

# Role of Digital Learning in Higher Education During COVID-19 Times

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Received: 05 May 2020 Revised: and Accepted: 15 July 2020

**ABSTRACT:** Digital Learning for long has been looked as a powerful technology to meet the challenge of significantly improving the quality and effectiveness of the teaching learning environment in higher education landscape. The sudden closure of the educational institutions due to Covid-19 Pandemic has opened immense opportunities to lean on to digital learning to effectively bridge the void and sustain educational activities during the prolonged lockdown of educational institutions. The teaching faculty as well as students have taken this opportunity in the right earnest and effectively saved the teaching loss during the academic semester. The present survey is aimed at assessing the ease of utilization of Digital Learning as well as its efficacy in imparting quality education during testing COVID-19 times and beyond. The survey has identified the grey areas that need to be addressed to make digital learning more effective and acceptable to both the teachers and the students.

**KEYWORDS:** Online teaching; online education, higher education, COVID-19, classroom teaching

## I. INTRODUCTION

Digital Learning is a big umbrella term which is very popular and has been accepted by everyone in recent decades as a powerful means to support those in the world of leaning and also in the world of work. In simple terms, Digital learning means learning by the means of electronic gadgets and devices, which includes Computers, Internet, YouTube, Video Conferencing, PowerPoint presentation and so on. Digital Learning is "learning facilitated by technology that gives students some element of control over time, place, path and/or pace." [1]. Digital environment of learning permits both the teachers as well as students to effectively utilize the vast reservoir of knowledge and enhance learning by practicing partially online and partially personally innovative methods which help in improving the teaching learning process. Digital Learning also allows us to remix and create. Teachers may remix a content source for their students, while students might use remixing to build and demonstrate skills, or while becoming participants in sustaining culture (Ladson-Billings, 2014). [2]

Education through digital mode is not a new development. Since decade individuals and universities are using these technologies, but not whole heartedly because of the perception of parents and teachers towards digital learning. Knowing the fact that this technological shift has been a continuous development and it is likely that this trend will carry on further with high impact and beneficial technology, we should plan to adopt Digital learning in higher education now that we have experimented mixed feelings and impact in sustaining the teaching learning activities of colleges and universities during prolonged lockdown due to Corona Pandemic and should try to address some of the barriers that are coming in the way of digital learning. It is therefore important to review the impact of Covid-19 on higher education and the role Digital Learning could play for sustain the quality of education during the new normal during Covid-19 and beyond.

It is estimated that approximately 1.38 billion learners are impacted by Covid-19 Pandemic worldwide as per UNESCO report, Covid-19 Educational Disruption and Response, 2020 and also Statista. [3]

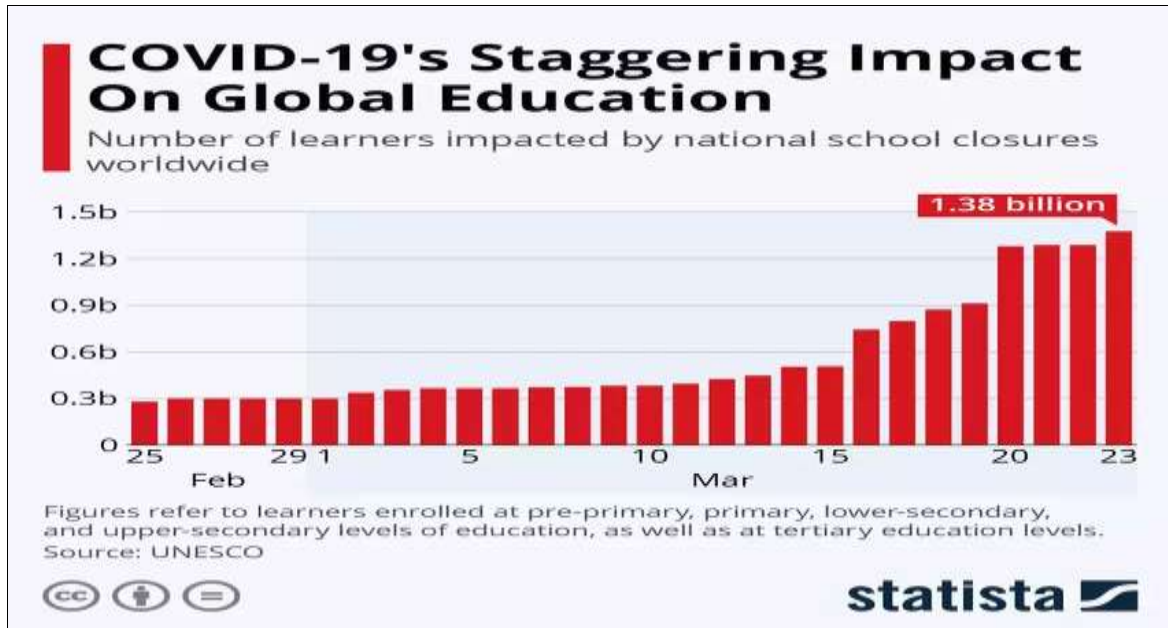


Fig. 1 Graphical representation of the data, Source: UNESCO

Even before COVID-19, there was already high growth and adoption in education technology, with global educational technology investments reaching US\$18.66 billion in 2019 and the overall market for online education projected to reach \$350 Billion by 2025. 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.[4]. During this eruptive time, when whole world has come to a halt, Digital learning and online education have emerged as powerful tools to sustain educational activities in academic globe in these challenging times. Here in India too, the adaptation of Digital Learning in colleges and universities has seen a rapid upsurge during Covid-19 lockdown from March 22 onwards this year. A survey has been carried out by the authors to see the usage and effectiveness of digital learning by students and teachers in higher education during the current days due to the COVID-19.

**II. OBJECTIVES OF THE STUDY**

The objectives of the present study are:

- To assess the adaptation of digital learning in receiving education through online mode.
- To obtain feedback of faculties and students on using online classes as compared to classroom learning.
- To find out how COVID-19 has impacted student’s future plans for higher studies/oversees studies.
- To assess the student’s anxieties for online examination and future career prospects.
- To collate feedback regarding the problems/issues acting as hurdles in receiving of education through online education

**III. DESIGN AND PLAN OF THE STUDY**

Using an online survey service, the authors developed an online questionnaire as an instrument for this survey study. There were two separate questionnaires- 10 questions for teachers and 10 question for students. A random sample of total 412 respondents (202 teachers and 210 students) were drawn between 17 April and 30 May 2020.

For the present study, the sample was drawn from Faculty members teaching at graduation and post-graduation levels in universities, colleges and institutes of Delhi and NCR and students doing graduation and higher education from Delhi NCR and few doing higher education from abroad. The data was collected through online survey. Following questions were asked from students including effectiveness of online education, online examination, student’s recruitment and major hurdles in receiving of education through online education.

**IV. RESEARCH QUESTIONS ASKED FROM STUDENTS**

| V. Research Questions Asked from Students |   |
|---|---|
| 1   | Education Level- Graduation or Post Graduation  |
| 2   | Do you have enough facilities available to receive Education through online mode?   |
| 3   | Do you agree that online education can be imparted in the same effective manner as face to face education?                  |
| 4   | Do you think that your teachers are technically equipped to impart education through online mode?                           |
| 5   | Are you aware of E-labs and Virtual labs are being used for online practical classes?                                       |
| 6   | Has COVID-19 impacted your future plans for higher studies or for overseas study plans?                                     |
| 7   | Are you worried how to give online examination as you are receiving classes online?   |
| 8   | Are you worried about your placement as you think COVID-19 may result in fewer jobs for freshers?                           |
| 9   | Please mention your suggestions/major problems/issues acting as hurdles in receiving of education through online education? |

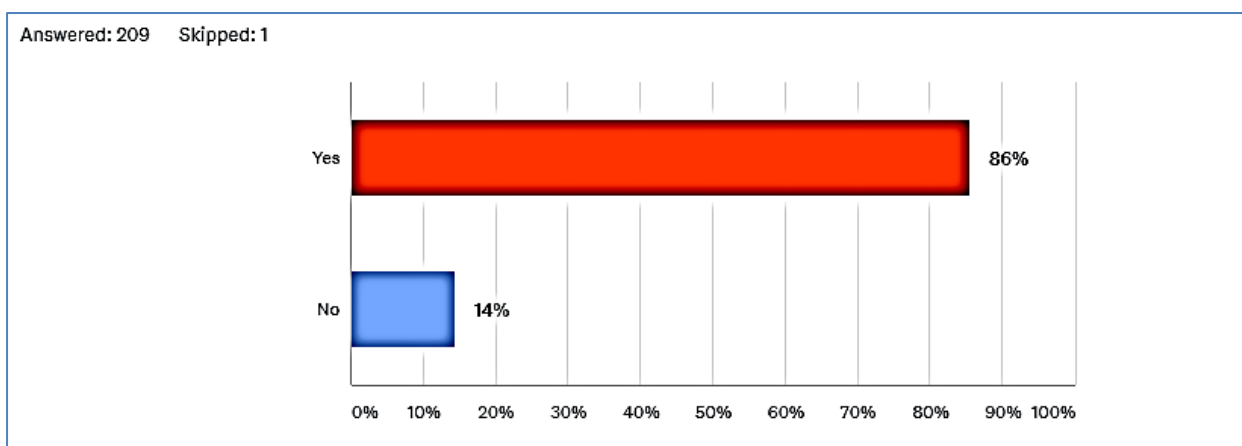
The above questions were further interpreted and explored, and the interpretation is as follows:

**Q1. Education Level-**

| Education Level | Responses |            |
|-----------------|-----------|------------|
| Graduation      | 71%       | 147        |
| Post-Graduation | 29%       | 61         |
| <b>Total</b>    |           | <b>208</b> |

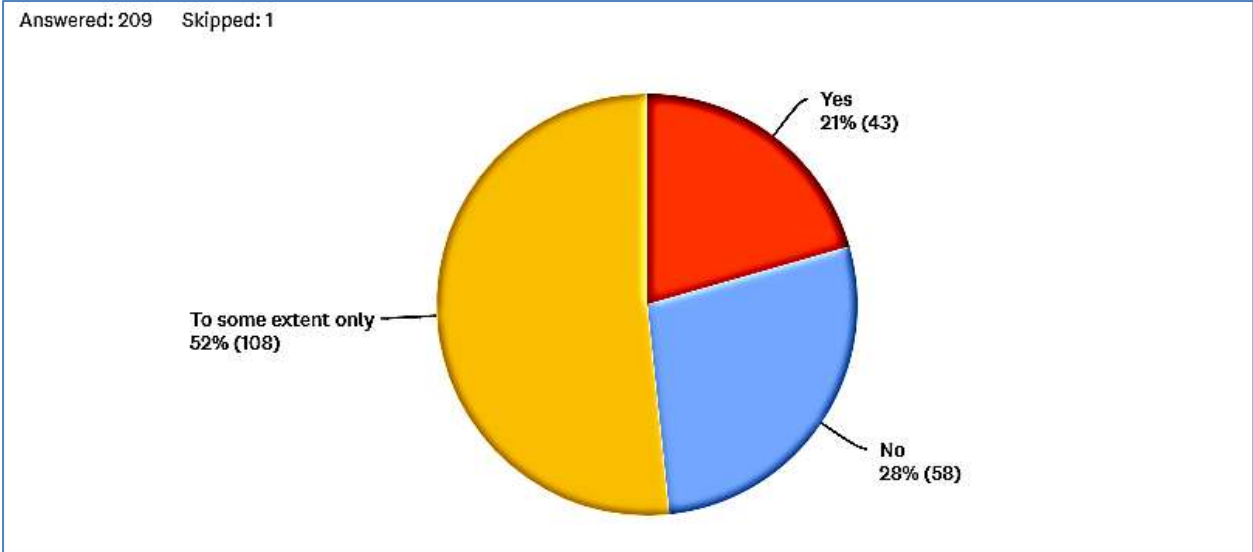
208 students participated in the survey out of which 147 students are currently pursuing graduation and 61 students are doing post-graduation and 2 students skipped the response.

**Q2. Do you have enough facilities available to receive Education through online mode?**



Out of 209 students who responded to this question, 179 students (86%) mentioned that they have the facility to receive online education whereas 30 students responded that they don't have such facilities.

**Q3. Do you agree that online education can be imparted in the same effective manner as face to face education?**



21 % students expressed that online education is effective as face to face education, 52% students felt that online education can be effective only to some extent whereas 28% students mentioned that online education is not effective as face to face teaching.

**Q4. Do you think that your teachers are technically equipped to impart education through online mode?**

| Answer Choices      | Responses |            |
|---------------------|-----------|------------|
| Yes                 | 52%       | 108        |
| No                  | 13%       | 26         |
| To some Extent only | 35%       | 73         |
| <b>Total</b>        |           | <b>207</b> |

52% students expressed that teachers are technically equipped to impart education through online mode while 13% students feel that teachers are not well versed to impart online education 35% students felt that teachers are only able to impart education to a certain level and need further exposure.

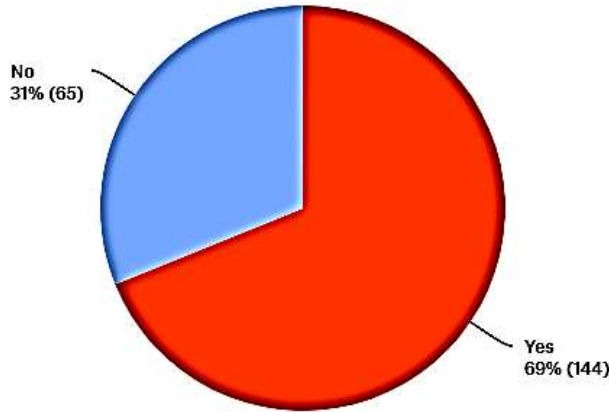
**Q5. Are you aware of E-labs and Virtual labs are being used for online practical classes?**

| Answer Choices | Responses |            |
|----------------|-----------|------------|
| Yes            | 33%       | 70         |
| No             | 67%       | 139        |
| <b>Total</b>   |           | <b>209</b> |

Only 33% of the students were aware of E- Labs and virtual labs that can be used for online practical whereas 67% of the students were not aware about these online virtual labs.

**Q6. Has COVID-19 impacted your plans for higher studies or for overseas study plans?**

Answered: 209 Skipped: 1



69% respondents said that COVID-19 has impacted their plans for higher study or to study abroad and 31% do not have any impact.

While comparing the response of students pursuing graduation as per response to question 1- 71% (104 out of 147 students) have felt COVID-19 impact as compared to post-graduates – 61% (39 out of 61 students).

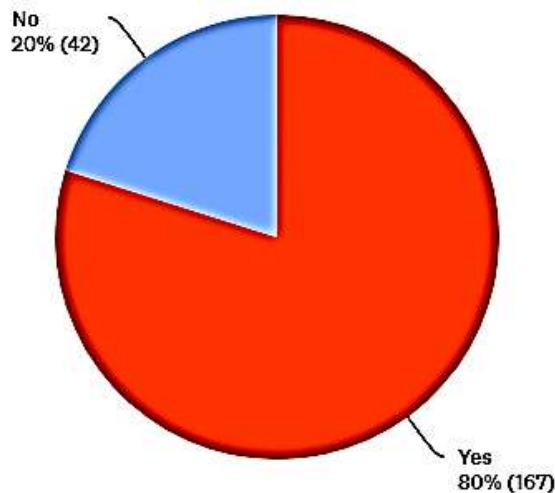
**Q7. Are you worried how to give online examination as you are receiving classes online?**

| Answer Choices | Responses |            |
|----------------|-----------|------------|
| Yes            | 72%       | 151        |
| No             | 28%       | 59         |
| <b>Total</b>   |           | <b>210</b> |

72 % respondents answered that they were worried about online examination whereas 28% students were confident to give online examination.

**Q8. Are you worried about your placement as you think COVID-19 may result in less jobs for freshers?**

Answered: 209 Skipped: 1



80% students were worried about their placement as they think COVID1-19 will result in less number of jobs in the market for freshers while 20% students were not worried about placement.

Comparing the response of students pursuing graduation and those pursuing post-graduation as per response to question 1, the impact of COVID-19 on placement was felt to be almost same -78% (114 out of 147 students) graduates and 84% (51 out of 61 students) post-graduates.

**Q9. Please mention your suggestions/major problems/issues acting as hurdles in receiving of education through online education?**

As part of survey, we asked students to share the biggest challenges and issues in receiving education through online education during corona virus.

- Here are few of the responses we received:
- ✓ The only hurdle that I feel is that there no or very less interaction between teachers and students therefore concepts are not that easy to understand. Also, this whole online learning is very new to both teachers and students
- ✓ Eyes start painig due to seeing laptops for longer duration. This impacts our focus of study and I can't focus properly. Also, connectivity issues are there due to which pace of the class disturb. Also, internet problem is there
- ✓ Internet Connectivity is one of the major issues. Generally, the poor network connectivity hinders the process of teaching-learning via online mode
- ✓ For architecture subject online classes is not an option
- ✓ It is a good experience but to some extent only
- ✓ I am getting a wonderful environment in Online classes. It is a new experience as a student in my life and I guess we should try to follow this online education system forever because sometimes poor children's cannot efforts higher studies because of rent and all but due to this system I think they can also get chance of studying
- ✓ Some new changes are required to adopt in the education system for implementation of e courses... For e labs Advance computer skills are required to teach each and every one so that they can Handel e and visual labs.
- ✓ Online classes are not as much success as we are implying it to. Face to face interaction is very much important for teachers and students. Yes, it's an solution but definitely not an alternative.
- ✓ Idea of online examination with a time limit is not good because of poor connection of Internet. And some students of J&K are not able to attend live classes. How can they give online exam?
- ✓ Some concepts can only be understood in face to face interaction
- ✓ Mainly network issues on both ends. Also, face to face learning is more efficient as it helps one remain more focused and attentive.
- ✓ The process is quite cumbersome when it comes to online class as we as students can be lazy about dressing up and waking up early as the teacher cannot see us. Also, no matter how strong your class in terms of unity and the understanding between the teacher and the students is, there is always a problem of interaction. Online classes tend to be less interactive.
- ✓ As a student I am not able to give online examination as I don't have digital instruments like laptop and webcam on my pc.

**3.0 Research Questions Asked from Faculties**

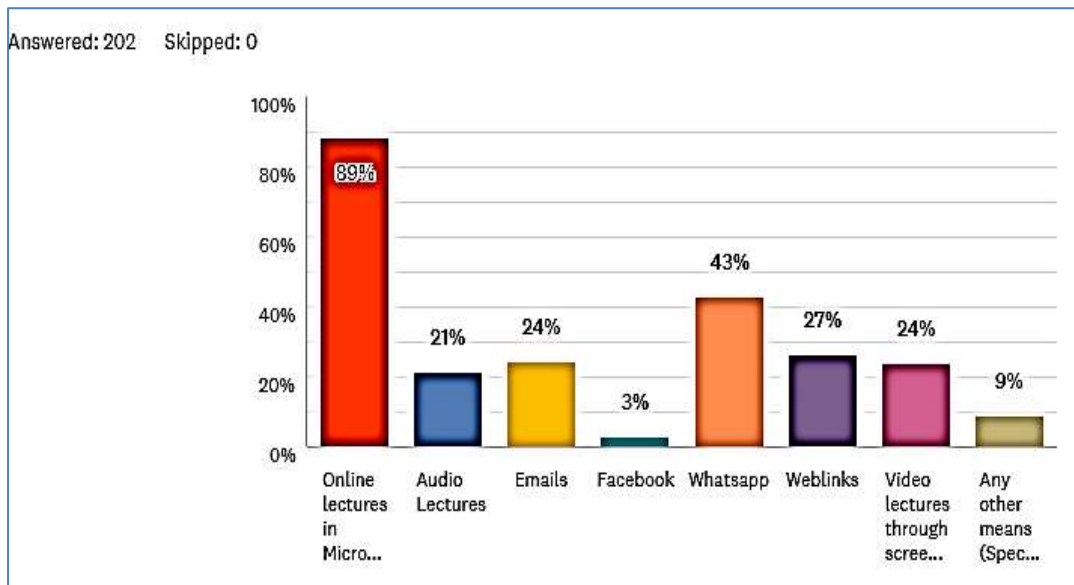
| Research Questions asked from Faculties |  |
|---|--|
| 1                                       | Are you comfortable in imparting online education to your students during COVID-19?                            |
| 2                                       | Which approach you are using for transmitting online education. You may select more than one option?           |
| 3                                       | Do you considered that online education can be pass on in the same productive manner as face to face education |
| 4                                       | Do you think that students like and prefer online education as compared to face to face teaching?              |
| 5                                       | Do you prefer online mode of education above face to face teaching?  |
| 6                                       | Do you think that all the faculty members are technically equipped to impart online education?                 |
| 7                                       | Are you using E-labs and Virtual labs for online practical classes?  |
| 8                                       | Do you think that students have necessary facilities available with them to receive online education?          |
| 9                                       | Please write the major problems/issues acting as barriers in passing on education through online mode?         |

**Q1. Are you comfortable in imparting online education to your students during COVID-19?**

| Answer Choices | Responses |            |
|----------------|-----------|------------|
| Yes            | 92%       | 185        |
| No             | 8%        | 17         |
| <b>Total</b>   |           | <b>202</b> |

92% faculty members were comfortable in imparting online education to their students while only 8% were not comfortable in imparting online education.

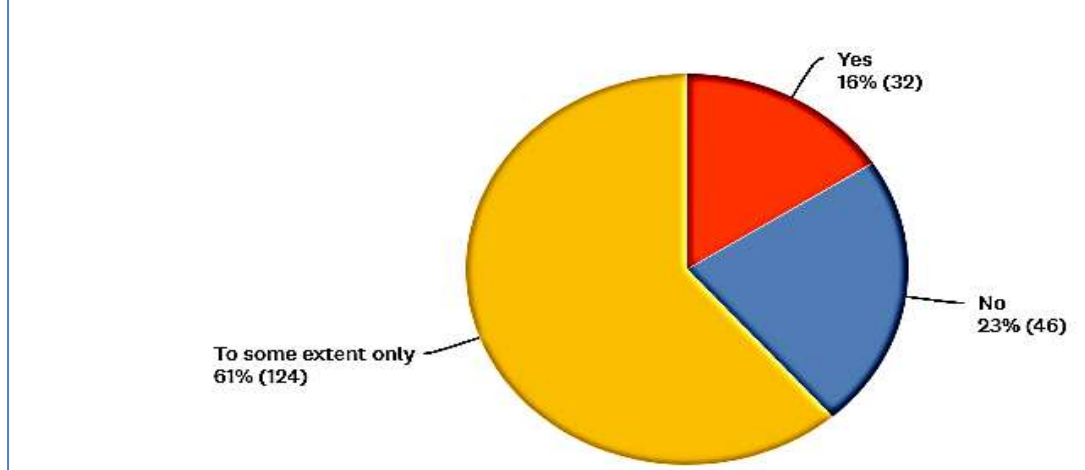
**Q2. Which approach you are using for transmitting online education. You may select more than one option?**



89% respondents were using Collaborative meeting tools like Microsoft Teams, Zoom, WebEx to impart online education. Along with this, at times the respondents have also used other tools like WhatsApp, Weblinks, Audio / Video lectures for taking online classes.

**Q3. Do you consider that online education can be as effective as face to face education?**

Answered: 202 Skipped: 0



16% faculty members considered that online education is as effective as face to face education. However, 23% felt that online mode of teaching is not effective as compared to face to face education and 61% respondents had mixed opinion that online mode of education can be useful to some extent only.

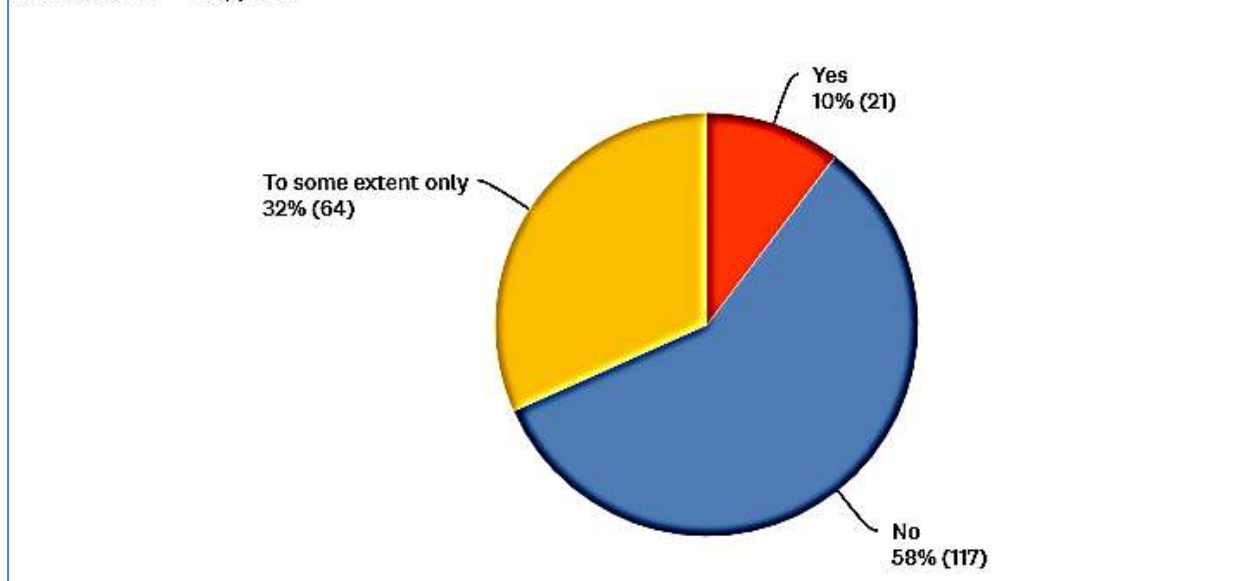
**Q4. Do you think that students like and prefer online education as compared to face to face teaching?**

| Answer Choices      | Responses |            |
|---------------------|-----------|------------|
| Yes                 | 10%       | 21         |
| No                  | 35%       | 70         |
| To some extent only | 55%       | 111        |
| <b>Total</b>        |           | <b>202</b> |

According to faculty members, only 10% teachers felt that students are preferring online education as compared to face to face teaching while 35% respondents felt that students are not liking the online mode.55% teachers had a mixed reaction and mentioned that students are liking online teaching to some extend only which could be forced in current COVID-19 scenario.

**Q5. Do you prefer online mode of education above face to face teaching?**

Answered: 202 Skipped: 0





58% faculty members did not prefer online mode of education above face to face teaching and only 10% preferred the online mode of teaching. 32% faculty members are still in a mixed mode of state and are liking online education to some extent only which could be due to current COVID-19 scenario.

**Q6. Do you think that all the faculty members are technically equipped to impart online education?**

| Answer Choices      | Responses |            |
|---------------------|-----------|------------|
| Yes                 | 22%       | 45         |
| No                  | 40%       | 81         |
| To some extent only | 37%       | 75         |
| <b>Total</b>        |           | <b>201</b> |

22% faculty members felt that they are technically equipped to impart online education while 40% felt that they are not technically equipped to impart online education and 37% teachers are equipped to some extent and are managing the current online classes.

**Q7. Are you using E-labs and Virtual labs for online practical classes?**

| Answer Choices | Responses |            |
|----------------|-----------|------------|
| Yes            | 16%       | 33         |
| No             | 84%       | 168        |
| <b>Total</b>   |           | <b>201</b> |

Only 16% teachers are aware of E-labs for online practical classes and are using the same whereas 84% are not using E-labs and virtual labs.

**Q8. Do you think that students have necessary facilities available with them to receive online education?**

| Answer Choices      | Responses |            |
|---------------------|-----------|------------|
| Yes                 | 22%       | 45         |
| No                  | 28%       | 56         |
| To some extent only | 50%       | 101        |
| <b>Total</b>        |           | <b>202</b> |

22% teachers felt that students are well equipped and ready to take online education whereas 28% respondents felt that students do not have necessary facilities to take online education. 50% of the faculty members responded that the students are somewhat ready to some extent only to take online education.

**Q9. Please write the major problems/issues acting as barriers in passing on education through online mode?**

As part of survey, we asked faculty members who are in higher education to share the challenges and issues in receiving education through online education.

Here are few of the responses we received:

- ✓ Less interactive because of connectivity issues
- ✓ Face to face teaching is more effective than online
- ✓ Technical glitches, lack of training in using online portals, class engagement in case of big classes, lack of commitment from students in some cases, conducting practical with virtual labs was a challenge.
- ✓ Education is the process of learning the skills of accessing, understanding and applying Consciousness to develop a good personality and Character. As mentioned, many times, it is not the sound, the words, the notes which matters, it is the ability of a teacher to skillfully open and ignite the consciousness of the student. This can happen in Face 2 Face mode only. Online mode is a Entropy driven process. Teaching should bring ORDER in the life of an Individual NOT chaos and entropy. Hence Online Education can never be equivalent or replaced with face 2 face teaching methodology.
- ✓ The mode is technically more biased towards few subjects such as computer, software engineering, other similar theoretical sub, most biological sub is more about doing in hand, and learning through experience. Second, internet speed, computer availability, versions, handiness in using latest tech modes are sometime tedious and frustrating when one can't access easily, quality of AUDIO, VIDEO, threat of hacking, occupational health hazards, behavior stress due to long uses etc.
- ✓ There are so many things which can be resolved by face to face interaction. Teachers is not only educating but have capabilities to read so many things by student's body language and can adopt direct and indirect methods to handle situations. Education is social interaction and being rational social human being, excess interaction via machine may bring many emotions at verge of extinction
- ✓ All students are not comfortable through online mode. Sometimes faced the technical issues in connectivity due to location or internet connection. Not suitable for all the concepts.
- ✓ I think that the online education through Microsoft team is quite effective although one student in my M.Sc. class who lives in a village invariably faces internet issue. The other issue is regarding conducting of Practical's.
- ✓ Everyone is at home with limited devices like laptops and smart phones. If a family has 2 kids and 2 working parents, then it is very difficult to work from home as they have to share the devices
- ✓ Few students do not switch on the video so in a class of large number of students, it is difficult to ensure whether they are actually attending the class or not. At times, not always, due to technical issues, we teachers loose on transaction time. Noting the reaction of students in class in real time is one of the major indicators of learning being effective, which is difficult in this case. Assessment for learning has become more challenging. Increased screen time also increased stress on eyes. Preparation and planning of sessions has become more time consuming. Moreover, it has taken away the joy of being with children face to face which used to add viability to our daily routine.
- ✓ limited control of the class with teacher and limited screen view in teams so all students cannot be seen at one time
- ✓ Practical and Experimental sessions are very difficult to take
- ✓ Monitoring work when given during online sessions, time lag, network disruptions prevent quick feedback, interaction between students cannot be witnessed or assessed, group work and presentation takes more time
- ✓ I think time and practice has faded the problems and made it better day by day.
- ✓ Though this generation is more tech savvy and can easily adapt to the online education, but the uniqueness and interaction, connect that face to face education can provide cannot be substituted with online mode. At the same time, this mode compliments classroom teaching but not all students' benefit. The challenges too are umpteen ranging from connectivity issue at the teacher or the taught end to clarity of concept. Multiple discussions that happen in the class and the teacher's ability to gauge learners' comprehension also somewhat suffer. All students may not be equally equipped to handle and understand through an online class and the use of multiple senses to learn is betrayed. to add to these woes, too much screen time isn't doing any of us any good. However, the silver lining is the fact that this has provided a platform to stay connected with the students.
- ✓ Managing younger learners' engagement for long duration, emotional connection, technology infrastructure in learners' homes, online etiquettes, teacher competency in designing optimized learning experiences on online forums they are using same approaches through online medium. Online assessments
- ✓ Lack of infrastructure and Digital Training of the faculty members and students both.
- ✓ I think it really depends on how an individual approach his learning. Some might find delivering study materials online quite useful and ways to grasp, however, there might be few who would prefer to have face to face learning approach as you would be able to impart education in a more personalized manner.

## **VI. CONCLUSION BASED ON THE SURVEY**

- (i) Many students and teachers highlighted that Internet availability and Internet bandwidth are the major concerns

- (ii) Most of the students have got sufficient facilities available to receive education through online mode. However, students feel that face teaching is more effective.
- (iii) According to students, the teachers are technically equipped to impart education through online education.
- (iv) The students are worried about online examination as well as placements as they think COVID-19 may result in fewer jobs
- (v) Students feel that COVID-19 has impacted their plans to pursue higher education and plans to study overseas
- (vi) The teachers have expressed that they are comfortable in imparting online education to their students. However, the teachers feel that online education may not result in same productivity as can be imparted using classroom teaching and hence would not prefer online mode of education.
- (vii) Most of the teachers were imparting Online lectures using Microsoft Teams, Zoom, Audio/ Video lectures, WhatsApp, emails and other available tools
- (viii) Most of the students and faculty members are not aware of Virtual E-labs for practical subjects/or have not used the same.

### 7.0 Areas to be explored to bring in a positive change in the higher education by using Digital Learning:

- (i) A positive attitude and a flexible approach to adapt to new technologies and collaborative tools would be the key to make Online Education more effective.
- (ii) Strong student-teacher interaction during online teaching can positively improve engagement, achievement, and meaningful connections.
- (iii) In online teaching, teacher must provide opportunities for higher order learning, experiential learning to engage students to enhance their learnability.
- (iv) Need to explore effective online assessment tools/rubrics so that students know how they are being assessed in online education
- (v) Although online education can be a good supplement to classroom learning in this time of emergency, but most students and teachers have felt that it cannot fully replace the classroom teaching. However, this opens up new opportunities and areas to explore and the time has now come to start using blended mode of teaching-use digital mode of education alongside with classroom teaching and couple this with real time exposure to industry in the form of internship.
- (vi) Students should take some education using digital/ online teaching along with this attend 2-3 days of classroom teaching during the week which should be used to impart experimental based teaching and the students can do part time jobs/ internship in their field along with studies during the rest of the days of week. This pattern of imparting studies is quite prevalent in countries like Australia, UK, USA, Germany where students attend classes 2-3 day a week. During the remaining days of weeks, the students carry out their experiments, assignments, projects, research and presentations along with gaining practical real time exposure by working part-time that gives them confidence and prepares them to face the real world by the time they graduate.

The time has now come to improvise the curriculum to take education to the next level by blended learning and maximize the benefits digital and online education to improve both the quality and efficacy of teaching learning environment in colleges and universities.

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