

APPLICATION OF VIRTUAL AND E-LEARNING IN THE POST CORONA PANDEMIC ERA-CHALLENGES AND PROSPECTS – A CASE STUDY OF INDIA

*Rajib Bhattacharyya**

Abstract: The catastrophe and the disruptions of the health shock in the form of Corona pandemic has really shaken the entire world and has confronted it with multiple challenges, the biggest obviously being life vs. livelihood. It is gradually transforming the world towards a new global order. Lockdown, social distancing and containment measures in various forms are announced all over the world to save life and combat covid-19 from spreading. However, it has also re-emphasized the need for the use of digital learning and online platform as the future in the education sector, as WHO has already sent a word of caution that in future we are probably going to have corona-free world. They had already recommended mobilization of different forms of online education and education resources. So what is needed is to make use of existing online distance learning platforms, develop new platform, partner with private educational platform and also collaborate internationally to use online educational resources. But there are various constraints in this change over to digital platform. Not only there are problems of developing proper infrastructure, but also there needs to be a change in the motivation of the teachers as well as the student community. Government Policy initiatives and implementation also play a pivotal role in this regard. Moreover, in this form of platform adequate IT and cyber security measures are also very important. Government of India, at various times, took separate measures to digitize India, but what is needed is a comprehensive master plan to implement it in actual practice and reap the demographic dividend.

Keywords: Digital learning; Online Platform; Education in India; Corona pandemic; Demographic Dividend.

Introduction

With the outbreak of the Covid pandemic since the beginning of the 2020, the world as a whole are facing challenges in all respects of life- occupation, lifestyle, education, and so on. Across the globe,

the spread of novel corona virus COVID-19 has led to profound changes in social interaction and organization, and the education sector has not been immune. Due to lockdown, social distancing and

* Associate Professor in Economics, Goenka College of Commerce and Business Administration, Kolkata, Email: rajib2014hmc@gmail.com

various containment measures the future of the school and higher education is facing tremendous uncertainty. Beyond China, with the spread of COVID-19 across the world, as of March 13, 61 countries in Africa, Asia, Europe, the Middle East, North America, and South America have announced or implemented school and university closures and most of universities have enforced localized closures (UNESCO, 2020). It has raised the issue of “traditional vs online education” – which one is more effective as well safe from health point of view. As per the statement of UNESCO Director-General Audrey Azoulay:

“We are entering uncharted territory and working with countries to find hi-tech, low-tech and no-tech solutions to assure the continuity of learning.”

The traditional form of education has come under immense challenge in India, where not only there has been high student teacher ratio, but in most cases the social distancing could not be guaranteed due to lack of adequate infrastructure. In this situation, to protect the students from the severe corona pandemic, the government, school authority and the higher education officials are really undecided what would be the form of education for future. So at present we need not only to address the immediate educational consequences of this unprecedented crisis, but to build up the longer-term resilience of education systems (UNESCO).

But this requires not only a reorientation of teachers, students, parents and other

staff related to the education sector but also a major re-structuring of the physical and technological infrastructure in this sector. Motivation towards e-learning has already gained momentum across the globe as well as in India. But still countries like India where a majority of the population does not have access to internet or smart mobile phone, it is very difficult to implement a mass e-learning strategy that would be of benefit to the student community. Moreover, as the health pandemic has transformed into and economic pandemic, it has put serious challenge to livelihood as 52 per cent of the job losses were among those who were under 40 years of age in India (as per CMIE figures from Consumer Pyramids Household Survey) and due to lack of purchasing power this form of education may not be affordable to all section of the society.

Literature Survey

Though we are still in a period of pandemic and are uncertain about what will be our future course of action, but within this short span of four to five months quite a few important research articles, studies and reports are published, which provide the basic idea of developing this paper. We mention a few of them here. Sahu (2020) in his paper has tried to highlight the potential impact of the terrible COVID-19 outbreak on the education and mental health of students and academic staff. Raj (2020) in his work made an effort to show how during the lockdown period educational institutions

are gradually shifting themselves from offline to on-line education. Mustafa (2020) in his study pointed out how school closures across the world has shed light on various socio-economic issues like digital learning, food insecurity, and homelessness, as well as access to childcare, health care, housing, internet, and disability services. UNESCO IESALC. (2020), has prepared this report on the impacts of COVID-19 on higher education. While it focuses primarily on the Latin American and Caribbean region, some of the strategies and research findings addressed apply also to other regions. The analyses and recommendations included are primarily intended for policy makers at both the systemic and institutional level. Bao's (2020) paper on a case of Peking University's online education. Six specific instructional strategies are presented to summarize current online teaching experiences for university instructors who might conduct online education in similar circumstances. The study concludes with five high-impact principles for online education: (a) high relevance between online instructional design and student learning, (b) effective delivery on online instructional information, (c) adequate support provided by faculty and teaching assistants to students; (d) high-quality participation to improve the breadth and depth of student's learning, and (e) contingency plan to deal with unexpected incidents of online education platforms. OECD Report (2020) also stresses on the importance of embracing digital learning

and online collaboration as an educational response to Covid-19.

Objective of the Study and Methodology

The fundamental aim of developing this paper is to understand the extent of the impact of the corona pandemic on the education sector in India. It tries to focus on the major issues and changes that are supposed to be implemented in both the school and higher education scenario in the context of transition from traditional class room education to virtual digital e-learning platforms. The study highlights the digital learning and online platforms that are in vogue in India during the period of pandemic. In this regard, the paper highlights the major platforms of digital education which has been emphasized both by the UNESCO and Government of India. In this connection the study tries to examine the latest position of e-infrastructural development along with facilities of ICTs, internets and their access and penetration in recent times in India. Lastly, the paper argues to throw some light on the economic problems related with this transitional issue, which have become prominent after the Covid-19 crisis and some policy prescriptions to overcome the problems. The entire analysis is based on secondary time series data available from various e-documents and websites.

Digital Learning and Online Platform

In wake of the COVID 19 pandemic, the Indian National Commission for Cooperation with UNESCO (INCCU) has

been working online to carry forward the mandates of the respective Sub Commissions. The Ministry of Human Resources Development and its associated institutions are promoting digital education through **online educational platforms** and through the mediums of **TV and radio**. The Ministry has, over the last few years, developed a rich variety of online resources that are available on a variety of platforms. While students and teachers can access these through their laptops, desktops and mobile phones, these resources are being reached to learners in remote areas through Television and Radio.

Digital Learning Platforms Available in India

a. e-PATHSHALA

It is a portal both for school as well as for higher education. A web portal and mobile app designed and deployed by the National Council for Educational Research and Training. It has audios, videos, e-books (e-Pubs) and Flip Books for classes 1st to 12th in different languages.

Website: <http://epathshala.nic.in> or <http://epathshala.gov.in>

b. SWAYAM

It is very popular and widely used national online education platform covering both school (class IX to XII) and Higher Education (both UG and PG) in all subjects including engineering, humanities and social sciences, law and

management courses. A unique feature of SWAYAM is that, it is integrated with the conventional education. The courses are interactive and prepared by the best teachers in the country, and are available free of cost to any learner in the country.

Website: <https://www.swayam.gov.in>

c. NATIONAL REPOSITORY OF OPEN EDUCATIONAL RESOURCES (NROER)

A portal equipped with best quality informational content on diverse topics in multiple languages including documents, interactive lectures, audios, images and videos on different languages.

Website: <http://nroer.gov.in/welcome>

d. DIKSHA

This digital learning platform is exclusively for school education. It offers teachers, parents and students engaging learning material relevant to the prescribed school curriculum. It has e-content items in multiple Indian languages, catering to Grades 1-12. During the lockdown period these contents have been accessed nearly 215 million times.

Website: <https://diksha.gov.in> or <https://seshagun.gov.in/shagun>

e. SWAYAM PRABHA

This is not a website but a band of 32 DTH TV channels transmitting educational contents on 24/7 basis. The channels cover both school education (class IX to XII) And Higher Education in a wide

range of subjects like engineering, vocational courses, teacher training, performing arts, social sciences and humanities subjects, law, medicine, agriculture and many more. These channels are available for viewing all across the country using DD free Dish set top box and antenna. Now even the private DTH operators are telecasting these courses through their channels.

Website: <https://www.swayamprabha.gov.in>

f. NATIONAL DIGITAL LIBRARY

This is a digital repository of a vast amount of academic content in different formats and provides interface support for leading Indian languages for all academic levels including researchers and life-long learners, all disciplines, all popular form of access devices and differently-abled learners.

Website: <https://ndl.iitkgp.ac.in>

g. VIRTUAL LABS

This provides a fully interactive simulation environment to perform experiments, collect data and answer questions to understand the knowledge acquired. IIT Delhi as the Nodal Institute with other 10 institutes is in charge of this initiative. It provides a remote access to labs in various disciplines of science and engineering.

Website : <http://www.vlab.co.in>

h. E-YANTRA

e-yantra enables the effective education across engineering colleges in India on embedded systems and robotics. e-Yantra also helps colleges to set-up Robotics labs/ clubs to make it a part of their routine training curriculum.

Website : <http://www.e-yantra.org/>

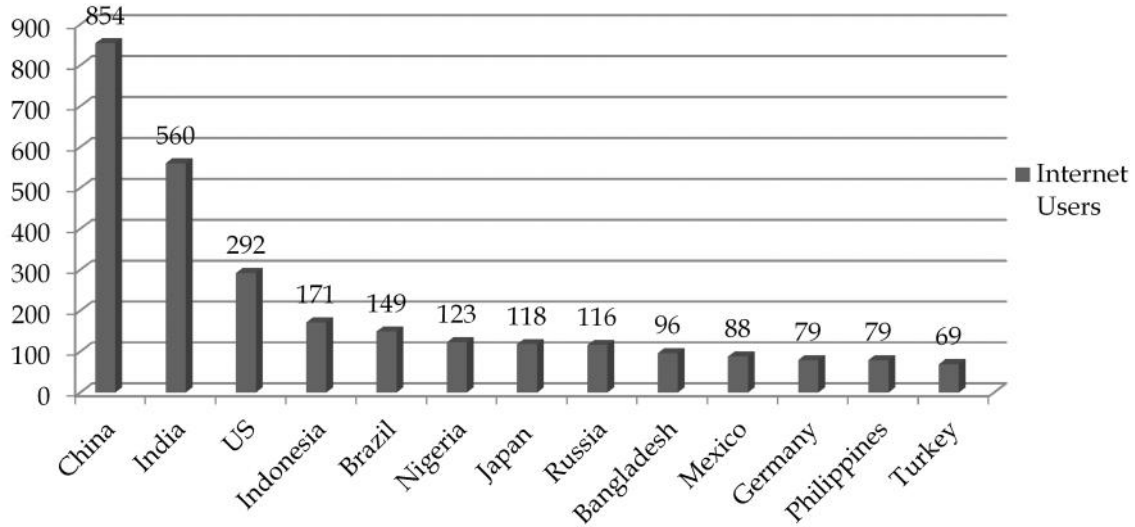
i. FOSSEE promotes the use of open source software in educational institutions. It does through instructional material, such as spoken tutorials, documentation, such as textbook companions, awareness programmes, such as conferences, training workshops.

Website : <http://fossee.in>

Infrastructural Facility and Access to Internet in India

According to a recent report, there were 4.13 billion internet users around the world. As of June 2019, China was ranked 1st among the countries with the most internet users. China had 854 million internet users, more than double the amount of third-ranked United States with just over 293 million internet users. India is the second largest internet user in the world with users of about 560 million. Overall, all BRIC markets had more than 100 million internet users, accounting for four of the eight countries with more than 100 million internet users.

Figure-1: Countries with the highest number of internet users as on June, 2019

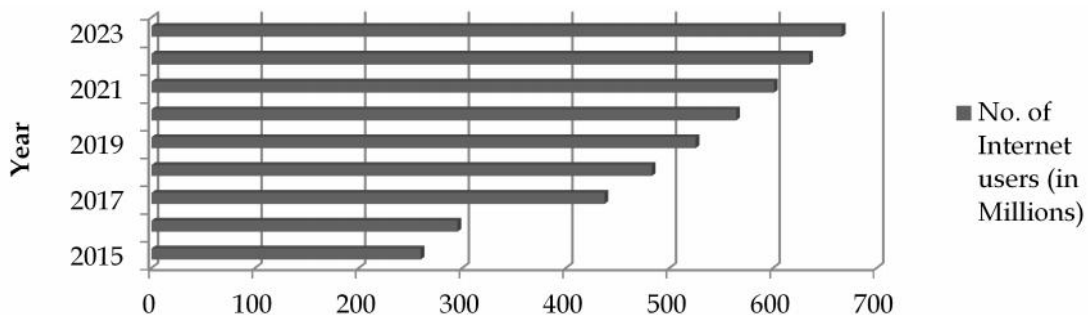


Source: <https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries>

In 2018, India had over 480 million internet users across the country. This figure was projected to grow to over 660 million users by 2023, indicating a big market potential in internet services for the south Asian country. Of the total internet users in the country, a majority of the people access the internet via their mobile phones. In 2018, this figure

amounted to almost 390 million across the country. Cheap availability of mobile data, a growing smart-phone user base in the country along with the utility value of smart-phones compared to desktops and tablets are some of the factors contributing to the mobile heavy internet access in India.

Figure-2: No. of Internet users in India (in Millions)

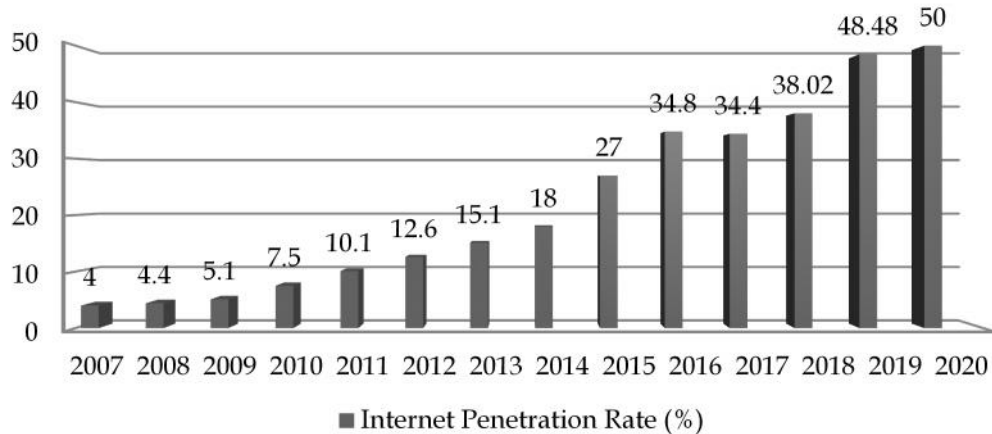


Source: <https://www.statista.com/statistics/255146/number-of-internet-users-in-india>

Internet penetration rate in India went up to nearly around 50 percent in 2020, from just about four percent in 2007. Although these figures seem relatively low, it meant

that around half of the population of 1.37 billion people had access to internet that year.

Figure 3: Internet penetration rate in India from 2007 to 2020

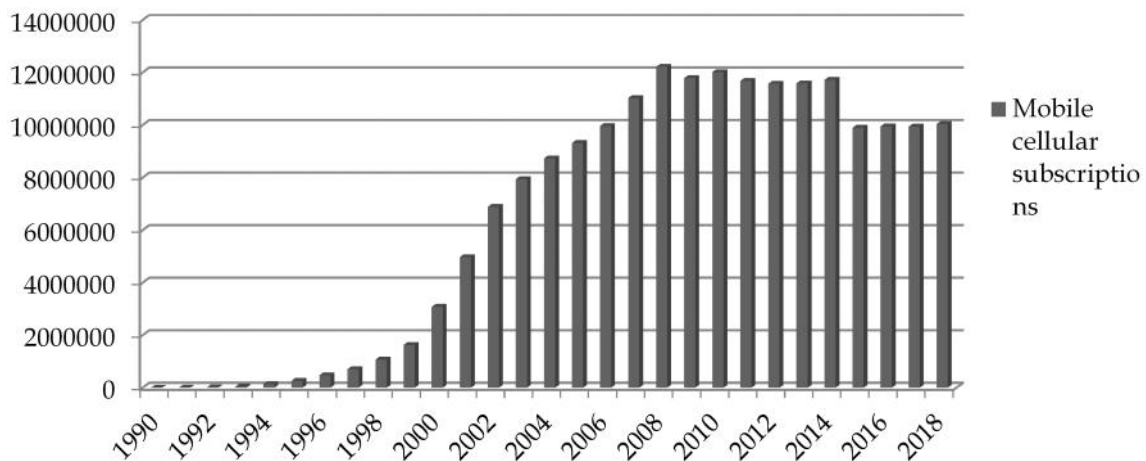


Source: <https://www.statista.com/statistics/792074/india-internet-penetration-rate>

If we look into the basic access to mobile cellular subscriptions in India, we will find that from 1990 to 2008 there a steady and sharp increasing trend. From 2008

to 2014, it remained more or less at the same level, but from then it decreased somewhat and remained at that same level till 2018 (figure-4).

Figure-4: Trends in Mobile Cellular Subscriptions in India



Source: Author's construction based on World Development Indicators 2018-19

In context of the above analysis, it is still very suspicious whether the change over from the traditional form of education to digital education would reach all sections of the population or not. Three things are worth mentioning in this context:

i. Access and use of Information and Communication Technology (ICT).

- a. We should try our best to use existing online digital platforms.
- b. We must put effort and investment to develop new online platforms (or virtual class rooms).
- c. Public- private partnership in developing this platform is essential.
- d. We must try to collaborate with foreign institutions to share online educational resources.
- e. We should provide and train our teaching faculty with digital learning opportunities.
- f. There must not be any digital divide across gender, wealth and places (rural or urban).

ii. Usability and Literacy

Access to education continues to be a greater barrier for women than men; an estimated two thirds of the world's illiterate are women. (*UNESCO, Statistics*). Having all students connected at the same time may not be feasible, at some places but it must be made and monitored in such a manner that the e-learning and digital platform may be useable within a specific time frame. This requires more emphasis in the long run on computer based education system from the school levels.

iii. Development and design

Technology enhanced learning leverages technology to maximize learning within an environment of high-quality course design that can offer students the options of time, place, and pace, and emphasizes different learning styles. The following five laws play vital role in applying effective technology enhanced learning (Huang, Chen, Yang, & Loewen, 2013).

a. On intrinsic access to E-learning resources (related to learning resources)

If learners take the initiative to browse or to “read through” all e-learning resources in order to learn more effectively than face-to-face teaching, the resources have to satisfy the following five basic conditions: (a) The contents are of learners’ interests or necessary for them to solve problems; (b) The contents are of moderate difficulty and in an appropriate scale, so that cognitive “overload” will not occur; (c) The structure of the contents is simple and clear, which will reduce the cognitive load of learners; (d) The content is well designed to avoid visual strain; and, (e) The navigation layout is clear with moderate depth so that the learners will not get lost during the navigation on a given learning system.

b. On virtual learning communities (related to learning environments)

If learners want to communicate in Virtual Learning Environments (VLE) as in the authentic classroom environments, the following three basic conditions are required: (a) Build a trustful learning environment, via providing continuous encouragements, so learners feel a sense

of “belonging to the group and environment”; (b) Provide timely feedback to learners, so they can find the answers and acquire a sense of achievement in the VLE; and, (c) Allow learners to gain a sense of emotional identification and release their desire of “competition” or “performance”.

c. On learning management systems (related to the learning system).

To effectively manage the learning process using Learning Management Systems (LMS), the following four basic conditions should be satisfied: (a) The LMS structure and the “teaching process” are highly coupled; (b) The LMS incorporates automatic services, such as automatic dashboards, which can reduce the teachers and the students’ workload; (c) The generated learning data of both the students and teachers are safe to protect their privacy; and, (d) The LMS should be well-designed in order to provide friendly learning and teaching experiences to both students and teachers respectively.

d. On user’s understanding of the designer’s intention (related to system design)

Design that does not take into account the user experience might lead to inconvenient learning experiences. In order to overcome this problem, the following three methods can be applied: (a) The use of “metaphor” and “common sense”; (b) Clear and concise documents; and, (c) A universal standard of labels and symbols that is made public and available to teachers and students.

e. On learner’s asking for help (related to users)

In order to make learners more motivated to ask their teachers for help when encountering difficulties, there are three necessary conditions: (a) Appropriate external encouragements (from the teachers, administration, etc.); (b) The intimacy between teachers and students; and, (c) Timely and effective feedback.

Challenges Faced by India in Implementing Digital Education

a. Problems in the Transition to Implement Digital E-learning Platforms

As per ILO estimates (April, 2020), full or partial lockdown measures are now affecting almost 2.7 billion workers, representing around 81 per cent of the world’s workforce. In India also as per CMIE report May 2020, the unemployment rate is 23.48 percent. As per CMIE report April, 2020, 27 million youth in the age group of 20-30 years lost their jobs. Considering this massive unemployment scenario there will be a lack of purchasing power or effective demand of a huge proportion of the population. As countries like India has a huge proportion of working population in the informal sector, who are either under temporary or permanent layoff, it is very difficult to ensure each family to bear the burden off carrying on e-class at this moment. As the question of life vs. livelihood has become a major issue now, it is really very difficult to say whether all sections of students can reap the benefits of this digital platform.

b. Problems Relating to Protection of Data Privacy and Data Security

One of the most important issues is assessing data security when uploading data or educational resources to web spaces, as well as when sharing them with other organizations or individuals. Measures should be taken to ensure that the use of applications and platforms does not violate students’ data privacy. Ministry of Home Affairs, Government of India, came out with a Handbook for students on cyber safety. It discusses extensively on various cyber threats impacting people, cyber bullying, cyber grooming, email fraud, online transaction fraud, safeguarding social network profile.

c. Lack of Investment in ICT for development of Online platforms

Technology can be a significant enabler

for achieving quality education with the attendant objectives of access, quality and equity. For this to happen, substantial investment will need to be made across the spectrum of education, including infrastructure and maintenance, teacher education, and content and curriculum. The National Information and Communication Technology (ICT) policy (2012) talked of states provisioning infrastructure, and schools imparting “ICT literacy”. The Draft NEP (2019) in contrast mentions the role of personal devices, and the ability of students to learn on their own. Today, low-cost personal devices provide data communication, computation and multimedia on a single platform, and students generally learn to operate them quickly and effectively. Hence, personal devices have the potential to support technology-based educational interventions.

Table-1: Trends in Expenditure by Govt. (Centre and State) in Education Sector in India

	2014-15	2015-16	2016-17	2017-18	2018-19 RE	2019-20 BE
Education (in Lakh crore)	3.54	3.92	4.35	4.83	5.81	6.43
Education (% of GDP)	2.8	2.8	2.8	2.8	3.1	3.1
Education (as% of Total Expenditure)	10.8	10.4	10.2	10.7	10.5	10.6

Source: Economic Survey 2019-20

As per the latest Economic Survey 2019-20, we can easily visualize the trends in expenditure by the government (both

Centre as well as the State) on education in India. It clearly shows a dismal picture. Though in amount it may be increasing

overtime but if we calculate in real terms or if we look into the figures of education as a percentage of GDP, we will find it is more or less stagnant at a meager 3 percent level. The same kind of picture emerges when we try to see it as a percentage of total expenditure. This amount of investment is very low for up gradation of infrastructural facilities in backward and rural areas. Moreover, there are many occasions where the institutions actually fail to receive any grant in practice.

a. Lack of Training and Motivation for Teaching Faculty

The transition to online mode has raised questions for the faculty about their capability to deal with the existing technology. The teaching faculty not exposed to the ICT to adopt themselves to teach through virtual lectures. One of the factors responsible is the age of teachers as a good percentage belongs to the 55 years or more categories. Moreover, there is also lack of motivation both from the government and from the teaching faculty as there is no incentive or rules which makes it binding for every institution. Also, many colleges, universities do not have internet or Wi-Fi facility or enough infrastructure or resources to facilitate online teaching with immediate effect.

Policy Suggestions and Conclusions

Realizing the above drawbacks, India government in his 11th plan allocated \$16 billion on ICT and vocational training, out of which \$9 billion were given for setting up of ICT labs for leaning computer based

programmes and EDUSAT centre for distance learning programmes. The residual \$7 billion was allotted for National Skill Development Programme for training through virtual centres, while the 12 plan spent \$20 billion on IT. The government is making effort to create online libraries under National Mission on Education through Information and Communication Technology (NME-ICT). Recently it has also emphasized on supporting and promoting Free and Open Source Software (FOSS) to make IT accessible by majority of the people. Colleges and Universities in many states have received grants from the governments to change traditional classroom to virtual classroom. Besides this the education sector has continued to receive projects build on the basis of public-private partnership model. Many private players are coming forward to invest in this sector. Moreover, the growth of online learning may lead to new start-ups and enterprises focused on the rapid conversion of classroom courses to online or on other aspects of this mode of learning.

It's really a testing time for the world as well as for India. Whether we can overcome the challenges of life and livelihood and concentrate on the transition from a traditional style of classroom learning to use of digital platform for e-learning, is really huge question. It not only depends on the extension of facilities from the government and other agencies but also on the demand and accessibility of those platforms by all sections of the students.

So it may create a digital divide between rural and urban, more developed and less developed regions in terms of ICT infrastructure, between rich and poor. So the government has a twin role to play in this context. On the one hand, it must save the life and livelihood by imposing certain restrictions on mobility and on the other hand create environment so that students may take advantage of the digital platforms and e-resources and continue their knowledge up gradation.

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