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STUDENTS AND TEACHERS PERSPECTIVE ON DIGITAL LEARNING – A SURVEY DURING COVID – 19 LOCKDOWN

Meghashree M[1], Tejaswini P S[2], Yeshwanth P S[3]

1,2 – Assistant Professor, Department of Civil Engineering, Dayananda Sagar College of Engineering, Bangalore, Karnataka, India
3 – PhD student, Administration and Leadership studies, Indiana University of Pennsylvania, Indiana, Pennsylvania, United States of America
meghashree-cvl@dayanandasagar.edu[1], tejaswinips-cvl@dayanandasagar.edu[2], yeshwanth.00013@gmail.com[3]

Abstract The worldwide COVID-19 lockdown has forced schools and universities to close and send their students home which, in turn, has impacted over 91% of the world's student population. The closure has placed unprecedented challenges on governments, institutions, teachers, parents and care givers around the world. With this sudden shift away from the classroom in many parts of the globe, some are wondering whether the adoption of online learning will continue to persist post-pandemic, and how such a shift would impact the worldwide education market. The current study is based on the survey made with the engineering students and faculty members in understanding the uncertain scenario in the sudden shift from classroom learning to digital learning, its effects and issues. Also, an attempt is made to bring out solutions and suggest to the related issues.

Keywords Global digital classroom, e-learning

1. Introduction

Students today find it easy to pick up new electronic devices and learn how to communicate with them — whether it's the newest cell phone or PDA. While it's exciting that most students can use today's tools, there are a few questions to be asked due to the unavoidable lockdown condition and its effects on education system: How effective is the digital learning has the ability to create persuasive communications using different forms of media? How effective is the digital learning helping in imparting foundational skills in conceptualizing, producing, delivering and receiving these communications in their future jobs and personal lives? Are the students and teachers ready to take up the current challenge? The answers are yes and no. While some believe 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, others believe that a new hybrid model of education will emerge, with significant benefits.

Whether it is language apps, virtual tutoring, video conferencing tools, or online learning software, there has been a significant surge in usage since Covid-19.This survey is limited to Engineering students and Faculty members for both UG and PG in order to understand the issues that they are facing in e-learning and teaching respectively due to sudden shift caused by the Covid – 19 pandemic lockdown.

2. Objectives and Purpose of the study

By conducting this survey, we are taking a proactive stance for better understanding in the issues faced by the conduction of online learning and teaching. Also, soliciting students and teachers' feedback allows us to evaluate how the education system is thriving globally. When students are not satisfied in learning their academics, it can lead to high attrition rates and low productivity. A satisfied student often equates to a productive citizen. A productive citizen equates to a productive and happy living.

- To measure the issues in student's learning satisfaction level.
- To study the teacher's perception towards student's receiving end.
- To identify the factors that motivates the students and teachers in digital learning.
- To bring out solutions and suggest to the issues related to digital learning.

3. Methodology

Types of research design - A questionnaire had been prepared that included cross-sectional study, quantitative research methods, linear ordinal scale and unit of analysis for both engineering students and faculty members.

Methods of data Collection -Both primary and secondary data are used for the study. The primary data were collected from the respondents by administering a structured questionnaire through Google forms and the secondary data and few statistics were collected from website, journals, informal talk with the students and teachers.

Sampling -The responses collected through Google form between 21st May 2020 and 31st May 2020 were 263 faculty members and 782 students and respectively in the ratio of 1:2.97 globally.

Reliability & validity of the study -The data has been analyzed through simple analysis technique. The data tool is percentage method. Percentage method is used in making comparison between two or sense of data.

Table1: Data Analysis for Student's perspective

Sl no	Question Description	Type	Options						
1	Email address	Short answer	-						
2	Full Name	Short answer	-						
3	Class of studying	Multiple choice	UG	PG	-				
4	Year of study	Multiple choice	1st	2nd	3rd	4th	-		
5	Branch	Short answer	-						
6	Residing area	Short answer	-						
7	City	Short answer	-						
8	State	Short answer	-						
9	Country	Short answer	-						
10	Name of the digital platforms most frequently used for learning	Check boxes	Zoom	Cisco Webex Meet	Google Meet	GoTo Webinar	Microsoft Teams	Google Classroom	Other
11	Kindly choose the devices through which you are accessing the digital platform	Check boxes	Mobile	Laptop	Desktop	Other	-		
12	Type of net connectivity	Multiple choice	Mobile 2G	Mobile 3G/4G	Dongle	Broadband	Other	-	
13	Connectivity of net	Multiple choice	Excellent	Fair	Poor	-			
14	If poor connectivity, then what are the alternate methods adopted to get digitally connected for your academics? or type NA	Short answer	-						
15	How would you rate your overall online learning experience?	Linear scale	Highly satisfied 1	2	3	4	Dissatisfied 5	-	
16	How would you rate your level of understanding through digital platform as compared to routine learning in classrooms?	Linear scale	Highly satisfied 1	2	3	4	Dissatisfied 5	-	
17	How often were you evaluated in the course of your respective classes by your teacher?	Multiple choice	Always	Some times	Rarely	Never	-		
18	Suggest any alternate online learning method that you would prefer or type NA	Short answer	-						
19	Any other comments you would like to share?	Short answer	-						

4. Findings from Student's perspective

1.The corresponding e-mail addresses were collected in order to have an authenticity over the responses.

2.An overwhelming of 782 responses was received from the engineering students globally.

3.As per the responses, 93.1% were UG students and 6.9% were PG students.

4.Among which, 1st, 2nd, 3rd and 4th years were 27.6%, 30.4%, 25.3% and 16.7% respectively.

5.As the target students were of Engineering stream, the following wide range of responses were received: UG courses such as Civil Engineering – 60.9%, Aviation and Aerospace Engineering – 1.07%, Computer Science Engineering – 7.28%, Construction Technology and Management – 1.07%, Electrical and Electronics Engineering – 9.2%, Electronics and Communication Engineering – 1.07%, Electrical and Industrial Engineering – 2.56%, Industrial Engineering and Management – 2.14%, Information Science – 4.28%, Mechanical Engineering – 9.2%.PG courses including Structural Engineering, Water Resources Engineering and Earthquake Engineering all together were1.5%.

6.Students background also impact on their performance where many of the students that lives in rural areas has low academic achievement when we compared it with the students that lives in urban areas. The information on residing area was collected to know that gives a picture of the facilities available in the locality to access internet, availability of the information that they get from various sources like mass media and electronic media, their educated families and peers groups which help them for better performance. It was observed that 62%, 32.66% and 5.33% were from rural, urban and remote area respectively. Students in rural and remote areas such as villages and few areas in Jammu and Kashmir are less exposed to the outside world and also lack of knowledge about the currents issues that happen.

7,8.A wide range of responses were received from various cities all over the world.

9.As the surveying was done globally, a major response of 92.3% was obtained from India and 7.7% from other countries such as USA, Canada, Africa, Nepal, etc.

10.Though Zoom video conferencing app had complaints of accounts being hacked with several privacy and security concerns, it has seen an unprecedented level of growth in the past month or so due to lockdown. However, Zoom's Latest Security and Privacy Features and Resources with user friendly feature attracted students and teachers to use this platform with the maximum users of 88% followed by Google classroom, Cisco Webex meet, Google Meet, GoTo Webinar and Microsoft teams in India. It was also observed that outside India platforms like Edmodo and Impartus were widely used.

11.Higher engagements of digital classes were accessed through their personal mobiles followed by laptops, desktops and very few ipads and tabs. Research has shown that though mobile technology is a great tool in our teaching and learning experience, many who use it only use it to increase efficiency and not necessarily effectiveness.

12.When it comes to digital learning, connectivity is considered a key factor. Type of connectivity determines the usage of latest technology in different type's hardware and its range of connection speeds. Though a major of 72.3% of 3G/4G network were used, there were still 19.2% of students using 2G network followed by 7.2% of broadband usage. As technology changes, faster internet connections are needed to handle those changes.

13.Internet access opens doorways to a wealth of information, knowledge, and educational resources .A number of factors, however, inhibit full achievement of these gains. Lack of access is first and foremost among these. Lack of broadband connectivity is preventing widespread use of the Internet in education and other areas of life in many countries. For access to be meaningful, it must also be affordable for schools and individuals, and teachers and students must acquire digital literacy and other skills required to make the best use of it. In addition, those teachers and students also need to be able to find and use locally relevant content. In the current survey conducted, 55.24% had a fair connectivity followed by 38.54% of poor connectivity. Only 6.2% students had an excellent connectivity.

14.The students having poor connectivity opted for not having any online classes and instead conducted classes in fast track mode after the lockdown is lifted. Slow Internet connections or limited access from homes in rural areas can contribute to students falling behind academically and lose their interest in learning.

15.The students are left with no option other than virtual learning due to the corona virus pandemic. The teachers are trying their best to teach their students online and have also asked them to contact whenever they face any difficulty in studying. Despite that, 10.92%, 10.7%, 27.83%, 19.27% and 31.26% were the findings on a rating of 5 from highly satisfied to totally dissatisfied. Classroom learning has proved to be better than virtual learning and understanding concepts.

16.The digital learning maybe not perfect, but it is serving the purpose to a major extent and becomes an effective mode in times of crisis. However, it is not as impactful as classroom learning in general. Majority students agreed that it requires coordination between a teacher and students, which is possible when the two are in a face-to-face set-up. In classrooms, students can learn about concepts better and get their doubts cleared easily. 11.77%, 10.27%, 21.62%, 21.84% and 34.47% were the findings on a rating of 5 from highly satisfied to totally dissatisfied.

17.Online video interactions, concept videos and PDF files have enabled educators to continue with the teaching and learning process amid the lockdown. However, this new mode could not take over the traditional mode of learning from the following findings – 19.7%, 44.11%, 26.12% and 10.06% for always, sometimes, rarely and never evaluated respectively. The classrooms teach the real essence of learning to students as the students will be continuously evaluated.

18.Lockdown left no option and with less satisfied students in digital learning majority opted to have neither online classes nor exams. Most of them do not want to take up online classes seriously. Also, it is difficult to cover laboratory experiments through digital mode of learning. Lot of improvements is required in this field and innovation is required to develop a platform that can monitor and cater all needs of students.

19.Hoping for a better tomorrow, student's safety and being alive and healthy should always be the first priority of all educational institutions. Majority of the student don't see any logical and viable way of conducting exams in the lockdown situation. Though exams are needed no doubt the students preferred to be passed on the basis of merit and exams should not be conducted with their lives at stake. A proper revision of the whole syllabus was expected before conducting exams. As a lot of students are from different states and them coming back to college means that they have to get exposed to lot of surfaces and a lot of people which thereby contaminates the college atmosphere puts their lives in danger. With all these views, local government must decide on the necessary action that benefits all.

Table 2: Data Analysis for Teacher's perspective

Sl no	Question Description	Type	Options						
1	Email address	Short answer	-						
2	Full Name	Short answer	-						
3	Designation	Multiple choice	Professor	Associate Professor	Assistant Professor	Lecturer			
4	Engineering Branch of Teaching	Short answer	-						
5	Residing area	Short answer	-						
6	College or Work Area	Short answer	-						
7	StateResiding District/City during Lock down	Short answer	-						
8	State	Short answer							
9	Country	Short answer							
10	Teaching From Home During lock down	Multiple choice	All time		Some Time		None of the Time		
11	Name of the digital platforms most frequently used for learning	Check boxes	Zoom	Cisco Webex Meet	Google Meet	GoTo Webinar	Microsoft Teams	Google Classroom	Other
12	Kindly choose the devices through which you are accessing the digital platform	Check boxes	Mobile	Laptop	Desktop	Other	-		
13	Device Used for online Teachng	Check boxes	Personl		Provided by institution		Borrowed from others		
14	Type of net connectivity	Multiple choice	Mobile 2G	Mobile 3G/4G	Dongle	Broadband	Other	-	
15	Connectivity of net	Multiple choice	Excellent	Fair	Poor	-			
16	If poor connectivity, then what are the alternate methods adopted to get digitally connected for your academics? or type NA	Short answer	-						
17	How would you rate your overall online Teaching experience?	Linear scale	Highly satisfied 1	2	3	4	Dissatisfied 5	-	
18	How was the response/ Interaction of the Students for online classes	Linear scale	Highly satisfied 1	2	3	4	Dissatisfied 5	-	
19	How often were students evaluated during course	Multiple choice	Always	Some times	Rarely	Never	-		
20	The online teaching was carried out through	Multiple choice	Open access platform			Paid version facilitated by institution			
21	How effective according to your opinion is online teaching over regular classroom teaching	Linear scale	100 % effective 1	2	3	4	0% effective 5		
22	Any other comments you would like to share?	Short answer	-						

5. Findings from Teacher's perspective

1, 2. Email address and names were collected for authenticity and it shall be kept confidential.

3. The opinion and experience of teachers comprising of all cadres were collected. 13.2% of them were Professors, 10.5% were Associate professors. 73.7% Assistant Professors.

4. Responses were obtained from various branches of Engineering. Major portion of which was Civil comprising 62.6% followed by Computer Science 15.2%, Mechanical Engineering 7.2%, Electronics and Communication 7.0%, Electrical and Electronics 5.2% Information Science 2.0%, Rest of the branches were 0.8%

5. Residing Area of the teachers were basically collected to know the connectivity of the internet. Most of the Engineering Colleges are in cities. However, the residing place of teaching staff is spread across the state. Some of the staff was located in nearby villages/ outskirts of the city. 65% of them from urban areas, 30% from semi urban area and rest were from rural area where connectivity was quite low.

6. As it was already mentioned the work area was spread majorly in cities. Very few of the work places were at taluk level.

7. During the time of lock down faculty were located in the same city as the college is located. As we have received responses mainly from major cities, the work place and the location of teachers were within the range of maximum 20 km, where as it was even noticed that some of the faculty members were located in the neighboring districts of their respective work place.

8. The survey received response from teachers throughout the country.

9. Majority of the response obtained was within the country.

10. After the lockdown was imposed, the entire nation experienced a sudden halt in education system. The academics started to lag. Thus, the Universities came out with the new concept of teaching i.e. through online. Both students and teachers were new to the full time online classes. 69.7% of the teachers engaged in full time online teaching, 26.3% of them were occasionally teaching from home and rest of them did not take up online teaching.

11. There was a platform required to conduct online classes, either to upload notes, assignments or teach live. As zoom was a very popular online meeting platform available to be used free of cost, it was widely chosen by most of the teaching fraternity. It had a very friendly user interface which everyone could learn overnight and started engaging the classes online within few days after initiation of lockdown. But during engaging of classes there were many security issues raised in zoom by students and also media started showing up it's the lapses. Due to which other modes of online platforms were looked in for as shown in Figure: 1.

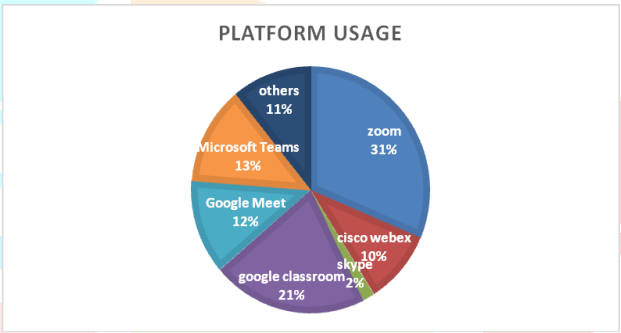

Figure: 1 – Pie chart indicating frequent usage of digital platform in terms of percentage

12, 13. One of the basic need for online class is a system to engage in teaching. But not all of the teaching staff could afford to have either a personal computer or laptop for the same. About 46% of them made use of their smart phones to deliver the classes, 38% used their personal systems available, 12% had systems given by the institutions for working and 4% borrowed systems from their closed ones for conduction of classes. This data shows the commitment of the teachers for their work and the level of self-motivation in educating students.

14,15,16. 70.5% used mobile 2G/3G connections for data connectivity, 24.3% used house broadband and 5.2% used dongle. Though the Broad band connectivity was good, there had anyways few problems sometimes encountered due to bandwidth, as some open access platforms draws more bandwidth during video and screen sharing. But at times of power cut there was connectivity problem and the classes had to be rescheduled to other times.

17, 18. In both the cases 'Covid triggered' digital classes served as an efficient tool but overall impression with chalk and talk and physical class room was more satisfying. A better emotional quotient, spiritual quotient and IQ could not be inculcated easily online to a satisfactory level.

19. The assessment of students during online teaching was important as well as tricky task. The questions need to be set keeping in mind the resources available to students at the time they were taking up the assessment. Though the graph shown in Figure: 2 indicates a good percentage in assessments carried out during early phases, at the later stages some of the universities have even switched over to conduction of exams in online mode to assess and promote students to higher semesters.

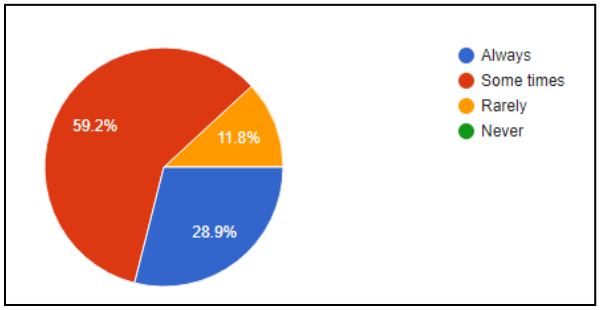

Figure: 2 – Pie chart indicating how often students were evaluated during course in terms of percentage

20. A majority of the cases used open access platforms for teaching mode. However, only about 4% had paid versions available, facilitated by their respective institutions.

21. When asked to share the opinion about online teaching on a scale of 5 mixed opinions were obtained. 4% of them stated it as poor and felt that it is difficult to provide the same level of education to all students - especially to those in rural India, 10% cited below average, 45% said it was average, 28% were feeling good and 13% of them were completely satisfied about the online teaching.

22.There was a mixed opinion about conduction of online classes. Teachers commented that there were problems due to misbehaving of students during classes. The effort put up by teachers for conduction of classes was not appreciated by students to their expectations. The faint responses to questions asked during the sessions indicated students were just login in and were not giving their attention to the complete sessions. Proper support and facilities will help teachers to continue with this new mode of teaching and learning.

6. Conclusion

The sudden, forced immersion of learners into virtual learning during this period of Covid-19 has proved that the education industry is disrupted. Education is going to be digital in the foreseeable future and with the right infrastructure and policies in place, we would be better prepared to handle it.

As the digital learning acceleration continues, it also throws light on the digital divide in India. Students from remote districts and those belonging to poor communities lack the infrastructure and the means to reap the benefits of online learning. Greater penetration of telecom network and rolling out 5G services will give a huge impetus to this sector.

Overall we see there is a mixed opinion from both the student as well as the teaching fraternity. This might be due to a sudden imposing of the online education system. With days to come, this field can prepare itself for the online mode of teaching as it can be a boon to the teaching industry in time of a Pandemic like Covid19.

At pandemic times like this, social distancing is the mandate need of the hour. It is in fact a great challenge to practice social distancing as it requires either increased infrastructure or staggering the timings. Again this may add in an extra burden on the teaching staff to work for extra hours. Also there will not be interaction with many people around on daily to daily basis. So, this online teaching method can restrict the movement of large number of students throughout the country in turn help in curtailing the spread of the disease.

There is a need to equip teachers with effective tools available online, train them for making online education more fruitful. Activity based teaching can be adopted to motivate and build interest in students and regular assessments can be conducted to assess their understanding level. It is required to equip teachers with required recourses and platform to boost their morale, as they too are undergoing mental stress during times of pandemic like this.

Team activities and games related to courses can be planned by teachers apart from regular conventional method of teaching even in the online mode. However, as an overall opinion to digital learning, at this point of time when the classes cannot be conducted face to face, this method of online education has served the purpose.

7. Scope for further Study

1. Effect of mental health on teachers and students due to online education.
2. Saving of resources due to online classes' that add to sustainable usage and saving of paper.
3. Effect on student faculty ratio in teaching institutions after adopting online teaching pedagogy

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