

A STUDY ON ESTABLISHING THE ONLINE TEACHING-LEARNING FOR HIGHER EDUCATION DURING COVID-19 IN INDIA

Robin¹, Neeraj Dhiman², Anand Chauhan³

¹Department of Mathematics, Graphic Era Hill University, Dehradun, India.

²Department of Mathematics, Graphic Era Hill University, Dehradun, India.

³Department of Mathematics, Graphic Era deemed to be University, Dehradun, India.

Email: robinsingh@gehu.ac.in¹

Received: 14 March 2020 Revised and Accepted: 8 July 2020

ABSTRACT: This study has been compiled during the lockdown period due to the outbreak of corona virus (COVID-19) pandemic in India. This work has been carried out at the time when the “work from home” initiative was announced by the Government of India, and all academic institutions were advised to take online classes. Observing the situation, research on establishing the online teaching system was conceived. In the second week of lockdown period, when there was an appeal for inviting ideas/suggestions, during the campaign launched by the MHRD, India¹, this research work became even more certain of the academic transformation. Thus, the results of this study have proved the actual aspect of the online teaching-learning process. The predictions substantiated by fact may continue to come true in the future as well. These results have come about as a response of 310 teaching staff to the survey conducted and evaluated during the period.

KEYWORDS: Teacher feedback, Online education, Survey analysis, Higher education, Teacher effectiveness

I. INTRODUCTION

With the starting of campaign “Bharat Padhe Online” of MHRD in India¹ and movement of higher education system towards online teaching- learning process during COVID-19, a survey study was carried out. The data was analyzed to measure the consequences of sudden and remote online classes from the point of view of teaching staff of different departments from various universities. During the lockdown period, faculties were advised by educational governing bodies UGC, AICTE, MHRD, to continue teaching-learning in institutions and universities in order to fight COVID-19 and breakthrough during the prevailing situation by adopting ICT for teaching-learning process and contribute towards the intellectual wealth of the nation^{2,3}. To ensure uninterrupted teaching and learning at home and minimize academic loss by leveraging the potential of ICT and UGC has also shared links of digital platforms developed by MHRD and UGC. Furthermore, Government took actions to create awareness amongst the academic fraternity by using the websites, e-mail, sharing through social media apps like WhatsApp, Twitter, Facebook etc⁴. At this time, faculty members were supposed to undergo a teaching-learning transformation or "academic revolution" at the most fundamental level and transform the process and cherish each student⁵. Students as well as faculty members were also advised to develop the conviction that with such an online teaching-learning process, they can establish a smooth and productive academic environment⁶. With these advisories, teachers were given facility to teach online from home so that teaching-learning process can be continued, without any loss, in academic year 2019-2020. People from higher education in this time expected to become capable of taking the present situation as an opportunity to test the online classes' efficiency so that some future decisions and plans can be drawn on the basis. These academic professionals engaged in the noblest action of reaching out to students and gave hope and encouragement through phone/ video/various other technology mediums. Each faculty member had to make efforts to transform physical classroom teaching into the online classroom, develop confidence and conviction in the power of online facilities, for which they had to polish themselves to strengthen their online teaching skills and strive hard in the exact accord with students. At the time, each educational body had to overflow with creative and dynamic momentum to foster national and international youth through video lessons, audio ppts, live classes, and various other mediums, thereby leading to victorious India in this challenging time.

II. LITERATURE RIVIEW

In the past (before lockdown period), in regular semester in higher studies in India, not a single teaching staff used technology in all three ways-teaching, learning, and assessment. Many researchers, however, have already

confirmed the importance of online education. Online teaching is a rapidly growing segment Deming [1-2]. The lecturers have most important role in higher education [3]. Recorded video lectures, subject notes bring higher education easy approachable to students those unable to attend face to face lectures or to assist students with alternative learning styles [4].

Some universities record videos at the time of live lectures and get it available online for students. Low attendance students mostly use these video lectures, but it is also useful for the students to revise the topic taught previously [5]. Moreover, all those who started flipped classes and implemented were able to make online education systems easier and it's demand is also increasing for future education systems [6]. Recently, the relations of Five-Factor Model of Personality (FFM) and the linguistic styles during the academic performance in fully online asynchronous classes were examined by Jo Ann A. Abe and concluded that the personality and linguistic individualities of students who perform well in online classes are hypothetically coherent and similar to those in traditional face-to-face classes [7]. The students who do well in face-to-face classes are also likely to do well in online classes.

Nevertheless, from the faculty perspective, online classes are less effective with respect to the traditional way of face to face teaching and delivering a lecture through online mode is difficult and time-consuming [8-9]. A study was also conducted to see the effect of online education in nursing course and concluded that students could not have real-world experience if online classes are the only mean to teach students. So, the academicians had to customize the curriculum by using community-oriented pedagogy Smith, G. G. et al [10]. By providing valuable online lectures on a payment basis, an institute can earn more, but according to some to the responses, face-to-face lectures are a more effective way of learning. However, from another thought, students will use online lectures and get benefit from them if they are free, and most of the students do not take online lectures seriously. A few students, however, find them very valuable according to Taplin, et al. [11]. Keeping all these views in mind the survey was conducted when teaching staff had no other choices to conduct teaching and engaging students online.

The Internet-related self-efficacy was deeply studied and concluded that all the sample for the study was mostly taken from university, not from alumni of the universities. And suggest that in future online teaching and learning will involve the interviews. In the online learning system, academicians should have a high level of self-efficacy associated with positive learning outcomes [12], also Professional training courses and a variety of reference materials, as well as appropriate incentive scheme, can motivate teachers to voluntarily participate in online training [13]. The online behavior of young students on social media and the online education study and concluded that more graphical representation, realistic and meaningful posts with comments give a boost to the student for the discussion and learning through social media [14].

The social presence and individuality remain the relevant topics of study for online learning researchers. A common language will be adopted by educational researchers to encourage student learning for the development of online course development [15]-[16]. To update and upgrade the online learning of the global south government should evaluate and monitor regularly, start digital game-based learning, Massive Open Online Courses (MOOCs), intelligent tutoring systems and promote MOOC's in the curriculum in higher education [17].

A sustaining personal learning environment using a variety of social media can be entirely adapted by a student according to their requirement of learning. This pedagogical research should be conducted to trace students' paths of social media so that the student's personal learning environment will be according. It may differ from one student to another [18].

III. CONCEPTUAL FRAMEWORK

Teaching staff involved in online classes by undertaking the above advisories on academic transformation during COVID-19 were the respondent to fill the survey in this research work. A random sample of 310 teaching staff was the respondent of this survey from INDIA. As per the model, depicted through fig.1, various factors incorporated to carry out meaningful research so that appropriate data could be collected and then evaluated. The obtained data was analyzed in integrated form using included ten factors (F1-F10), and nine key Indicators (K1-K9) mentioned below. Which ensured the actual aspect of the real phenomenon of the online teaching process " work from home " for higher education in technical and non-technical institutions during the lockdown period of COVID-19. In this framework (fig.1), the first three factors describe the individual character and provide the basis for this research on faculty thinking during the COVID-19 lockdown period. To represent a teaching staff as an entity - first factor (F1), age and gender which represent the attribute; second factor (F2),

teaching experience that refers the essential aspect, and third factor (F3) marital status, which is the latent disposition - are incorporated which form a basic framework for the purpose.

The next six factors describe the phenomenon (functions and working) that implies, in which way the teaching faculty performed duty (teaching-learning) under different circumstances. Factor 4 worked as a shaping factor for these professionals because of the support of the right resources and benefits from their organization (private/public). Which indicates through K1, and that produced the positive effects in this challenging time. Whereas factor 5 indicates their respective departments, which provides them the potential to act, and create related effects depending upon the prior involvement and existence of technological tools and techniques. Hence, the relations between Factor 4 and 5 trigger the internal cause for the phenomenon, which is presented with the help of factor 6 and 7. While factor 7 makes the negative cause simultaneously, factor 6 represents the compatibility of the educationist with provided by their organization or open-source technical platforms for delivering the lecture with their self-satisfaction. Factor 8 is the consequence of factor 6 because the preparation of faculty to deliver the lecture, now completely depends upon the options and tools provided on the online technical platform. Here key indicator K5 helps us to collect the data related to the type of study material provided to the students. Also, the popularity of different technology mediums amongst teaching staff came into the picture.

The tenth factor represents the consistency from beginning to end in this process. It indicates that all of the other factors from F1 to F9 are interrelated and express the consistent model for the research work and also produce the final results (satisfaction level) of online teaching from the individual perspective. At this stage key indicators from K6 to K9 show the actual results of this online teaching process, which include individual satisfaction level, time-saving benefits that can be utilized for research activities and attitude towards online classes etc.

Table 1 Sample characteristics

| Characteristics | Survey Sample Characteristics | Faculty (Respondent) |
|------------------------|--------------------------------------|-----------------------------|
| Gender | Male | 197 |
| | Female | 103 |
| | Prefer not to answer | 10 |
| Age | Age group (25-35) years | 163 |
| | Age group (35-45) years | 89 |
| | Age group (45-55) years | 40 |
| | Age group above 55 years | 18 |
| Marital Status | Married | 219 |
| | Single | 85 |
| | Prefer not to answer | 6 |
| Organization | Private | 246 |
| | Public (Government) | 64 |
| Department | Engineering | 127 |
| | Allied Science | 114 |
| | Social Science and Art | 49 |
| | Management | 20 |
| Satisfaction Level | Somewhat satisfied | 181 |
| | Very satisfied | 82 |
| | Neither satisfied nor dissatisfied | 38 |
| | Somewhat dissatisfied | 9 |

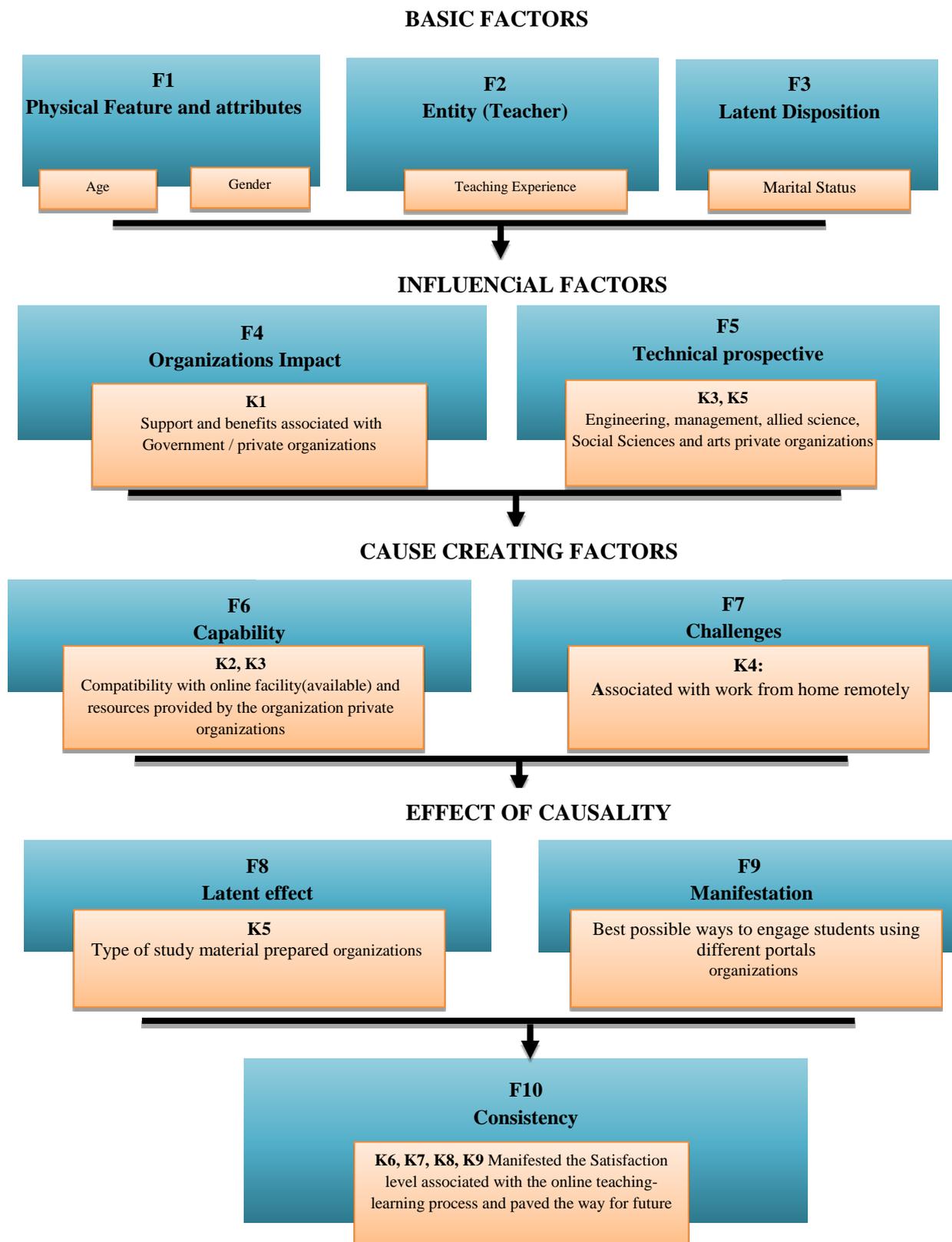


Fig. 1: Framework of online teaching phenomena during Lockdown period COVID'19

K1:- Employs a confidence level towards the right resources and benefits from their organization.

K2:- Institutional online facility provided such as ERP

K3:- Utility of available Online platforms /technology mediums such as Google classroom,

Zoom, WhatsApp, etc.

K4: - Related challenges such as Internet speed, family disturbance, shortage of recourses... etc

K5: - Kind of study material could provide such as Video lessons, PPTs/PDF, Live Classes... etc

K6: - Satisfaction level achieved through online teaching during COVID'19

K7: - Time management, which helped towards research activities... etc

K8:- Get rid of a narrow spectrum towards online teaching or usage of technology.

K9:- Outlook towards the promotion of online teaching in higher education.

During the lockdown period of COVID'19 and mid of the semester academic year 2019-20, those faculty members who embraced online teaching methodology as the basis of their profession and practiced these online facilities in earnest could generally obtain the benefits. These benefits were obvious in terms of time for research work, smooth conduct of the teaching-learning process, and a high level of satisfaction on a scale of acceptance of online teaching challenges. The reason is that all these people had already established the bond with emerging trends and technological mediums such as audio/video/live classes and use online platform services to reach out to the students during this period.

Fig. 2 shows the main portals and other tools which have been frequently used in order to engage students according to respondents. It should be noted at the outset that the total responses exceed one hundred percent since teaching staff were using more than one portal. Google classroom and WhatsApp were the most functional of the seven technical mediums, preferred by 55% and 65 % university lecturers, respectively. Also, at the other end of the age scale, teaching staff under the age group 25-35 years were most active, using every popular portal. However, this group was less active in using the portal provided by their organization.

Satisfaction level of academicians delivering online lectures diverse mainly due to two reasons. First teaching staff with different teaching experience in four different steams-Engineering, Management, Allied science, Social science and Arts - varied according to whether or not their receptivity had fully matured in order to work in the full-remote atmosphere (fig. 3(a)). Secondly, they had to work from home amidst the lots of challenges that varied based on the technicality of the platform, internet speed, demand of course subject, and a full-remote atmosphere when they did not originally plan for it. Fig. 3(b) depicts the list of challenges faced by academicians, which validates the actual scenario.

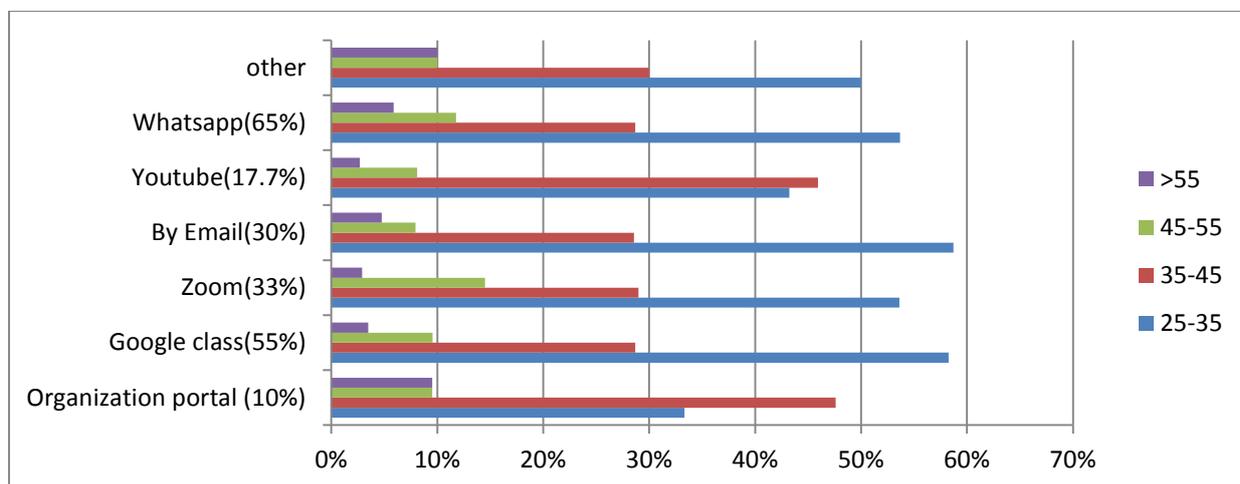


Fig. 2: Comparison of different online portals used by different age groups

Almost 75 percent of faculties from the engineering departments were satisfied with delivering the content online amidst the full of challenging atmosphere, while nearly 72 percent from management staff could attain the level of satisfaction. Teaching staff from two other departments-Allied Science, Social Science and arts, were around 70 and 67 percent respectively. The reason is quite obvious, that is the technical background. Maximum challenges were faced by teaching staff from the non-technical department as they were not familiar with the technical aspect of online teaching methodology. Even not a single seemed fully satisfied from any of these departments. It happened because of challenging factors associated with online teaching and work from home when they were not ready at the time. During the survey, when respondents were asked to give three

main reasons why they are not able to produce a quality lecture just as similar to the lecture delivered by them in the classroom, 82% respondent reply to poor internet connectivity, the biggest problem during online teaching. Fig. 3(b) shows that maximum challenges were faced by youth. Certainly, it is evident that young professionals were more active during this period than to any other age group.

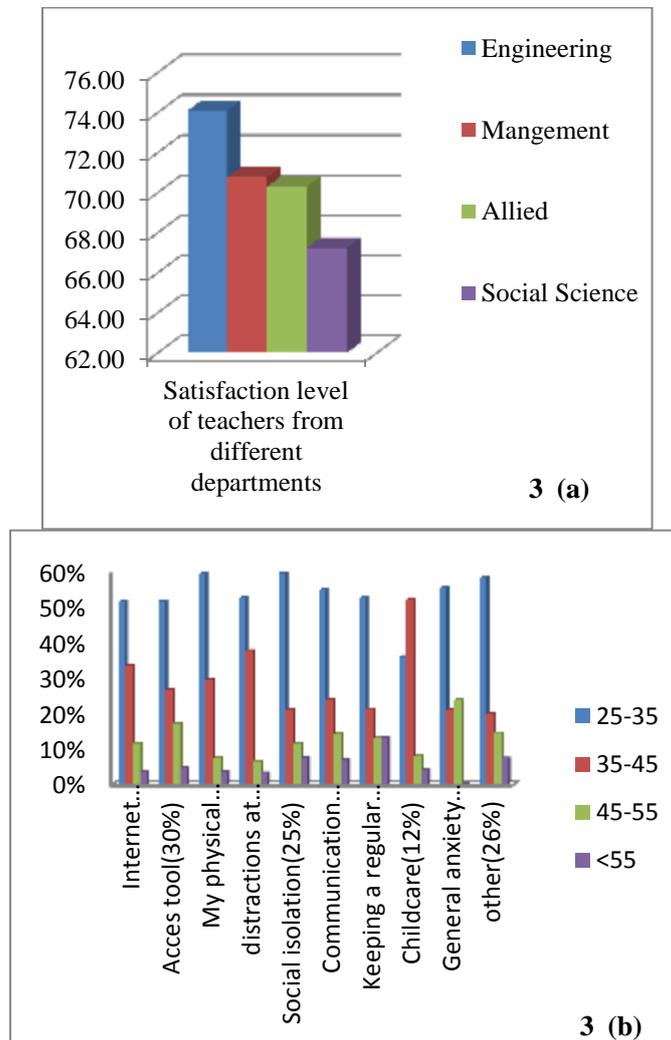


Fig. 3: Satisfaction level of teaching staff according to their (a) receptivity with technology medium amidst (b) associated challenges in taking online classes

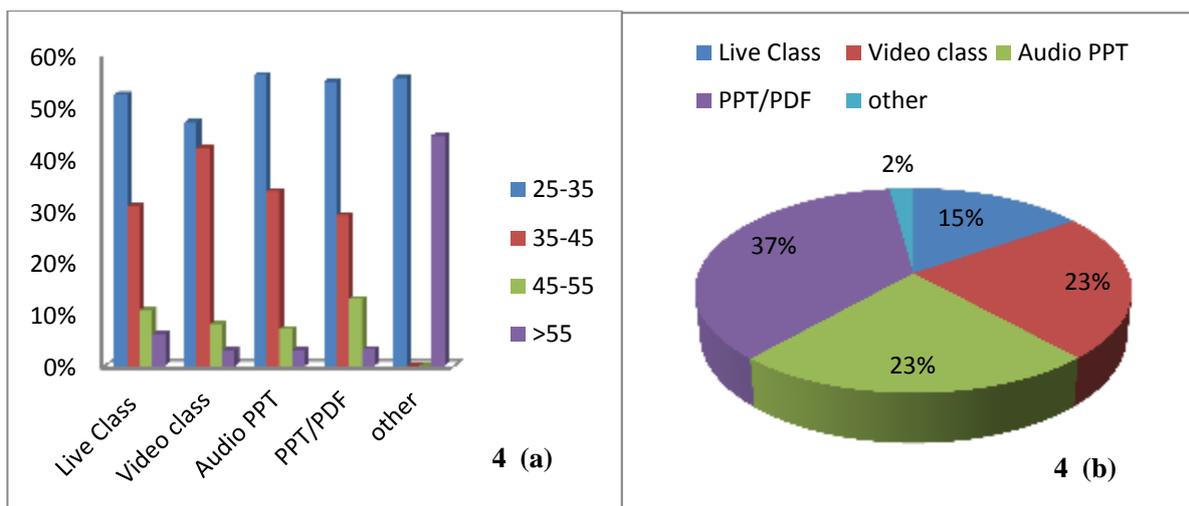


Fig. 4: Type of study material by different age groups.

Fig. 4 illustrates that academicians' (age group 25-35 and 35-45) capacity to understand the online teaching-learning was fully matured that is why they attained a level of satisfaction during this lockdown period as they found themselves in the situation where online teaching was the only medium to take lectures and to provide study material. Whereas those academicians of age group above 45 years were inferior, and less skill could not attain a similar satisfaction level at that time. However, they were determined to take further classes, and they were sure, by adopting a provisional teaching method and face to face interaction, they will gain the same satisfaction. At the other end, from the pie chart, it can be seen that faculties provided a variety of study materials to the students. The most common study material was PPTs/PDFs, which accounts for 37 % of all materials. Providing Audio PPTs and Video Lessons were next, accounted for an equal share, with just under a quarter (23% each) for the purpose. Comparatively, live classes were less popular; security and reduced internet speed may be the reasons. Interestingly, senior teachers used some other medium, which are unspecified, to engage students, which accounted for the lowest percentage (2% only) of the total percentage of study material provided to the students.

Thus, from academicians' perspective, in the first half of the even semester of the academic year 2019-2020 they possessed all three: teaching-learning (with or without online teaching), face to face interaction (physical monitoring) and satisfaction level of academicians (irrespective of age group and teaching experience). Whereas in the lockdown period, academicians confirmed their full efforts of teaching (students also confirmed that they are receiving the study material), even extra effort to make lecture more creative and easier to understand. But they still do not confidently accept the full satisfaction as they believe that online teaching depends on the demand of the subject, and in the lockdown period, only teaching remains, there is neither personal monitoring nor actual assessment which justifies the efforts of teaching-learning process. There was no single person who could believe that online classes are as effective as regular classes. Government employees who possessed the capacity to teach students through either the experience or true original teaching style had long since dissatisfied as well as they seemed relatively less active on online portals (fig. 5(a)), and as a result, provided less study material to the students (fig. 5(b)). We observed that audio PowerPoint presentations and video lectures were more popular among employees of private organizations, which accounted for 92% and 82% respectively. In contrast, academicians from government organizations were more comfortable with notes and PowerPoint data and cited by 22 %.

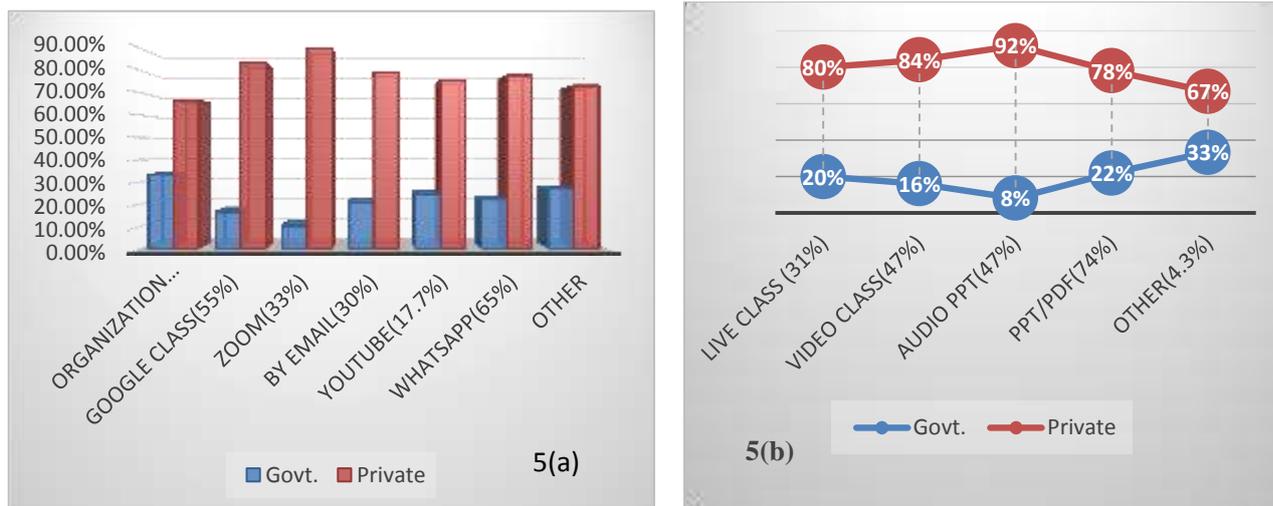


Fig. 5: (a) Government Vs private faculty members during online classes, (b)Type of Study material provided by private and public employees

In the lockdown period, online teaching for the higher study has become an essential part of technical education, even senior teaching staffs that are committed to the education sector and are not compatible with today's teaching style, have to adopt online teaching. This is what indicated in the results obtained from the survey analysis where faculty-student relationship and satisfaction are linked to soundness and keenness for technology adoption, which will strengthen the country's digital learning infrastructure in the long run. COVID-19 has only accelerated the adoption of technologies to deliver education in higher education. Form fig. 6(a)-(b), It should be noted that senior academicians prepared audio/video lessons and used different platforms to provide them to students. Eventually, they are at last able to obtain some benefits of online teaching methodology. It indicates that they had started welcoming technology and practiced along with their experience, and they have now become the practitioner at the initial stage. In contrast, academicians between the age group (25-35) adopting these online teaching-learning methods quickly.

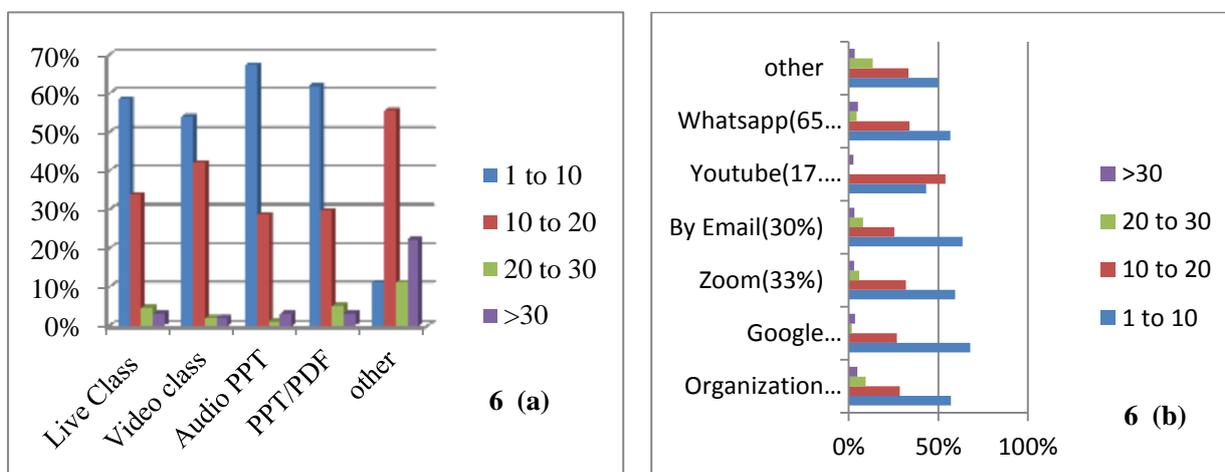


Fig. 6: Comparison of Professors with different teaching experience using online facilities.

45 and above age group teaching staffs who are familiar with online mediums showed the benefits of traditional teaching and little along with online teaching, while the faculty of age group (25-35) and especially young professionals quickly grasped everything because it is the working culture of this era. Although the ages are different, the purpose is the same to make students capable and serve the nation in this crucial time. Online teaching, monitoring and the satisfaction level achieved by those who have teaching experience less than 10 years differ greatly from those of experienced (more than 10 years) and technically sound.

IV. CONCLUSION

Although many, who were unfamiliar with using online resources, might have found using online tools more exhausting than beneficial, the benefits are quite considerable. The results show that those who obtained benefits during the regular lecture routine and the lockdown period received "conspicuous" benefits because the relationship they formed with technology during their academic career had finally matured. On the other hand, those who just started usage of online tools received the beginner's benefit for the first time and their benefits are, therefore, "inconspicuous". In both cases, however, online teaching during the lockdown period became a learning experience for everyone. Observation by the research survey, the benefits of the training and practice during Lockdown will be the milestone for the academicians for the online learning era in India. The following are the significant points to conclude.

1. Academicians under the age of 45 are adopting teaching-learning transformation quickly. With proper training and workshop, they will do excel in online academic transformation.
2. WhatsApp, Google Classroom, and Zoom.in were the most frequently used platforms as the medium of engaging students in this period, and preferred by 65%, 55 % and 33% faculty members, respectively.
3. Audio Powerpoint presentation, Video lectures are the most used study material for online teaching during these days because of the poor connectivity in some remote areas effect the live lectures.
4. Internet connectivity and speed are the challenges in taking online classes according to 82% of respondents in the survey.

Based on the survey analysis, we recommend that the Government should take quick action to improve internet speed and network connectivity in order to established online teaching in higher education. There must be compulsory workshops and training courses to train academicians for the academic revolution in higher education.

Notes

1. An Appeal: Inviting ideas/ suggestions for Bharat Padhe Online campaign. Published on 11-04-2020, https://www.ugc.ac.in/pdfnews/1436240_Appeal-Bharat-Padhe-Online.pdf
2. UGC letter regarding : Preventive measures to achieve 'social distancing'- Permission to teaching and non-teaching staff to work from home, Published on 21-03-2020, https://www.ugc.ac.in/pdfnews/7248697_UGC-Advisory---Permission-to-work-from-home-in-view-of-COVID-19.pdf
3. Preventive measures to achieve "social distancing" - permission to teaching and non-teaching staff to work from home (Friday,27-March-2020)https://mhrd.gov.in/sites/upload_files/mhrd/files/covid-19_social_distancing_0.pdf
4. UGC letter reg : LET COVID 19 not stop you from learning- ICT initiatives of MHRD & UGC for teaching learning., Published on 25-03-2020,https://www.ugc.ac.in/pdfnews/1573010_On-Line-Learning---ICT-initiatives-of-MHRD-and-UGC.pdf
5. UGC Quality Mandate : Suggestive Academic Activities, Published on 28-03-2020,https://www.ugc.ac.in/pdfnews/8032600_ugc-qUALITY-mANDATE.pdf
6. UGC letter reg :Mental health &Well-being of Students during and after COVID-19, Published on 05-04-2020,https://www.ugc.ac.in/pdfnews/7012639_Mental-Health-and-Well-Being-of-the-Students.pdf

V. REFERENCES

- [1].Deming DJ, Goldin C, Katz LF. The for-profit postsecondary school sector: Nimble critters or agile predators. *Journal of Economic Perspectives* 2012;26(1):139–164. <http://dx.doi.org/10.1257/jep.26.1.139>
- [2].Toven-Lindsey B, Rhoads RA, Lozano, JB. Virtually unlimited classrooms: Pedagogical practices in massive open online courses. *The Internet and Higher Education* 2015; 24:1-12. <http://dx.doi.org/10.1016/j.iheduc.2014.07.001>
- [3].Bendriyanti RP, Dewi C, Julita R. Lecturer and literacy in higher education. *Journal of Critical Reviews* 2019; 6(4):48-51.
- [4].Gosper M, Green D, McNeil M, Phillips R, Preston G, Woo K. The impact of web-based lecture technologies on current and future practices in learning and teaching: Australian Learning and Teaching Council, Australian Government Department of Education Employment and Workplace Relations 2008.

- [5].<http://www.cpd.mq.edu.au/teaching/wblt/research/report.html>
- [6].Dommett EJ, Gardner B, Tilburg WV. Staff and student's perception of lecture capture. *The Internet and Higher Education* 2020. doi:10.1016/j.iheduc.2020.100732
- [7].O'Flaherty J, Phillips C. The use of flipped classrooms in higher education: A scoping review. *The Internet and Higher Education* 2015;25:85-95. <https://doi.org/10.1016/j.iheduc.2015.02.002>.
- [8].Jo-Ann AA. Big five, linguistic styles, and successful online learning. *The Internet and Higher Education* 2020;45. <https://doi.org/10.1016/j.iheduc.2019.100724>.
- [9].Lederman D. Conflicted views of technology: A survey of faculty attitudes. *Inside Higher Education* 2018. Retrieved from: <https://www.insidehighered.com/news/survey/conflicted-views-technology-surveyfaculty-attitudes>
- [10]. Shea P, Bidjerano T, Vickers J. Faculty attitudes toward online learning: Failures and successes. SUNY Research Network 2016. Retrieved from: <http://www.sunyresearch.net/hplo/wp-content/uploads/2016/03/AERA-2016-w-newanalysis-3.pdf>
- [11]. Smith GG, Passmore D, Faught T. The challenges of online nursing education. *The Internet and Higher Education* 2009;12(2):98–103. doi:10.1016/j.iheduc.2009.06.007
- [12]. Taplin RH, Kerr R, Brown AM. Who pays for blended learning? A cost–benefit analysis. *The Internet and Higher Education* 2013; 18:61–68. doi:10.1016/j.iheduc.2012.09.002
- [13]. Tsai CC, Chuang SC, Liang JC, Tsai MJ. Self-efficacy in Internet-based Learning Environments: A Literature Review. *Educational Technology & Society* 2011;14 (4): 222–240.
- [14]. Nguyen QLHTT, Nguyen PT, and Huynh VDB. Roles of e-learning in higher education. *Journal of Critical Reviews* 2019; 6(4):7-13,
- [15]. Ransdell S. Meaningful posts and online learning in Blackboard across four cohorts of adult learners. *Computers in Human Behavior* 2013;29(6):2730–2732. doi:10.1016/j.chb.2013.07.021
- [16]. Lowenthal PR, Dennen VP. Social presence, identity, and online learning: research development and needs. *Distance Education* 2017;38(2):137–140. doi:10.1080/01587919.2017.1335172
- [17]. Dennen VP, Bong J. Cross-cultural dialogues in an open online course: Navigating national and organizational culture differences. *Tech Trends* 2018; 62(1): 1-10. doi:10.1007/s11528-018-0276-1
- [18]. Lim CP, Sungsup R, Chin B, Wang T. Information and communication technologies (ICT) for access to quality education in the global south: A case study of Sri Lank. *Education and Information Technologies* 2019 <https://doi.org/10.1007/s10639-019-10069-3>
- [19]. Dabbagh N, Kitsantas A. Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and Higher Education*2012;15(1): 3–8. doi:10.1016/j.iheduc.2011.06.002