in Govt. sector and fresh graduates fear withdrawal of their job offers from private sectors because of the pandemic COVID-19. Many Indians might have returned home after losing their jobs overseas due to COVID-19. Hence, the fresh students who are likely to enter the job market shortly may face difficulty in getting suitable employment (Ramakrishna, 2021).

#### Digital initiatives of UGC & MHRD for higher education during COVID-19

Some of the digital initiatives of UGC & MHRD for higher education during COVID-19 are pointed as below:

- e-Gyan Kosh is a National Digital Repository to store and share the digital learning resources which is developed by the Open and Distance Learning

Institutions of India. Items in e-Gyan Kosh are protected by copyright, with all rights reserved by Indira Gandhi National Open University (IGNOU).

- Gyandarshan is a web- based TV channel devoted to educational and developmental needs for Open and Distance Learner. A web-based TV channel devoted to educational and developmental needs of the society
- Gyandhara is an internet audio counseling service offered by IGNOU. It is a web radio where students can listen to the live discussions by the teachers and experts on the topic of the day and interact with them through telephone, and through chatmode.
- Swayam provides Massive Open Online Courses (MOOCs) with 140 universities approved credit transfer feature. Swayam Prabha provides high quality educational programs through 32 DTH channels transmitting educational contents. E-PG Pathshala (<https://epgp.inflibnet.ac.in/>) is for postgraduate students. Postgraduate students can access this platform for e-books, online courses and study materials. The details of these three digital platforms are described by the author in the previous paper
- National Digital Library of India (NDLI) is a repository of e-content on multiple disciplines for all kinds of users like students (of all levels), teachers, researchers, librarians, library users, professionals, differently-abled users and all other lifelong learners. It is being developed at Indian Institute of Technology Kharagpur. It is designed to help students to prepare for entrance and competitive examinations, to enable people to learn and prepare from best practices from all over the world and to facilitate researchers to perform inter-linked exploration from multiple sources. It is a virtual repository of learning resources with a single-window search facility. It is also available to access through mobile apps.
- e-Yantra provides hands on experience on embedded systems. It has about 380 Lab and made 2300+ colleges benefited.
- FOSSEE is short form for Free/Libre and Open-Source Software for Education, which is developed to promote open-source software for education as well as professional use.
- Virtual Labs has developed web-enabled curriculum-based experiments designed for remote operation. It has over 100 Virtual Labs consisting of approximately 700+ web-enabled experiments which are designed for remote-operation. It provides remote access to Labs in various disciplines of Science and Engineering. These Virtual Labs caters to students at the undergraduate level, post graduate level as well as to research scholars.
- National Educational Alliance for Technology (NEAT) is an initiative for skilling of learners in latest technologies through a Public-Private partnership model between the Government (through its implementing agency AICTE) and the Education Technology companies of India. It brings the best technological products in education pedagogy on a single platform for the convenience of learners

## Conclusion

COVID-19 necessitated the social distancing. It brought about shift in pedagogical approaches and switching over to virtual education across all the levels of education. The

upsurge of virtual platforms necessitated the education sector to look out for online depositories, e-books and other online teaching and learning materials, crisis of COVID-19 led to wide acceptance of on-line/ virtual education as a parallel system of education. Blended learning was a major move for the educational institutions. Self-learning with remote learning opportunities led to many edX start-ups to emerge and expand. The teaching fraternity has been a facilitator and frontier in the transmission of knowledge even during the COVID times.

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