Delhi Metropolitan Education
Affiliated to GGSIP University, New Delhi & Approved by Bar Council of India

RESEARCH ARTICLE
doi: 10.53361/dmejc.v1i02.4

E-learning during pandemic: A study on students in Delhi

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Abstract

In the times of pandemic, which locked everyone at their homes, the internet helped in reaching out to others globally. This also led to the virtual classrooms and online teaching for the generation of students who are well aware and equipped with internet technology. In developing countries like India which aspired to be the superpower in 2020, faced many opportunities and challenges to deal with technological development during the pandemic. On the one hand, many metropolitan cities were capable of carrying out online teaching, the others in the interior of the country were suffering the loss of their studies through this mode of learning. This research paper studies and analyzes the major impact of e-learning on the students living in the capital. An online survey is conducted on the students of University of Delhi. A sample of 100 respondents is collected for the purpose of this research paper. The paper highlights the issues that students are facing during e-learning mode related to technological problems, physical health and mental issues and the social-cultural needs. The paper also focuses upon the silver lining of interactive learning methods and online teaching. The results showed that students are facing many health issues due to the long screen time they are spending on their devices for e-learning. However, the difficulty of appearing for online examination among students shows a technical glitch in the entire system.

ARTICLE INFO

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Dates:
Published: 20-01-2022

Keywords:
E-learning, Internet, Interactive learning, Online teaching.

How to Cite:
Kauldhar, R. (2020) E-learning during pandemic: A study on students in Delhi. MediaSpace: DME Journal of Communication, 1(2), 28-38.
doi: 10.53361/dmejc.v1i02.4

Introduction

In the times of pandemic, which locked everyone at their homes, the internet helped in reaching out to others globally. Academic activities in India are based on face-to-face classes, physical mode of learning at both school and university level. But the changes during pandemic as the new normal has led to the virtual classrooms and online teaching for the present generation of students who are well aware and equipped with internet technology. Developing countries like India which aspired to be the superpower in 2020, faced many opportunities and challenges to deal with technological development during the pandemic. Educational institutions had to shift their classrooms from institutional set-up to online teaching–learning mode. UNICEF data reveals that a total of 320 million learners in India have been adversely affected and transitioned to the e-learning industry, which comprises a network of 1.5 million schools.

MediaSpace:
DME Journal of Communication
e-ISSN: 2583-035X

Combining face-to-face lectures with technology gives rise to blended learning and flipped classrooms; this type of learning environment can increase the learning potential of the students. On the one hand, many metropolitan cities were capable of carrying out online teaching, the others in the interior of the country were suffering the loss of their studies through this mode of learning. In a recent study from The School Children's Online and Offline Learning (SCHOOL) survey, it was found that online education has a very limited reach. Only 24 percent of children were studying online regularly in urban areas and eight percent in rural areas.

For the purpose of this research paper, Online learning is defined as an interactive process for imparting and receiving knowledge through available online teaching apps (google, microsoft, zoom, etc), more innovative for better learning (using slides, audio and videos), and even more flexible in terms of accessibility of devices like mobile phones and laptops. Live virtual classes and recorded lectures can also be shared with students to increase flexibility and in these environments, students can start the process of learning and interacting with teachers and other students from anywhere. "The synchronous learning environment is structured in the sense that students attend live lectures, there are real-time interactions between educators and learners, and there is a possibility of instant feedback, whereas asynchronous learning environments are not properly structured, learning content is available at different learning systems and forums" (Singh & Thurman, 2019). "Most of the terms (online learning, open learning, web-based learning, computer-mediated learning, blended learning, m-learning) have in common the ability to use a computer connected to a network, that offers the possibility to learn from anywhere, anytime, in any rhythm, with any means" (Cojocariu et al., 2014).

Online teaching became a safe boat during the lockdown and covid times. It becomes important to understand the many favourable advantages of e-learning for its better utilization during pandemic. For instance it's necessary to highlight here how accessibile, affordable, and flexible learning is possible from distance through online teaching, encouraging educational reforms in the country. Accessible because virtual classrooms can even reach rural and remote areas with the due availability of the required infrastructure. It's affordable as it is one of the cheaper modes of education in terms of routine travelling and migrating for education to urban centres, and also it cuts the cost of institution-based learning. However, it may cost students in terms of technological adherence like internet facilities cost and the devices used for e-learning like laptops. Also, data speed and internet connectivity may impact smooth functioning of the digital classrooms especially in remote areas where they are still facing frequent power cuts and also fluctuating mobile data networks. Being a flexible mode of learning, e-learning provides opportunity to learn or attend classes from anywhere and anytime as per one's own convenience especially in terms of online courses offered.

Although many academicians and students believe that in the times of pandemic online learning proved to be a boon for the education sector leading to educational reforms and introducing new pedagogical approaches to digital learning. There are still many on the other hand those who believe in whether it can provide quality education and understating as face-to-face classroom learning. Although many challenges are also identified for the online teaching-learning process including required infrastructure (internet and device), smartphone or devices ownership, connectivity issues, recharge money, intelligible material and a conductive environment. Two-way interaction among students and teachers also is problematic due to internet connectivity and issues. Also, the use of Learning Management systems (LMS) like Moodle by the universities and schools is challenging for the students and teachers. Lastly, the health issues (both physical and mental) due to long screen hours are impacting the students community at large. In response to these issues, efforts for engaging and making dynamic e-learning processes are of top most priority.

Review of Literature

Fortune, Spielman, and Pangelinan (2011) investigated 156 students who took and enrolled in either an online learning section or face-to-face learning of the Recreation and Tourism course at multicultural

university in Northern California, United States and found that no statistically significant difference in learning preference was found between those enrolled in the two different learning modes. Another study by Tratnik (2017) indicated significant differences in student satisfaction levels when online classes were compared to face-to-face learning of English as a foreign language. Students taking the face-to face course were found to be more satisfied with the course compared to their online counterparts.

Nambiar (2020), conducted a survey on 407 students from colleges and universities of bangalore, assessing two dimensions: online v/s classroom mode and personal factors during online classes. "The results of the survey showed that 87.1% of the students reported that they preferred classroom teaching methods more than online teaching mode. 12.9% preferred online classes" (Nambiar, 2020). When asked about the problems generally faced by them during classes online or what were the negative aspects of online classes, majority of them (55.7% of the sample) reported technical issues like poor network connectivity, power cuts, broadband issue, poor audio and video quality, problems with the app, getting disconnected in between the classes and finding it hard to log in again as the main issues. 23.3% reported that they found it difficult to concentrate during online classes, distraction at home were more, no structured learning environment makes it harder for the students to focus during the class.

Nambiar also identified that "too many subjects are scheduled on the same day which makes it difficult for them to stay alert and active. They feel information overload and fatigued. 15.4% reported the online classes to be less interactive, no communication between students or with teachers and makes it harder to participate. Thus, the online classes they felt were less lively, lacked a friendly atmosphere and social interaction. 12.7% of them felt a lack of motivation and interest to attend online classes".

Long-time use of electronic devices such as desktop computers, laptops, mobile phones etc. are harmful to one's physical and mental health [Hunt & Eisenberg, 2008; Vadim et.al, 2013]. Electromagnetic waves emitted during the use of E-gadgets affect the eyesight and damage it. Internet addiction of teenagers has also been addressed and even suggested remedies to reduce the usage time of internet access [Ramane & Kottapalle, 2016].

Online learning has a negative effect (Aboagye et al., 2020; Putra et al., 2020; Sufian et al., 2020), for students who have trouble accessing online learning due to an insufficient network and have to use their mobile phones on an ongoing basis. This causes them to be left out from the lessons that were conducted and it affects their academic achievement. These factors lead students to have depression and anxiety (Kalok et al., 2020; Odriozola-González et al., 2020).

A survey by Cao et al. (2020), which includes 7143 participants of college students, found around 25% of students are suffering from severe anxiety due to e-Learning crack-up. Another study (Lee, 2020) reported that approximately 83% of students experience the worst situation, and 26% of students are unable to get access to mental health support. This condition offers a situational demand to measure psychological distress among college students due to the negative perception of the e-Learning system.

According to Ramane, Devare and kapatkar (2021) "in spite of being flexible and comfortable methodology, online learning is less interesting and not much appreciated by stakeholders for various reasons. Moreover, the issues related to E-gadgets and internet connectivity interrupts the teaching-learning and thus productive time is wasted in resolving the related issues. Thus if online learning is to be continued for a long time then there is a need for revised standard SOP for conduction of online lectures".

Theoretical Framework

Learning theory explains how people learn and understand. The learning theories which are required to understand online learning are behaviourism, cognitivism and social constructivism. The theory of 'behaviorism' focuses on how students behave and respond towards certain ways of learning. This way by observing students' responses to certain stimuli can be evaluated, quantified and controlled. Watson who coined the term 'behaviorism' argued that mind and consciousness are unimportant in the learning

process and that everything can be studied in terms of stimulus and response. According to Picciano (2018), "Cognitive theorists promoted the concept that the mind has an important role in learning and sought to focus on what happens in between the occurrence of environmental stimulus and student response. They saw the cognitive processes of the mind, such as motivation and imagination, as critical elements of learning that bridge environmental stimuli and student responses". Gagne (1977), emphasized nine events in instruction that are important for cognitive development for the design of instructional material. These nine events of instructions are to gain attention, describe the goal, stimulate prior knowledge, present material to be learned, provide guidance for learning, elicit performance, provide feedback, assess performance and enhance retention and transfer. These instructional elements can be helpful for designing, upgrading and enhancing the e-learning process. Social constructionism focuses on describing and explaining teaching and learning as complex interactive social phenomena between teachers and students.. According to John Dewey (1916), "learning is a series of practical social experiences in which learners learn by doing, collaborating, and reflecting with others". The use of reflective practice by both learner and teacher is a pedagogical cornerstone for interactive discussions that replaces straight lecturing, whether in a face-to-face or online class.

Some of the learning theories specific for Online education are Community of Inquiry (CoI), Connectivism and Online Collaborative Learning (OCL). The "community of inquiry" model for online learning environments was developed by Garrison, Anderson & Archer (2000) is based on the concept of three distinct "presences": cognitive, social, and teaching. This model promotes online or blended learning through student and teacher interaction (sharing ideas, information, and opinions) in a social phenomenon by using discussion boards, blogs, and videoconferencing. George Siemens (2004), explains the concept of connectivism, how the process of learning changed due to change in dissemination of knowledge based on information flow and data communication networks. The Internet has changed the course of learning from individual to community activity. "Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more and are more important than our current state of knowing" (Siemens, 2004).

Online Collaborative learning (OCL) theory of learning focuses on collaborative learning, knowledge building, and Internet use as a means to reshape formal, non-formal, and informal education for the Knowledge Age" (Harasim, 2012, p. 81). In this model three phases of knowledge construction are identified as idea generation, idea organization and intellectual convergence by Harasim, (2012). Here the role of teacher becomes important in interaction. The community/collaborative models do not scale up easily because of the extensive interactions among teachers and students. On the other hand, the self-paced instructional models are designed for independent learning with much less interaction among students and teachers.

Objectives of the Study

- To understand the benefits of online teaching for the students during pandemic.
- To identify the interest and attitudes towards e-learning by analysing the problems and challenges faced by students during e-learning, impacting their health and lifestyle.

E-LEARNING BENEFITS DURING PANDEMIC

Some characteristics of e-learning beneficial during pandemic can be identified as:

- Anybody, anywhere and whenever- world wide web can be accessed for e-learning by students and teachers (anyone), while travelling, in offices and homes (anywhere) and at their own conveniences whenever they wish to join recorder or live classes.
- Provide self reflection openings- students focused e-learning gives freedom to students to relate individual circumstances through interesting self-indulging learning checks from time to time.

- Effective learning- it helps students to learn through upgraded technology, new e-learning softwares and innovative methods. Also, it gives opportunities to students and teachers to use quizzes, tests and scores for assessments.
- Accommodating and utilizing- students focused e-learning makes it easy to utilize and empowers them to take control of their course in case of recorded lectures and available reading material.
- Customized learning- it can be more individualized than traditional form of learning, with the help of various assessment and scoring techniques and teaching methods or tools like use of presentations, audio-video, graphics etc.
- Less impact on environment- as e-learning is a paperless method of learning, it minimizes the use of paper. As well as e-learning is equivalent to distance learning, so it also saves travelling time and reduces the carbon dioxide emissions related to travelling to colleges and institutions. Thus e-learning is an eco-accommodating method of learning.
- Geographically dispersed students- e-learning helps in reaching a wider targeted audience and students who are geographically dispersed with limited time and resources to travel.

Modes of E-learning

- 'Backing' learning; E-learning can assume a simple supporting part to the educating learning exercises coordinated in the class. Students can use e-learning to do research, learn and complete their assignments and understand the subject. While teachers can use it for better instructing and to have up-to-date knowledge of the subject.
- 'Blended' learning: Here e-learning is utilised as a blend of customary physical classrooms and virtual classes or ICT enhanced e-learning. This mode hence is also called mixed learning. An effective way of delivering e-learning can be to complement it with face-to-face (F2F) training within the same learning programme. This approach is generally called 'blended learning'. Blended courses can be defined as a combination of face-to-face with online experiences, to produce effective, efficient and flexible learning (Stein and Graham, 2014).
- 'Complete e-learning': In this mode the conventional and formal face to face learning is completely replaced by virtual classrooms, online courses like MOOC's and webinars. The students in this mode are allowed to take their learning undertakings freely with the assistance of the appropriately planned e-learning courses. Complete e-learning can happen in two forms:
  - Offbeat correspondence style: in this form the course data or learnings are passed to students through online posting on websites, emails, weblogs, webjournals, etc. Inquiries by students are made through posting or emails. The instructor and student don't communicate at the same time.
  - Simultaneous communications: In this form communication between students and instructor can take place through audio-video conferencing like virtual classrooms, online lectures and webinars. Though its a computer generated experience, still a conducive environment of disseminating and learning can be created for instructor and students with simultaneous responses.

Method

This research paper studies and analyzes the major impact of e-learning on the students living in the capital. This study is based on primary data collected through online survey questionnaires with the help of google forms to understand students opinions and attitudes towards e-learning. An online survey is conducted on the students of University of Delhi. A sample of 100 respondents was collected for the purpose of this research paper. The paper is focusing on the issues that students are facing during e-learning mode related to technological problems, physical health and mental issues and the social-cultural needs. An attempt is also made to throw a light on the benefits of interactive learning methods and online teaching. There was an issue for many students to appear for the online examination (OBE) during the period of pandemic. Simple percentage method is used to describe and analyze the collected data. It was found that the majority of the students spend around 5-8hrs on

their screen for the purpose of e-learning and online classes on a daily basis.

Data Analysis

Q1. Does e-learning promote interactive teaching processes?

In Figure 1 the respondents opinion about E-learning promoting Interactive teaching is measured. The data reveals that a little more than half (58%) of the respondents are of the opinion that e-learning does not promote interactive teaching. However, a little less than one-third (31%) of the respondents are of the opinion that e-learning promotes interactive teaching.

Q2. What are the advantages of online learning according to you?

In Figure 2 respondents' opinion about advantages of e-learning is measured. Respondents were given a list of advantages of e-learning- it saves time, can access classes from anywhere, can access recorded lectures anytime, it promotes better understanding of the subject and others. Respondents were allowed to opt for multiple choices. The data revealed that more than half of the respondents are of the opinion that one of the important advantages of e-learning is accessible from anywhere (59%) and can receive recorded lectures anytime (53%). It is significant to know that a little less than one-fourth of the respondents think e-learning promotes better understanding of the subject. Whereas very few think that there is any advantage to e-learning, other than it keeps them safe from pandemic.

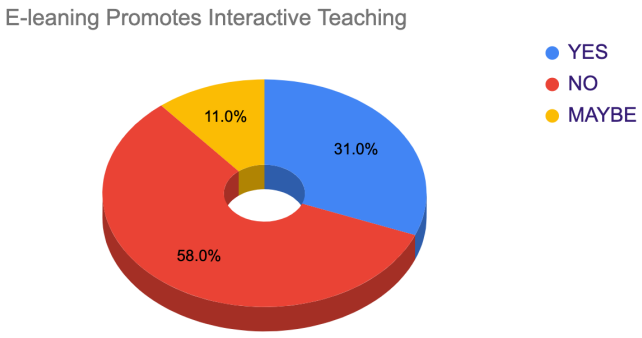

Figure 1: Respondents opinion about E-learning promoting Interactive Teaching

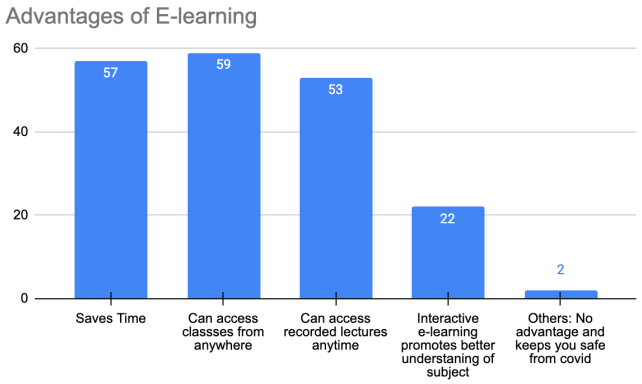

Figure 2: Advantages of e-learning

Q3. What are the challenges that you faced during e-learning?

In Figure 3 challenges faced during the e-learning process by respondents are measured. The categories of these challenges are identified as slow internet connection, bad camera quality, noise (audio) disturbances, distractions at home, lack of sleep, long hours in front of screen and category of others. Respondents were allowed to opt for multiple choices. Data highlighted that almost two-thirds of respondents faced the challenge of long hours in front of the screen (67.3%), slow internet connection (62.2%) and distractions at home (63.3%). However, a little less than half (48%) of the respondents faced audio breakage and disturbances challenges. Whereas few respondents faced mental stress and were unable to concentrate during the e-learning process.

Q4. What type of devices do you use for e-learning?

In Figure 4. Devices used for e-learning by respondents were measured. The categories of these

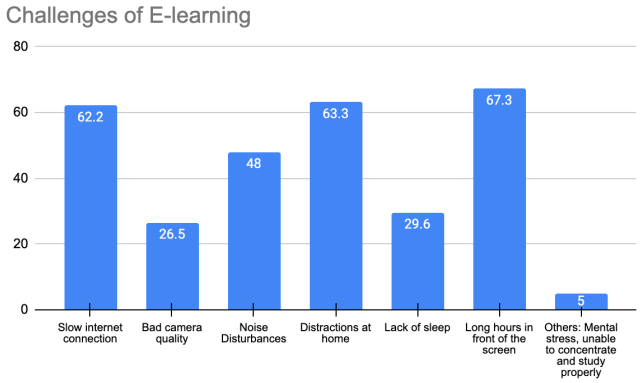

Figure 3: Challenges faced during the e-learning process

devices are identified as laptop, tablet, desktop and smartphones. The responses of the respondents are measured in percentage and they were allowed to choose multiple options of these categories. The data highlights that the majority (63.1 %) of the studente used smartphones for the e-learning process during the pandemic. Also, a little more than half (52.4) of the respondents used laptops for the e-learning or online classes. While, a similar number of the respondents i.e, around seventeen percent of them used tablets and desktops for online learning.

Q5. How many hours do you spend daily on e-learning devices?

In Figure 5 screen time spent on e-learning devices by respondents is measured. The categories are identified as screen time spent on e-learning devices before pandemic and screen time spent on e-learning devices after pandemic. And the categories of screen time hours are categorised as up to 2 hrs, 2-4 hrs, 4-6hrs and 6 hrs and above. Respondents were asked to mark the screen time they spend before and after pandemic on the devices (laptop, tablet, mobile phones, desktop, etc) used for e-learning during pandemic. The results revealed that before the pandemic a little less than half (45%) of the respondents were spending up to 2hrs screen time on these devices for the purpose of e-learning. While thirty five percent of the respondents were spending 2-4 hrs on these devices for e-learning and a negligible number of respondents were spending more than 6 hrs daily on these devices before the pandemic. However, forty percent of the respondents were spending more than 6 hrs on e-learning devices after the pandemic. Also, a similar percentage of respondents i.e, thirty six percent were spending 4-6 hrs screen time on these e-learning devices after the pandemic. It is important to note that before pandemic forty five percent respondent had screen exposure up to 2 hrs but after pandemic this exposure of 2 hrs increased for majority of the respondents.

Q6. How has e-learning impacted the following?

In Figure 6 the impact of e-learning on students is measured. The categories of impact are identified as effects on eyesight, headache, anxiety, sleep disorders, muscles strains, focus and time management. Respondents were asked to rate their mental and physical health issues if they increased, decreased or remained the same during e-learning process for each of the categories. A little more than two-third (70%) of the respondents' headache increased due to long hours spent in front of the screen. Among fifty five percent of respondents, sleep disorder also increased. Majority of the

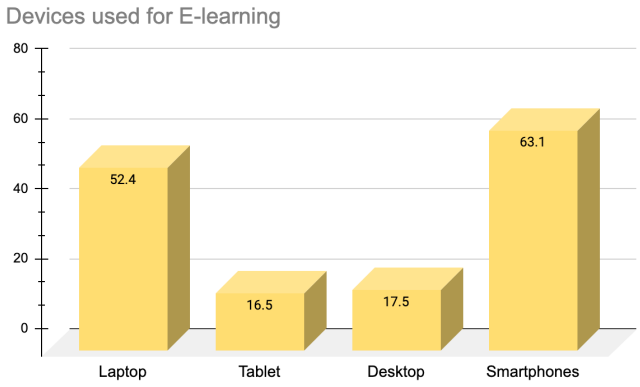

Figure 4: Devices used for E-learning

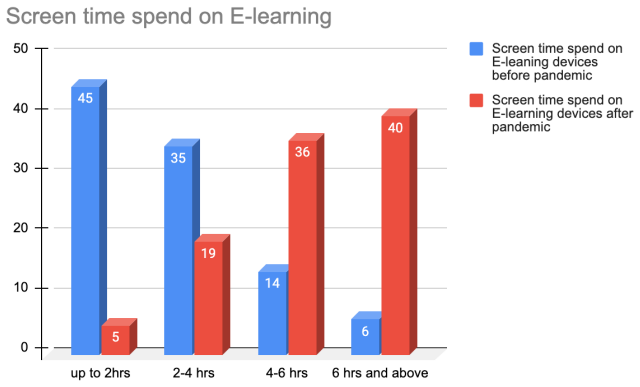

Figure 5: Screen time spend on e-learning devices

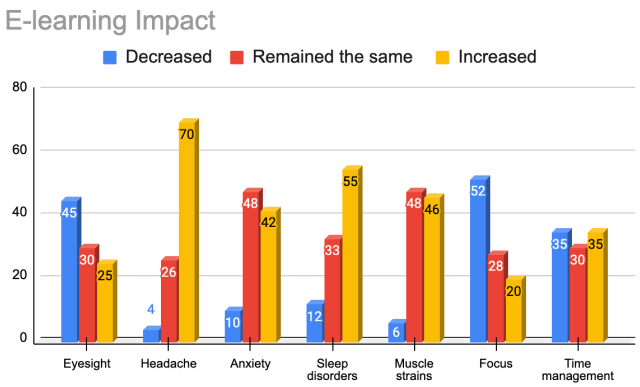

Figure 6: Impact of e-learning on students

respondents (94%) of them faced muscle strains, of which forty six percent said it increased and forty eight percent said it remained the same. While it is interesting to note that almost half (52%) of the respondents said that their focus decreased during e-learning, which adversely affected their eyesight for which forty five percent agreed. However, one-third (35%) of the respondents were able to manage their time and the similar percent were not able to manage their time during e-learning. It is worthy to note that the level of anxiety related to subjects remained the same for almost half (48%) and increased for the other forty two percent of the respondents.

Q7. Rate your experience of online learning for the following.

In Figure 7 respondents rating experiences of e-learning is measured. The categories are identified as resemblance to traditional methods, discipline, creative thinking, efficient learning and comfort. Respondents were asked to rate these experiences on the scale of 1 to 4, where 4 represents excellence rating, 3 represents good, 2 represents acceptable and 1 represents poor rating. In comparison to traditional methods of face-to-face learning, e-learning is an acceptable tool for education for forty percent of the respondents, while a combination of another forty percent rated e-learning as a good (26%) and excellent (14%) tool for learning. However, almost two-third of respondents rated discipline as good (33%) and acceptable (30%). A little less than one-third (30%) of the respondents rated creative thinking and efficient learning as acceptable and good for e-learning. Among twenty seven percent respondents rated creative thinking as poor or declining. It is significant to note that three-fourth of the respondents rated comfort as excellent (52%) and good (26%) for e-learning.

Q8. What are the issues that you faced while giving online examinations?

In Figure 8 respondents issues that they faced during online examination is measured. The issues were categorized as website glitches, uploading heavy files, internet problems, lack of time for submission and the category of others. Respondents were allowed to opt for multiple choices of issues. Almost two-third of the respondents faced website glitches (65.5%) and internet connectivity issues (64.6%). However, forty percent of the respondents faced scarcity of time for online examination and almost one-fourth (24%) find it difficult to upload heavy files of the answer sheet on the portal. While only two percent faced other issues like out of syllabus questions, etc.

Q9. What type of mode of learning do you prefer post-pandemic?

In Figure 9 respondents preferred mode of learning post-pandemic is measured. The categories of mode of learning are identified as 'backing' learning, 'blended' learning, 'complete e-learning' and 'conventional' learning. The data shows that forty percent (40%) of respondents are preferring 'backing' learning mode post-pandemic. It is important to note that 'blended' learning is preferred by a little more than one-fourth (27.7%) of the respondents as a mode of learning. These figures of preferences reveal that the majority of the respondents partially prefer e-learning as a natural mode of education that

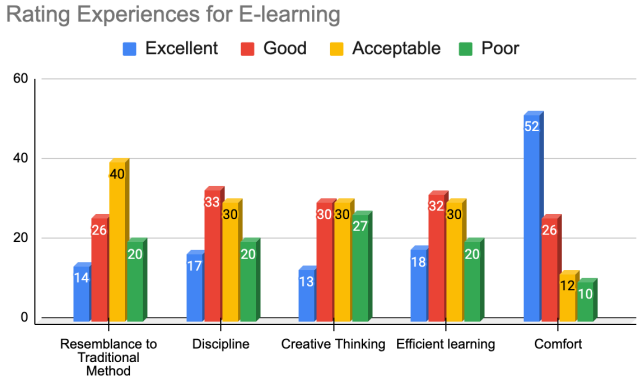

Figure 7: Rating experiences of e-learning

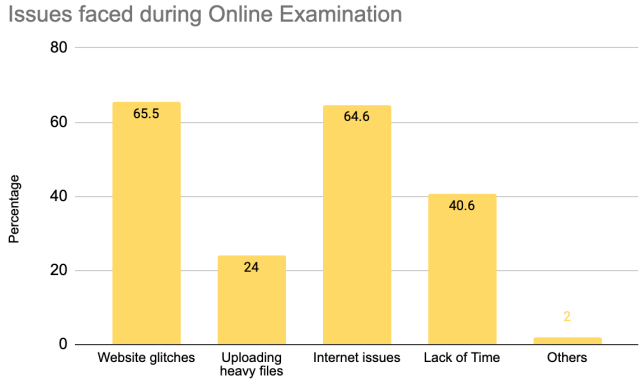

Figure 8: Issues faced during online examination.

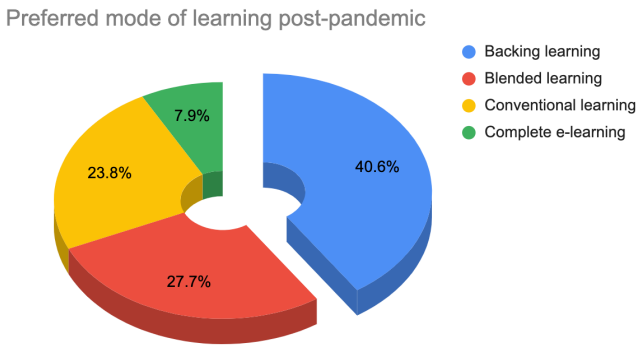

Figure 9: Preferred mode of learning post pandemic

too in the form of 'backing' and 'blended' learning mode. While a little less than one-fourth (23.8%) respondents prefer 'conventional' learning (face to face, physical classroom learning) post-pandemic. However, it is interesting to highlight that only eight percent of respondents are interested in 'complete' e-learning mode after the pandemic.

Conclusions and Suggestions

As per the World Economic Forum, the Covid-19 pandemic also has changed the way how several people receive and impart education. Teachers who are used to face-to-face teaching are now dealing with digital classrooms. Similarly, students are also facing a number of issues related to e-learning. Although this study reveals that e-learning is not promoting interactive teaching among undergraduate students of Delhi University, it is the only escape boat in these difficult times. Digital literacy level among teachers and students needs to be improved in order to promote interactive e-learning by engaging teachers in faculty development programmes for online pedagogy. And by making Learning Management Systems (LMS) and online examination system students (user) friendly and flexible.

According to The School Children's Online and Offline Learning (SCHOOL) survey, half of children in rural areas of India are not studying at all or studying occasionally offline. They do not have access to online education and are drifting apart from their fellow mates. The situation is worst incase of dalit and adivasi childern the survey reports. The biggest challenge for e-learning in India lies in the digital divide. In order to promote e-learning and its advantages, robust internet infrastructure is a need of the hour throughout the country. Also, to bridge the gap of digital divide among the students of less affluent classes, the access of costly digital devices and internet plans should be made affordable by sponsorships or scholarships by educational institutions. According to Huang (2020), Information Communication Technology infrastructure should be made reliable and available for all to promote education for all.

E-learning tools (apps like zoom, google meet and microsoft), online learning courses offered like Massive Open Online Courses (MOOC's), e-books, e-notes, E-Quizzes and tests, audio-video tools and youtube are of utmost importance to promote digital learning. "These educational reforms and rebuilding of e-learning pedagogy requires collaboration and cooperation across institutions at higher education levels." (Meyer & Wilson, 2011). Ways are to be identified to upgrade pedagogy for e-learning to maintain the interest of the students.

This study identified a major shift in habits of using e-devices. Before the pandemic forty five percent respondent had screen exposure up to 2 hrs but after pandemic this exposure of 2 hrs increased for majority of the respondents. It is imperative to consider the impact of long hours of screen watching and spending most of the time on digital devices for e-learning which adversely affect the health of the learners. Screen exposure for longer hours impacted their eyesights, increased headache and mental stress is also noticed. However, it was also identified that the majority of respondents use smartphones and laptops for the purpose of e-learning. This again highlights that long screen hours spent on these devices can cause long-term health problems.

As smartphones are handy and are immensely used by e-learners (students), it will give rise to a new trend i.e. mobile learning or M-learning. The course can be devised in a way appropriate to the mobile phones technology. E-learning resources and courses can be made available on mobile devices such as smartphones and tablets. This could benefit e-learners from remote or rural areas

with poor internet connectivity. Learners with low internet connectivity can also learn with the help of offline apps. "Mobile learning (m-learning) is gaining in popularity in developing countries. It can be considered as a powerful means of opening up learning to all those who might otherwise remain on the sidelines of education" (Kukulska-Hulme 2010).

It is worthy to point out here that this study reveals that students of Delhi University are preferring 'backing' and 'blended' mode of learning over 'complete e-learning' mode post-pandemic. The majority of the respondents partially prefer e-learning as a natural mode of education that too in the form of 'backing' and 'blended' learning mode. Many of the university students do not find online teaching interactive and engaging and this could be a major reason that they are rejecting 'complete e-learning' mode for online teaching. So, the researcher here makes a suggestion to make online teaching more enduring, engaging and interactive.

E-learning shall continue to grow at a rapid pace, and this is irrespective of age, gender, location and subject. The motivation and dissemination of information and knowledge should be maintained in the ambit of physical and mental health of the learners considering various ways for the teaching-learning process. These ways could include experiential learning, blended learning and flipped classrooms including quizzes, animated presentations and use of audio tools to explain topics. This process will not only help in maintaining the innovative online teaching pedagogy but also will encourage the engagement and the interest of the learners. The idea is not to promote e-learning only but to encourage active learning for online teaching-learning processes.

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