Original Research Article

Experiences of online learning during COVID-19 pandemic lockdown period: a cross-sectional survey among the college students in India

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ABSTRACT

Background: The COVID-19 pandemic forced educational institutions across the world to shut down their campuses adhering to the lockdown protocols. As a result, higher educational institutions seek to deliver education through online platforms. This sudden shift created a huge impact on students learning capabilities.
Methods: We conducted an online cross-sectional survey to assess the college student's perspective about the online learning and also the most common problems faced in this online learning. A 17 item Google form questionnaire was structured by the authors. We received responses 1834 students from different higher educational institutions across India.
Results: The results revealed that 71.7% of students rated the pandemic online learning below moderate on a 5-point scale. The students felt that they learn better in offline classrooms (78.9%) and reported few technical issues which hinder their learning capacity. The students appreciated the flexibility of learning from home, availability of more personal space, accessibility of abundant online learning resources, and wide range of online learning platforms in this online learning. However, most of the students felt that online learning is stressful and affects their mental health in particular.
Conclusions: The study reveals the importance of online education in the near future. As we scale up to the future, this survey findings warrant a prompt action to improve digital infrastructure to resolve the technical issues, reduce cost involvement, well-structured training to improve pedagogical skills and technical skills of the faculty members.

Keywords: COVID-19, Pandemic, Lock down period, Students, Higher education, Online education

INTRODUCTION

The world health organization (WHO) declared COVID-19 as a pandemic outbreak on 11 March 2020 alerting all the countries across the globe.[1] The rapid rise in COVID-19 cases all across the globe posed a great threat to the countries and in response to the alarming situation most of the countries declared complete lockdown, shut their borders, closed the operations in all the sectors sparing

health care and important essential services. On 24 March 2020, the Government of India imposed a nationwide lockdown 1.0 for 21 days, limiting movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India.[2]

This lockdown has brought sweeping changes in all aspects of our lives. Social distancing and restrictive movement policies have markedly disturbed traditional educational practices. All the educational institutions were closed and all the campus teaching learning activities were suspended to combat the spread of COVID-19. The closure of schools and universities has led to innovative methods of delivering education, ensuring that students continue to learn, albeit different methods of modality. The technology has advanced in teaching profession and blackboards can take a back step provided when right platforms were used.[3]

Higher educational institutions faced a huge crisis in engaging the students academically in this pandemic lockdown period. The COVID-19 pandemic has provided us with an opportunity to pave the way for introducing digital learning in higher educational institutions.[4] To lower the transmission of the virus, many educational institutions terminated in person gatherings and resorted to a fully online education system. This abrupt change impacted many people including educators, students, and parents.[5]

The higher education regulatory body of India (university grants commission) with its commitment to provide quality education urged all the higher educational institutions to shift to online mode of teaching. While the regulatory bodies of various professions as well as government have realized the importance of online learning, in practice, little or no support to the institutions has been materialized, especially in rural areas. Thus, the institutions that were earlier reluctant to change their traditional pedagogical approaches are left with no choice than to shift entirely to online mode.[6]

Most of the higher educational institutions across India adapted online teaching and learning including assessment strategies in this pandemic lockdown period. Though it was a challenge with few technical glitches in the initial phase, most of the students easily adapted to the technology for learning. Literally, online learning is an electronically supported form of learning relied on the Internet for interaction between students and faculty members. The integration of information and communication technologies (ICT) in the teaching learning process became a fundamental part in countries worldwide.[7]

Lectures have rapidly been developed to be delivered as online lectures/webinars using various platforms, with such technologically enhanced approaches already being proven to have high levels of engagement with students.[8] Virtual learning has allowed for the advancement of education to reach more people through the advancement of technology, but it also minimizes in-person experiences. Learning at home also allows for the flexibility in a student's daily schedule. The development of technology in the 21 century has allowed for education to continue despite the mandatory social lockdown.[9]

During this COVID-19 pandemic crisis, most of the educational institutions concentrated on their abilities to adapt to online learning and less importance was given to the quality of education. This sudden transition with minimum or no learning digital infrastructure, no previous training and preparation on use of digital platforms, the faculty members started scrambling to complete their syllabi online through trying different online pedagogical approaches. Given this scenario, an online research study was conducted among the students pursuing their higher education all across India to assess the effectiveness of online learning by their perspectives, experiences, and satisfaction levels.

METHODS

Study design

Current study was a cross sectional descriptive survey research design.

Sampling technique

Multistage sampling was used in this survey. In first stage, four regional zones were divided initially; North, South, East, and West according to the geographical location of Indian states. Two regional coordinators were identified in each zone by mentioning the clear objectives of the study. They were also included in the study as co-authors. This method gave a positive response to the survey, as the regional coordinators/coauthors helped us in reaching out to the educational institutions located in their zones through their wide zonal networks. In second stage, two states were selected from each zone using simple random sampling technique. Hence total 08 states were included from all the four zones of India for this study. In third stage, a total of 32 higher educational institutions (colleges/universities) offering diploma, undergraduate, postgraduate and PhD courses) were identified by the regional coordinators in all those 08 states by using convenient sampling technique.

Taking the due considerations of COVID-19 pandemic protocol, the questionnaire was structured in Google form, which had a total of 17 items meeting the objectives of the study. The Google form was circulated to the students of 32 identified higher educational institutions by the faculty resourceful network of the co-authors. The Google form was sent to the students through WhatsApp, emails, and text messages. The survey questionnaire link was made available online for a period of 90 days from September 2020 to November 2020. We received survey responses from 1834 students. All the students gave

formal consent to take part in the study in the questionnaire. The personal information of the students was not collected in this study to ensure the confidentiality of the survey. The collected data were then analyzed and interpreted using frequency and simple statistical percentage.

RESULTS

Total 1834 students responded to the research survey questionnaire, in which majority of them were female (F=1146 and M=688) 62.5% and 37.5% respectively. The average age was 24.19 (SD=5.04) in this survey. The students level of learning who participated in the study were; 71.9% of students were pursuing their undergraduate degree, 19.1% of students were in postgraduate degree, 7.2% of students were in diploma courses and 1.8% were pursuing their Ph.D programs/96.1% of students (N=1762) academic classes were migrated to online education teaching in this lockdown period. Interestingly, only 26.7% of students (489) have attended online digital learning programs occasionally before the pandemic lockdown period.

The demographic characteristics of the students' educational institutions were also collected in this study. 778 students (42.4%) educational institutions were located in urban area, 486 students (26.5%) institutions were located in suburban location, 303 students (16.5%) educational institute were located in Metropolitan cities and 267 students (14.6%) educational institutions were located in rural area. The most popular online platforms used by the students for learning in this pandemic lockdown period were Zoom 64%, Google meets 60.1%, CISCO WebEX 28.6%, Whatsapp 24.8%, YouTube 10.8%, Microsoft teams 4.8% and Face Book live 4%.

The online learning academic activities attended by the students were; 79.9% comprised on faculty lectures, 52.7% comprised of webinars, 10.7% comprised of prerecorded academic videos from online databases, and 56.3% were of online examinations. 39.7% of students had their online classes six days in a week, 21.6% of students had their online classes five days in a week, 12.3% of students had their online classes four days in a week, 12.7% of students had their online classes three days in a week and 13.7% of students had their online classes two days in a week. Most of the online platforms have the option of video option as one of their key-features. Only 18% of the students switched on their video camera during the online academic activity and remaining 82% of students switched off their video camera option while attending their online academic activity. The students had a mixed opinion about the ongoing online education during the lockdown period of COVID-19 pandemic. A majority of the students (78.9%) felt that they learn better in offline classrooms from their campuses rather than through online education. Also more students felt that online learning will be integral to the academic practices even after lock down period with 19.6% of students felt that there will be more of online learning & less of classroom learning after the pandemic, 35.9% of students reported that there will be blended learning with equal opportunities to online and offline learning post pandemic whereas 44.5% of students predicted that academic institutions will resume to offline regular classes after the end of pandemic.

Though the online education is paving roots as an alternative to traditional offline teaching, there are some bottlenecks faced by the students. 78% of students faced technical difficulties like distortion of voice, internet connectivity and bandwidth issues which leads to distraction in their learning. 47.6% of students responded that they could not concentrate fully on the online academic sessions, 36.8% of students reported about the uncertain academic schedules, 31.6% of students are distracted during their online academic activity with their house hold chores, and 87% of students felt that there is lack of practical exposure in online digital classes. Though there were technical issues in online digital learning, but it provided ample opportunities in this new age learning. 68.5% of students appreciated the flexibility of learning in online digital learning platforms, 43% of students mentioned about the availability of personal space, 34% of students reported that learning materials are available online 24x7, and 18% of students felt that there was a vast increase of wide range of online learning platforms in this pandemic. The most significant finding of this study was 85% of students felt there was a less interaction with the staff/faculty member in this online academic sessions. The students felt that online education is affecting their health. The results found that 21.2% students physical health are affected due to improper postures and lack of comfortable seating arrangements, 66.3% of students mental health are affected due to overuse of digital technologies for learning, 54.3% students felt that excessive screen time vision leads to eye strain and stress, and 38.6% of students felt they suffer from some sleep disorders and anxiety.

The online teaching and learning approach can be considered as one of the boon in this technologically advanced world which provides a higher flexibility in learning. However, the tangible learning outcomes of the teaching-learning should not be diluted by technical issues/lack of staff-student interaction and the leaner should acquire the necessary skill and proficiency with full attentiveness.

DISCUSSION

Current paper intended to study the perception of students on the online learning process during the COVID-19 lockdown period. Educational institutions and universities across India had to close their campuses in this lockdown adhering to the protocols. They are forced to find an alternate way to ensure the students are academically engaged.

Table 1: The 17 items questionnaire and the responses.

Questions	Observation, %			
Location of educational institution	Metropolitan city 16.5	Urban 42.4	Semi urban 26.5	Rural 14.6
Level of learning	Under graduate 71.9	Post graduate 19.1	Diploma, 7.2	Ph.D and above, 1.8
Have you attended any online digital learning programs conducted by your institute before COVID-19 pandemic situation?	Yes 26.7		No 73.3	
Does your educational institute moved to an online teaching-learning platform in this pandemic situation?	Yes 96.1		No 3.9	
Which online learning platform are you using in this pandemic time?	Zoom 64 YouTube 10.8	Google Meet 60.1 Microsoft Teams 4.8	WebEX 28.6	WhatsApp 24.8 Facebook 4
What are the online learning activities you have participated in this pandemic situation?	Faculty lectures 79.9	Webinars 52.7	Prerecorded videos 10.7	Online exams 56.3
What is the duration of online classes on a typical day during COVID-19 lockdown period	1 hour 37.1	2 hours 23.7	3 hours 17.1	More than 3 hours 22.1
What is the frequency of your online learning activities?	6 days/week 59.7 2 days/week 13.7	5 days/week 21.6	4 days/week 12.3	3 days/week 12.7
What are all the difficulties you faced during this lock down online learning?	Technical 78 Distraction from home 31.6	Lack of concentration 47.6		Uncertain schedules 36.8 Lack of practical exposure 87
What will be your video camera option during online academic activities?	Camera on 18		Camera off 82	
Advantages of online education according to you	Flexibility of learning 68.5 Materials available online 34		Availability of personal space 43 Wide range of online platforms 18	
Which learning mode provides better learning experience on personal level?	Classroom offline teaching 78.9		Online digital teaching 21.1	
What will be the mode of your preference for future learning in post pandemic situation?	More of online learning & less of offline learning 19.6		Blended learning 35.9	Offline learning 44.5
How do you think that online classes have affected your health?	Affects physical health 21.2	Affects mental Health 66.3	Eye strain & stress 54.3	Sleep disorders & anxiety 78.6
What device you use for attending online academic activities?	Smart phones 73.4	Laptops 12.1	Computer 9.4	Tablets 5.1
How is your interaction with your faculty member in this online digital learning?	There was a significant improvement in interaction 15		Less interaction 85	
On a five point scale how will you rate online learning education?	Worst 10.5	Bad 18.1 — Moderate 43.1	Good 20.1	Excellent 8.2

Shifting all their academic programs online was the best option for them and most of the institutions were not prepared for such a transition from classroom-education to online education.[10] Most of the institutions initially lacked the strategies, experiences and training. But there were several online platforms available free of cost to support online education.[11] Nevertheless, it was a challenge for the academia to map their educational activities in an untrained online space. Moreover, students faced a few issues which were logistic, technical, financial, and social problems.[12]

The online education was completely a new learning experience to most of the students, as only few students have some kind of prior experience in online education. Even this online technology was also a completely new teaching dimension for most of the faculty members, and they too had a challenge in adapting to the newer teaching technologies. Most of the students also reported that the faculty members made a considerable improvement in online teaching skills as most of them were accustomed to teach in physical classrooms.[10] Also, this online teaching schedule provided opportunities even to those conventional faculty members to adapt to the digital technologies leaving them no option. These faculty members also learnt new techniques and adjusted to online teaching in the last few months.[13]

Current study findings revealed that Zoom and Google Meet platforms are the most widely used online platform by the students followed by WebEX and WhatsApp. The factors attributing to the wide popularity of online platforms may be due to free services offered by most of these online platforms with some limitations to academic fraternity in this lockdown, wide range of features offered, easy to use and compatibility in smart phones. Further the shift to online mode is sudden with no or little technical training to students and faculty members. Also adapting to highly sophisticated platforms would have been a cumbersome enterprise and most of the precious academic time would have been spent in implementation and training. The Facebook seems to be least popular among students for online learning. Current study concluded that faculty lectures is the most used method in this online learning followed by webinars, prerecorded academic videos and online exams. The study conducted by Rahman et al supports our findings regarding that most of the student's online learning included faculty lectures followed by sharing of supplementary study materials in PDF/word files and giving assignments.[14] It was also commonly felt that more engaging and effective methods and materials like animation modules, audio-video clips, and quiz are less used by teachers.

Kirkwood and Price concluded that e-learning in this technologically advancement era provides a highly structured context that engages students and support them to hone their skills, enhance their problem solving capabilities and increase the mindset of teamwork among them. Contrastingly, all these attributes has not been materialized in this present study.[15]

The descriptive result analysis of our study reveals an interesting finding regarding the reasons behind the frequency and duration of online academic classes in this pandemic lockdown period. As presented in (Table 1), 37.1% of students attend 1 hour per day, 23.7% of students attended 2 hours, 17.1% attended for 3 hours and 22.1% attended for more than 3 hours. This result is obvious in India, where issues of irregular electricity, weak mobile network signal and poor internet connectivity are rampant. These facts are supported by the ministry of rural development survey in villages across India in 2017-2018 revealed 16% of households in India receive 1-8 hours of electricity per day, while 33% receive for 9-12 hours, and 47% receives for more than 12 hours.[16]

In regard to the internet connectivity, the report entitled COVID-19: A wake up call for Internet service providers, based on a survey conducted by QS IGAUGE, reported that internet connectivity and signal issues as the most common problems faced by students while attending online classes.[17] Attending online classes for longer period requires significant amount of data consumption which poor parents find difficult to afford. Even, there was no initiative from the government in the state for providing free or subsidized data packs or reimbursement of costs involved. Adding to all this, the opinion study by Chakraborty et al revealed that there are there are a limited number of digital devices and more people need to use them simultaneously. This is a new form of digital divide in this pandemic lockdown period.

The few common issues faced by the students in these online academic learning ranges from technical issues like poor internet connectivity, followed by lack of attentiveness and lack of concentration in the online classes. Contributing to this 82% of students in our study revealed that they do not prefer showing their face during online lecture sessions. It can be concluded that this kind of attitude shows that they are reluctant to actively take part in online academic lectures. Further, 85% of students felt that there is less interaction with the teaching faculty members in these online academic classes. However, students considered online classes during COVID-19 not engaging and difficult due to network and bandwidth problems and favour a blended learning approach with 30% of online and 70% of face-to-face education.[18] Molise et al on the basis of their key findings argued that the teachers should adjust their teaching plans, assessment details and teaching materials and adopt new ways of interacting with learners through emergency online teaching during the COVID-19 pandemic.[19] Online learning provides students with flexibility and freedom of learning from anywhere, availability of more personal space, offers variety of learning experiences, abundance of online learning materials and provides plenty of opportunities of active participation. The findings of our study revealed that most of the students preferred offline classroom learning as their choice. They also felt lesser interaction with their faculty members in this online

learning. Also more than 71.7% of students rated below moderate on 5-point scale and they experience some kind of health and mental issues. The findings of our study are also backed by research findings of Chakraborty et al and Rahman et al. Both of their studies concluded that majority of students are dissatisfied in the online learning and most of students felt that online education is stressful and affecting their physical and social life.[10,20]

Majority of students preferred offline classroom learning followed by blended learning with mix of online and offline classes. The findings of our survey raise an important outcome factor about the effectiveness of the online learning adopted across India in this pandemic situation. Also, our study conclusion closely fits with the research findings of Das et al in which 88% of students preferred offline mode of teaching before their semester examination. It has also been argued that the success of an online teaching also depends greatly on the quality of the teacher, who plays the most critical role in many aspects. Selwyn et al argued that teachers are supposed to be capable of acting as guides and/or facilitators with extensive digital competence.[21] It is also recommended that technological pedagogical and content knowledge framework (TPACK) of Mishra et al can be adapted for effective implementation of online learning strategies. Efforts should be taken to improvise the technological knowledge (TK), pedagogical knowledge (PK) and content knowledge (CK) of the faculty members for greater transformation.[22]

Limitations

Limitations of current study were; the study was conducted among the college students from eight Indian states only. The students were from a mix of different course backgrounds. Also, the sample size of this survey was small when compared to the student's gross enrollment ratio to higher education.

CONCLUSION

The result of this research concludes to an unsatisfactory scenario of the online learning adapted quickly. Technical factors like poor internet connectivity, less internet bandwidth, insufficient IT infrastructure, significant cost involvement in data plans along with digital divide, distraction from home environment, and lack of technical and pedagogical skill of teachers turned out to be the most imperative challenges. The students are trying to cope up with this new trend which was never anticipated. The online teaching in this pandemic period has taken health of the students to a toss, particularly the mental health of students due to over use of digital technologies, excessive screen time causing eye strain leads to mental stress affecting the sleep. It was also found that most of faculty members who are habitual to face-to-face classroom teachings are finding difficult to academically engage students in online medium though they adapted to newer online teaching platforms seamlessly. The study

clearly draws a conclusion of two disconcerting factors attributing to the students online learning in this pandemic lockdown period - technological factors and human factors. Robust IT infrastructure, hi-speed internet connectivity irrespective of geographical location, access to compatible devices, free access to user-friendly learning tools and online platforms would be one of the best promising solutions to address the technical factors. The faculty members should undergo periodical well-planned training programs to improvise technical and pedagogical skills with strong emphasis for collaborative learning, project-based learning, case reports, problem solving approaches, debates, discussions, and online quiz competitions to break down the monotony of online academic lectures and actively engage the students.

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