**TECHNOLOGY ENABLED LEARNING IN THE MIDST OF COVID 19 WITH SPECIAL REFERENCE TO HIGHER EDUCATION IN INDIA**

ABSTRACT:

Indian higher education is at crossroads. A new education policy is expected to be adopted soon. A milestone in the history of Indian higher education is in progress. There are several developments that point us towards this direction. The concept of traditional education has changed radically. Being physically present in a classroom isn’t the only learning option anymore. Nowadays, you have access to a quality education whenever and wherever you want, as long as you have access to a computer. There’s no need to discount the scepticism surrounding education through the internet. It’s hard to understand the notion of leaving behind the conventional classroom, especially if it's to face this vast space called The Internet. However, that’s not reason enough to shy away from this alternative, which has proven to be valid and useful for many students. Technology-Enabled Learning is “the application of some form of digital technology to teaching and/or learning in an educational context” (Kirkwood & Price, 2016). The current paper illustrates how the ongoing COVID-19 crisis has presented an opportunity to rethink the deep-rooted classroom mode of Indian education and highlighted the benefits and challenges of online learning. The paper also highlights the initiatives taken by the UGC to help students learn from home amid lockdown due to the COVID-19 pandemic.

Keywords: Indian Higher Education, Technology Enabled Learning, UGC initiative, Benefits and Challenges

**INTRODUCTION:**

The concept of traditional education has changed radically within the last couple of years. Being physically present in a classroom isn’t the only learning option anymore. The COVID-19 pandemic has resulted in schools shut all across the world. Globally, over 1.2 billion children are out of the classroom. As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms.

While it’s true that the unplanned and rapid move to online learning – with no training, insufficient bandwidth, and little preparation – will result in a poor user experience that is unconducive to sustained growth, it is also true that a new model of education will emerge, with significant benefits. It is believed that the integration of information technology in education will be further accelerated and that online education will eventually become an integral component of school education.

In India as an immediate measure to stem the spread of Covid-19, most educational institutions have been shut since the end of March. It is still difficult to predict when schools, colleges and universities will reopen. The only option is to shift from the traditional face-to-face mode of classroom learning to digital platforms. Therefore, the government has come up with e-learning program. Many ed-tech firms have tried to leverage the occasion by offering free online classes or attractive discounts on e-learning modules. These measures have been met with overwhelming response by students with some start-ups witnessing as high as 25% uptick in e-learning. The ongoing COVID-19 crisis has thus presented an opportunity to rethink the deep-rooted classroom mode of Indian education and highlighted the significance of online learning. This pandemic may be just the tipping point for reform in the Indian Education System.

Online education market in India was worth $ 247 million in 2016, which is expected to grow about $ 1.96 billion by 2021. That is a compound annual growth rate of 52%. The number of users enrolled for various online learning courses is estimated to be 1.6 Million in 2016, Which is expected to grow about 9.6 Million by the end of 2021. It is estimated that there is a 175% increase in the cost of classroom education, this gives online education more preferred because it is cost effective. Nearly 48% population in India between 15–40 age group with high aspirations but lower income is a good target market for online education. And, the acceptability of online channel is high in the younger demographic. These factors clearly show the involvement and future potential of online education in India.

**ICT in India:**

Technology-Enabled Learning is “the application of some form of digital technology to teaching and/or learning in an educational context” (Kirkwood & Price, 2016). Technology-Enabled Learning is a pedagogical innovation established in a technology-enhanced multimedia studio, emphasizing constructivist-oriented teaching and learning. Information and Communication Technology (ICT) is becoming a fast changing and renewing technology for higher education industry. With the advancement of ICT tools and techniques, social media evolved as a prominent communications tool and found to be a facilitating tool for teaching and learning, particularly in the higher education. Thus, academic institutions and faculty are under pressure to use the social networking sites, such as Facebook and LinkedIn, to connect with students and to deliver instructional content. This has led to a rise in stress among academicians for efficient and effective use of social media and other ICT based tools for collaborative learning.

The rate at which the Information Technology (IT) is growing today is evident from the fact that it has invaded almost every part of our life. Technological progress can be harnessed for augmenting both expansion as well as quality of education. The Government of India is keen to use the technological resources in helping its mission to make Higher Education accessible to all deserving students. In this regard, it has launched its National Mission on Education through Information and Communication Technology (NMEICT) in 2009 to provide the opportunity for all the teachers and experts in the country to pool their collective wisdom for the benefit of every Indian learner and, thereby, reducing the digital divide. Under this Mission, a proper balance between content generations, research in critical areas relating to imparting of education and connectivity for integrating our knowledge with the advancements in other countries is to be attempted. For this, what is needed is a critical mass of experts in every field working in a networked manner with dedication.

**LITERATURE REVIEW:**

Online learning can be termed as a tool that can make the teaching–learning process more student-centered, more innovative, and even more flexible. Online learning is defined as “learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students” ([Singh & Thurman, 2019](https://journals.sagepub.com/doi/full/10.1177/0047239520934018)).

Amidst this deadly virus spread such online platforms are needed where (a) video conferencing with at least 40 to 50 students is possible, (b) discussions with students can be done to keep classes organic, (c) internet connections are good, (d) lectures are accessible in mobile phones also and not just laptops, (e) possibility of watching already recorded lectures, and (f) instant feedback from students can be achieved and assignments can be taken (Basilaia et al., 2020).

Online education in Chinese universities has increased exponentially after the Covid-19 outbreak. There was an overnight shift of normal classrooms into e-classrooms, that is, educators have shifted their entire pedagogical approach to tackle new market conditions and adapt to the changing situations. During this tough time, the concern is not about whether online teaching–learning methods can provide quality education, it is rather how academic institutions will be able to adopt online learning in such a massive manner (Carey, 2020).

Educators must spend a lot of time in making effective strategies for giving online instructions. Effective online instructions facilitate feedback from learners, make learners ask questions, and broaden the learner horizon for the course content ([Keeton, 2004](https://journals.sagepub.com/doi/full/10.1177/0047239520934018)). Institutions must focus on pedagogical issues and emphasize collaborative learning, case learning, and project-based learning through online instructions ([Kim & Bonk, 2006](https://journals.sagepub.com/doi/full/10.1177/0047239520934018)).

In the last few years, e-learning has started gaining popularity in India. Many platforms provide affordable courses to students via Massive Open Online Courses. Still a lot of institutions in India were reluctant toward online teaching and learning. However, the challenges posed by the Corona Virus pandemic introduced everyone to a new world of online learning and remote teaching. Instructors indulged them in remote teaching via few flatforms such as Google Hangouts, Skype, Adobe Connect, Microsoft teams, and few more, though ZOOM emerged as a clear winner. Also, to conduct smooth teaching–learning programs, a list of online etiquettes was shared with students and proper instructions for attending classes were given to them ([Saxena, 2020](https://journals.sagepub.com/doi/full/10.1177/0047239520934018)).

Hasselbring et al. (2000) in his study ‘Technology to support teacher development’ had shown that improving the quality of an education system depends upon teachers’ training and development. He argues that teachers should be trained to view ICT as a resource and to use technology in classroom activities, whilst earlier added that education authorities are responsible for teacher training.

Cuban (2001) investigated study on ‘High access and low use of technologies in high schools’. He found that teachers who used computers in their classrooms largely continued their customary practice, A very few fundamental changes in the dominant mode of teacher-centered instruction have occurred occasional to serious use of computers in their classes had marginal or no impact on routine teaching practices. In other words, most teachers had adapted an innovation to fit their customary practices, not to revolutionize them. He noted that the overwhelming majority of teachers employed the technology to sustain existing patterns of teaching rather than to innovate. In interviews with 21 teachers he found that 13 said that their teaching had indeed changed because of their use of information technologies. Changes include planning more efficiently, communicating with colleagues and parents far more via the Internet, securing education materials from the Internet, having an additional tool in their customary set of teaching practice, and seeing students’ access to information as a phenomenal enhancement to their teaching. Of the 13 teachers who said that their teaching had changed, only four said that they had modified their daily practices in major ways: organized their class differently, lectured less, relied more on securing information from sources other than the textbook, gave students more independence, and acted more like a coach than a performer on stage

M2 Communications Ltd (2001) conducted study on ‘ICT investment boost secondary schools’. They found that there was a consistent trend for pupils in schools with better IT resources to achieve better grades for English, math and science. It also indicated that schools that used IT to support a particular subject, tended to achieve better in that subject than schools which did not use IT.

Diezmann et al. (2002) conducted survey on ‘Framework for multimedia resources’. They found clear evidence that students appropriated ICT resources as tools to construct an understanding of the teaching-learning process in science. Being able to access and revisit resources over time had the potential to strengthen effectiveness and heighten students’ interest in science teaching. Although the project included pre-service and in-service teachers, the experience of using CD ROMs in teaching and learning applies equally well in primary and secondary schools.

Berner (2003, cited in Afshari et al, 2008) in a case study on the ‘Relationship between computer use in the classroom and two independent variables: beliefs about computer competence; and administrative support’, found that the faculty’s belief not computer competence was the greatest predictor of their use of computers in the classroom. Therefore, teachers should develop their competence in ICT skills through training based on the educational goals they want to accomplish in order to use computers in teaching.

Deaney et al. (2003) in their study ‘Pupil perspectives on the contribution of ICT to teaching and learning in secondary schools’ found that students viewed ICT resources as helpful in tasks and presentations, and also useful in refining project reports and trial options. They associated ICT with change in the study environment and classroom relations; ICT applications raised interest and increased motivation on their part. Nevertheless, whilst the participants valued independent study and the challenge of ICT, they were concerned that this reshaping of learning might be displacing valuable teaching.

Al-Moussa (2004) conducted study on ‘Integration of information and communication technology in Gulf Cooperation Council Countries’. He reported that obstacles to the integration of ICT into schools in the Gulf Cooperation Council countries were a lack of computer skills training for teachers and insufficient technical support, plus costs. A recent Omani higher education survey concerned a questionnaire based on literature from developed economies faculty member’s perceived moderate levels in obstacles in applying ICT to their teaching practices: lack of equipment, lack of institutional support, disbelief of ICT benefits, lack of confidence, and lack of time.

Schaffer et al. (2004, cited in Afshari et al, 2009) reported that when technology is introduced into teacher education programs, the emphasis is often on teaching about technology instead of teaching with technology. Hence, inadequate preparation to use technology is one of the reasons that teachers do not systematically use computers in their classes. Teachers lack the necessary skills and thus need to be given opportunities to practice using information communication technology during their teacher training programs so that they can see ways in which technology can be used to augment their classroom activities. Teachers are more likely to adopt and integrate ICT in their courses, when professional training in the use of ICT provides them time to practice with the 42 technology and to learn, share and collaborate with colleagues. The statement suggests that training teachers to update their ICT skills may aid the integration of computers into the classroom setting. To promote ICT integration in schools, school leaders should adopt strategies that make ICT part of their daily routine or tasks of the teachers. These strategies may include using e-mail as the mode of communication among staff, accessing the Intranet to download data and using a word-processor to complete lesson plans for submission.

Afshari et al. (2009) studied on ‘Factors effecting teachers’ use of information and communication technology policy for education’. They stated that schools should work to convince ICT staff on how ICT integration in classrooms is very important. Ministry of Education and Sports should encourage Schools to purchase highly reliable technologies; improve systems for checking and maintaining ICTs in the classroom. This could be done by creating new approaches (including staff training) to guarantee that extremely rapid responses are made to breakdowns. They reported that with information technology support, teachers are able to access school network, internet and computer accessories (printer, digital camera, data projector, large TV screen, scanner and video camera). They also reported that as beginners of computer use, teachers need technical training support to assist them in teaching-learning process when they face constraints whereas for competent teachers, they are eager to share their expertise and provide technology support to their colleagues. Thus, lack of technical knowledge of maintaining the functionality of computers confused teachers to integrate ICT in the classroom. They found the effective use of computers by teachers depends not only on their attitudes, but also on the training 49 they have received Teachers competence presupposes: positive attitudes to ICT, understanding of educational potential of ICT, ability to use ICT effectively in the curriculum and ability to manage ICT use in the classroom.

Beauchamp et al. (2009) conducted research on ‘Pupils’ attitudes towards school science as they transfer from an ICT-rich primary school to a secondary school with fewer ICT resources’. They studied a group of science students from a technology-rich primary school who moved to a less ICT-oriented secondary school in rural UK. They found that the lack of ICT in the secondary school caused some frustration; however, the group remained predominantly enthusiastic about science. The students particularly enjoyed the practical aspects of science lessons, something that they had not experienced in the primary school, and which they reported compensated for the relative lack of ICT in science teaching

Young et al. (2012) studied on ‘Preparing instructors for quality online instruction’. They found that warned an instructor’s online role can be more difficult than one experienced in traditional classrooms. Online instructors were thought to have the extra burden of preparing courses well in advance, constantly facilitating the course, modelling good communication skills, and adjusting courses for the varied needs of students.

**Initiative of UGC :**

In a landmark reform in the field of Higher Education, University Grants Commission has been notified UGC (Online Courses or Programmes) Regulations, 2018 on 4th July 2018. Higher Educational Institutions can offer Certificate, Diploma and Degree Programmes in Full-Fledged online mode in only those disciplines in which it has already been offering the same or similar programme in regular mode of classroom teaching or in Open and Distance Learning mode and from which at least one batch has been passed out and approved by the statutory councils, as applicable.

University Grant Commission (UGC) has shared 10 links with which students & learners can easily study from home amid lockdown due to the COVID-19 pandemic. As per an official notification released by UGC, "There are several ICT initiatives of the MHRD, UGC and its Inter University  Centres (IUCs) - Information and Library Network (INFLIBNET) and Consortium for Educational Communication (CEC), in the form of digital platforms which can be accessed by the teachers, students and researchers in Universities and Colleges for broadening their horizon of learning". Links to access these important resources are given below.

1. **SWAYAM On-line Courses:**

<http://storage.googleapis.com/uniquecourses/online.html>

Free or cost and without registration, students & learners can access quality resources with this link. According to UGC, students or learners who registered on SWAYAM (swayam.gov.in) in the January  2020 semester can continue their studies as usual.

1. **UG/PG MOOCs:**

[**http://ugcmoocs.inflibnet.ac.in/ugcmoocs/moocs\_courses.php**](http://ugcmoocs.inflibnet.ac.in/ugcmoocs/moocs_courses.php)

Students and learners can access 86 PG courses & 222 UG courses through this link. These are learning material of the SWAYAM UG and PG (Non-Technology)  archived courses.

1. e-PG Pathshala:

<https://epgp.inflibnet.ac.in/>

It provides great quality, curriculum-based, interactive e-content containing 23,000 modules (e-text and video) in 70 Post Graduate disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences.

1. e-Content courseware in UG  subjects:

http://cec.nic.in/

It provides e-content in 87 UG courses with about 24,110 e-content modules.

1. SWAYAMPRABHA:

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

It is a group of 32 DTH channels delivering high quality educational curriculum based courses covering diverse disciplines such as  arts, science, commerce, performing arts, social sciences & humanities subjects, engineering, technology, law, medicine, agriculture    etc to all teachers, students and citizens across the country interested in lifelong learning. These channels are free to air and can also be accessed through your cable operator. The telecasted videos/lectures are also archived videos on the Swayamprabha portal.

1. CEC-UGC  YouTube channel:

<https://www.youtube.com/user/cecedusat>

It provides free access to unlimited  educational curriculum based lectures.

1. National Digital Library:

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

It 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.

1. Shodhganga

<https://shodhganga.inflibnet.ac.in/>

It is a digital repository platform of 2,60,000 Indian Electronic    Theses and Dissertations for research students to deposit their Ph.D. theses  and make it available to the entire scholarly community in open access.

1. e-Shodh  Sindhu

<https://shodhganga.intlibnet.ac.in/>

It provides current as well  as archival access to more than 15,000 core  and peer-reviewed journals and several bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions including centrally-funded technical institutions, universities and colleges that are  covered under 12(8) and 2(f) Sections of the UGC Act.

1. Vidwan

<https://vidwan.inflibnet.ac.in/>

It provides a  database of experts which provides information about experts to peers, prospective collaborators, funding agencies, policymakers and research scholars in the country.  UGC also requested Faculty members to register on the Vidwan portal to help expand the database of experts.

**BENEFITS OF ONLINE TECHNOLOGY ENABLED LEARNING**:

Flexibility:

Online education enables the teacher and the student to set their own learning pace, and there’s the added flexibility of setting a schedule that fits everyone’s agenda. As a result, using an online educational platform allows for a better balance of work and studies, so there’s no need to give anything up. Studying online teaches you vital time management skills, which makes finding a good work-study balance easier. Since online education only requires a laptop or a smartphone with an internet connection, students can learn anywhere at any time. This flexibility helps working professionals to pursue new courses without giving up their jobs. They can learn at weekends or in their free time. All the course materials are readily available at student’s fingertip.

Customized learning experience:

Everyone learns at a different pace. In a classroom where everyone is taught together, many students find it difficult to follow the lessons. This is a serious disadvantage of traditional education. Online education solves this issue. In online education all the course materials are provided beforehand, students learn it by taking their own time. Online classes tend to be smaller than conventional class size. Most of the time, online learning platforms only allow few students at a time, and in almost all cases, this allows for greater interaction and more feedback between the students and the teacher. There’s often access to very diverse material such as videos, photos, and eBooks online as well, and tutors can also integrate other formats like forums or discussions to improve their lessons. And this extra content is available at any moment from anywhere, which will offer you a more dynamic and tailor-made education.

Accessible:

This is the most appealing beneﬁt of online education for students with many duties to balance. Since everything is available online, accessing class materials and submitting work is very convenient. Exactly when and where this takes place is up to student, as long as assignment due dates are met. Online education also enables one to study or teach from anywhere in the world. This means there’s no need to commute from one place to another, or follow a rigid schedule. On top of that, not only do students save time, but also [save money](https://www.educations.com/articles-and-advice/5-creative-ways-save-money-tuition-15420), which can be spent on other priorities.

 Bridge the gap between education level and industry expectations:

According to a report in The World Employment and Social Outlook – Trends, there were 18.3 million Indians unemployed in 2017 and it is projected to increase by 18.9 million by the year 2019. According to a report, India’s working age population is increasing and is expected to reach 64% of the population by 2021. According to opinion given by Sanjay Bansal, 58% of unemployed graduates and majority of the unemployed post-graduates (62%) states that jobs matching their skill and education are not available and this is the primary reason for their unemployment. So online education is one of the alternatives to bridge the gap between what industries expect and what the educational institutes are delivering. Online education offers an opportunity to enhance skills through advance courses available in different domains.

**CHALLENGES:**

E-learning, though reached India late of course, but it is being fast accepted in a big way. Due to the growing Indian economy, Indian education system has a chance to embrace digital technology.

Poor Internet Connectivity:

India is a country with 4G and broadband, but we still face a lot of internet outrages and poor connectivity across the nation. Millions of students who have currently moved to online platforms are facing internet problems during virtual classes which demotivate them and they lose interest. Although Government of India is taking initiative to develop digital infrastructure but a lot need to be done in this direction. High speed internet and stable power supply are the biggest problem. India stands 89th worldwide on internet speed and stability. Only 15 % of the households have access to the Internet, and mobile broadband remains accessible to very few i.e. only 5.5 subscriptions for every 100 people.

Credibility of degrees:

 Although industry has started recognizing online degrees, there are still a lot of fraudulent and non-accredited degrees being offered online. The number of scam operators is rising who are offering fake certificated which does not have any credentials. These scams not only losses the credibility of the online certificates but also the faith of prospective employer in online programs.

Language barrier:

India is a multi-linguistic country, and a vast majority of the population comes from rural areas. The content offered by most of the online courses is in English. Hence, those students who are not able to speak English struggle with the availability of language content. Hence, it is the duty of computer professionals, educators, administrators, language content creators, and content disseminators, to sit together and give a viable framework and standard solution to the learners knowing only Indian languages.

**Quality of content:**

There is considerable dialogue throughout academia about what constitutes quality in E learning and how to ensure it. There was a time when courses through distance education were criticized on the counts of poor quality, not being on par with the regular courses, lower standards of students who enroll, and being detrimental to the planning of higher education in the country. The quality of content is a big issue and providing quality content is a major take for Ed-tech firms. With technological developments and adequate awareness about ensuring quality there is a growing consensus that online education can be made very effective. But it is easier said than done.

CONCLUSSION:

Since the outbreak of COVID-19 began, some 1.37 billion students in 138 countries worldwide have been affected by school and university closures. Nearly 60.2 million school teachers and university lecturers are no longer in the classroom. Since the whole country of India is under lockdown, [e-education](https://government.economictimes.indiatimes.com/tag/e-education) is the best bet left. With Technology enabled learning, teachers across the globe made a rapid transition to online learning. There is an equal growth in the challenges faced by teachers and students alike, however we've discovered that the e-Learning industry is growing fast and will continue to expand substantially over the coming years. It's greener than traditional modes of education and is an excellent way for institutions who want to attract and retain talent and offer affordable education. Technology Enabled Learning is, therefore, a trend for the future.

REFERENCES:

Ayebi-Arthur, K. (2017). E-learning, resilience, and change in higher education: Helping a university cope after a natural disaster. E-Learning and Digital Media, 14(5), 259–274. <https://doi.org/10.1177/2042753017751712>

Chick RC, Clifton GT, Peace KM, et al. Using technology to maintain the education of residents during the COVID-19 pandemic. J Surg Educ. 2020. <https://doi.org/10.1016/j.jsurg.2020.03.018>.

Cojocariu, V.-M., Lazar, I., Nedeff, V., Lazar, G. (2014). SWOT analysis of e-learning educational services from the perspective of their beneficiaries. Procedia-Social and Behavioral Sciences, 116, 1999–2003.

Kebritchi, M., Lipschuetz, A., Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education. Journal of Educational Technology Systems, 46(1), 4–29.

Martin, A. (2020). *How to optimize online learning in the age of coronavirus (COVID-19): A 5-point guide for educators*. <https://www.researchgate.net/publication/339944395_How_to_Optimize_Online_Learning_in_the_Age_of_Coronavirus_COVID-19_A_5-Point_Guide_for_Educators>

Partlow, K. M., Gibbs, W. J. (2003). Indicators of constructivist principles in internet-based courses. Journal of Computing in Higher Education, 14(2), 68–97.

Rieley, J. B. (2020). Corona Virus and its impact on higher education. *Research Gate*