

Teacher Experiments and Experiences of Teaching Online during Covid-19 Pandemic – Study of School and College Teachers

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Abstract

During the COVID-19 outbreak, in India, specific instructions had been issued to the universities, colleges and schools by the Union Ministry of Education and the University Grants Commission (UGC) to maintain academic calendar, examination, etc. through online teaching by using different online educational technologies (UGC Guidelines on 29th April, 6th July, and 24th Sept, 2020). Against this backdrop, the present paper analyses the experiments and experiences that teachers had undergone during the pandemic in terms of practicing online teaching. Descriptive survey method was used to conduct the study by using a mixed form of online questionnaire through Google Form to seek data from teachers at school and tertiary levels. Findings suggested that the teachers had experienced and experimented themselves in using new technology tools to teach online to the students and also created learning resources for the students. A group of teachers was also quite critical on the issues relating to availability of smart phones, internet facility in remote areas, absenteeism in online classes, difficulty to address the psychomotor and affective domains, assessment, etc. The implications of the study are that a positive confidence among the teachers had been built to use technologies in teaching both online and in the conventional mode. The study also implies that there is the need to orient teachers for using technology in teaching and facilitating student learning. It also implicates to develop required online teaching infrastructure by both governments and educational institutions. Further, in the post-pandemic situation, the study has the implication that a blended-learning environment is essential to be created in all modes of teaching and learning i.e. both campus-based and distance/online learning.

Key words: Learning Management System, Blended Learning, Affective and Psychomotor Domain, SWAYAM, MOOCs and Covid-19.

Background of the Study

Universities and other educational institutions across India had been closed since 16th March, 2020 when the Government of India announced a countrywide lockdown as one of the measures to contain the COVID-19 outbreak. Specific instructions were also issued to the universities and colleges by the Ministry of Education and the UGC in this regard to maintain academic calendar, examination, etc. through online teaching by using various educational technologies. Educational institutions were impressed to continue with teaching-learning processes using different technologies, platforms and online modes such as Google Classroom, Cisco WebEx Meeting, Zoom, YouTube streaming, OERs, SWAYAM platform, Swayam Prabha, Virtual Labs, FOSSEE, application of spoken tutorials, National Digital Library (NDL), electronic journals, etc. (UGC Guidelines on 29th April, 6th July, and 24th Sept, 2020). Similar types of guidelines had also been issued to the schools by the appropriate Governments and Education Boards for continuing the teaching-learning process online.

Against this backdrop, the present paper analyses the experiments and experiences that school and higher education teachers had undergone during the pandemic while practicing online teaching by using different technology tools.

Literature Review

Online methods of teaching support and facilitate learning-teaching activities during the crisis like Covid-19, but there is a dire need to weigh the pros and cons of technology and harness its potentials (Dhawan, 2020). The level of involvement in learning in each discipline was higher and online interaction was higher than that happens in face-to-face teaching. Unfortunately, one of the common practices in online class was only a small number of students interact in discussions with teachers (Salceanu, 2020).

In a study, Mseleku (2020) reported that the challenges in teaching online during Covid-19 was inability to access or use online learning and teaching tools; difficulties to adjust particularly for students living in rural areas and those from low-income families; and associated stress, depression and anxiety. Carrillo (2020) highlighted that there is the need for a comprehensive view of pedagogy of online education that integrates

technology to support teaching-learning. Muthuprasad (2021) reported that a blended mode of curriculum is needed in agricultural education where many courses are practical-oriented. Jung et al. (2021) underlined that engaging in reflection-in-action and reflection-on-action can be effective ways for faculty members to develop their competencies to solve problems in emergency online teaching situations. Khan et al. (2021) reported students' positive perception towards e-learning and the new learning system. Singh (2021) found that a wide range of learners did not prefer online learning as a future replacement of offline classes because of certain limitations and issues like network connectivity, electricity problem, large group participation in a single class, disturbance faced during classes, and health-related issues. Sharma (2021) reported that the ICT and e-learning initiatives taken by the Government during Covid-19 pandemic at the national, state and individual levels had contributed significantly to make it possible for education to reach the remotest corners of the country with the help of technology-related tools.

Tyagi and Malik (2020) argued that online teaching in Indian schools is still in its infancy and is gradually getting more popular since it is now the need of the hour. Technical issues were the biggest challenge for teachers and students, and connectivity caused major problems. Kapasia et al. (2020) reported that open-source digital learning and learning management system could be adopted by the institutional teachers to conduct online learning. Yu et al. (2021) reported that teachers' online informal learning in pandemic improved their personal teaching efficacy and ICT efficacy, and that also facilitated their innovative teaching without any gender and teaching-age effect. Garcia-Morales (2021) suggested that higher education institutions should develop digital learning infrastructure to focus learning challenges in crisis situation, and teachers should also be oriented properly to prepare and use digital resources. Zawacki-Richter (2020) reported that the current situation in Germany had a positive effect on digital innovations in university teaching due to the pressure of Covid-19.

Analysing the results and discussions of the above studies, the following focus points emerged:

- The Covid-19 situation created an opportunity for the education fraternity to be ready to face such challenges in providing necessary learning inputs by creating and transacting digital learning.
- Schools and tertiary education institutions need to be equipped with digital learning resources.
- School and tertiary education teachers need to be oriented properly for creating and using digital learning resources.
- Governments should come forward to promote blended and online learning uniformly in remote and urban areas.

Objectives of the Study

In line with the above studies, the authors focused on the following objectives:

- to study the experiences of school and college teachers teaching online during the Covid-19 pandemic;
- to study teachers' innovative practices (if any) in creating and using online learning resources to teach their students during the Covid-19 pandemic; and
- to study the opinions and suggestions of teachers towards online teaching during (and post) Covid-19 pandemic.

Methods

Descriptive survey method was used to conduct the study. An online survey was conducted by using Google Form questionnaire to seek data relating to teachers' opinions and online teaching experiences during the Covid-19 pandemic. The questionnaire included demographic data - gender (male and female teachers), age group (below 30, 31-40, 41-50, 51-60 and above 60), levels of teaching (school and tertiary education), teaching experience (below 10 years, 10-20, 20-30 and above 30 years) and different mode of teaching (conventional, open and distance learning, and online). The online questionnaire covered 8 questions relating to demographic variables, 11 questions relating to experiments and experiences in online teaching during Covid-19, and 11 questions relating to opinion and suggestions of the teachers on online teaching (including certain qualitative data). A total of 202 teachers were conveniently selected (by open invitation whosoever can) to fill up the online questionnaire. The sample included 119 teachers teaching in schools and 83 teachers teaching in colleges. Simple descriptive statistics such as percentage count, average scores, etc. were used to analyse and interpret data.

Analysis and Findings

Data have been analysed in three different aspects: (i) demographic variables, (ii) experiments and experiences of teachers towards teaching online during Covid-19 pandemic, and (iii) opinions and suggestions towards online teaching during (and post) Covid-19 pandemic. Both quantitative and qualitative data analysis techniques have been used to analyse the data.

Demographic variables

Table 1: Demographic variables (age, gender and experience)

Age	Teachers (N -193)	%	Gender	Teachers (N – 194)	%	Teaching experience	Teachers (N – 192)	%
Below 30	38	19.7	Male	71	36.6	Below 10 years	87	45.3
31-40	63	32.6	Female	123	63.4	10-20	74	38.5
41-50	67	34.7				20-30	22	11.5
51-60	22	11.4				Above 30 years	9	4.7
Above 60	3	1.6						

The Major findings were as follows:

- 67.3% teachers covered in the study were between the age group 31 to 50.
- More female teachers (63.4%) participated in the study in comparison to male teachers (36.6%).
- 83.8% teachers had teaching experience of 1-20 years.

Table 2: Demographic variables (present position and mode of teaching)

Present position	Teachers (N-185)	%	Mode of teaching	Teachers (N-190)	%
PRT	25	13.5	Face-to-face	81	42.6
TGT	39	21.1	ODL	29	15.3
PGT	36	19.5	Online	128	67.4
Asst. Prof.	54	29.2			
Associate Prof.	5	2.7			
Professor	10	5.4			
Principal/HOD	24	13			

The major findings were as follows:

- 54.1% teachers were from the school education system teaching at different stages of education.
- 37. 3% teachers participated in the study were from the higher education system.
- Apart from the above, 13% teachers held educational administration position like principals or head of the departments.

Experiments and experiences of teachers

Table 3: Teacher engagement in online teaching

Items	% or Average	Items	%	Items	%
Teacher engagement in online teaching (N-192)	98.4%	Time preference to teach online (N-191)		Use of learning resources (N-190)	
Hours engaged in online teaching (N-188, Total Hours – 195.16))	1.57 (average)	Morning (N-130)	68.1	Text based study materials (N-69)	36.3
Regular practice during lockdown period (N-191)	86.9%	Afternoon (N-54)	28.3	Power point slides (N-51)	26.8

	Evening (N-30)	15.7	Audio programmes (N-26)	13.7
	Late night (N-2)	1	Video programmes (n-51)	26.8
	All most all the time in a day (N-20)	10.5	All the above (N-100)	52.6

Major findings from Table No.3 are as follows:

- 98.4% teachers were engaged in online teaching during the Covid-19 pandemic.
- 86.9% teachers were teaching online regularly.
- Teachers were spending average 1.57 hours daily on online teaching.
- Most of the teachers (68.1%) were teaching in the morning.
- 44% teachers were teaching either in the afternoon or evening hours.
- Majority of teachers (36.3%) were using text-based materials, 26.8% teachers used ppt and the same percentage teachers also used video programmes to teach their students.
- 52.6% teachers were using all types of learning resources to teach their students.

Table 4: Availability of learning resources

Availability of learning resources	%
Prepared by the teachers (N-116)	61.4
Collected from different OER and other sources (N-75)	39.7
It was available by the teachers (N-47)	24.9
It was provided by the institution/university (N-22)	11.6
From all the above sources (N-56)	29.6

61.4% teachers were preparing the learning materials of their own. Around 40% teachers explored the learning resources available online like from different Open Educational Resources sites. In 12% cases, learning materials were provided by the institutions/universities. Around 30% teachers were trying to gather learning materials from all most all the available sources.

Figure 1 suggests the use of media/tool/technology/platform to teach students online.

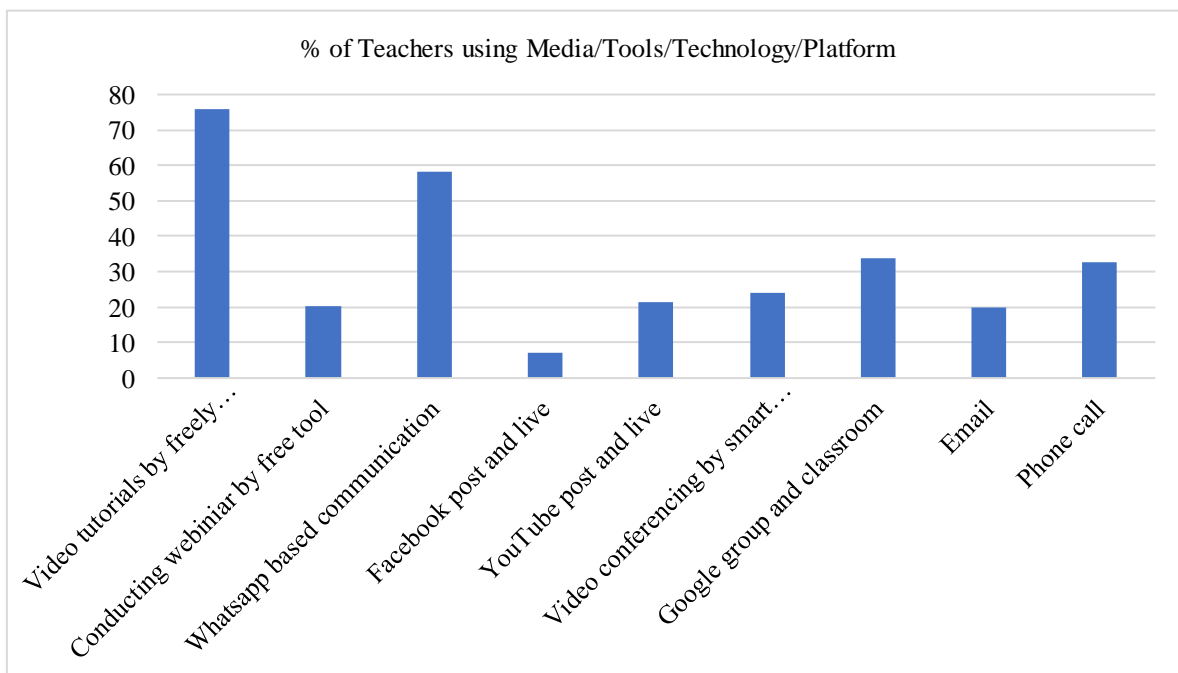


Figure 1: Use of media/tool/technology/platform to teach students online

The preferences in the use of various media by teachers included the following: video tutorials (75.9%), followed by Whatsapp (58.3%), Google group and classroom (33.7%), voice call (32.6%), video conferencing (24.1%), e-mailing, conducting webinar and youtube (20% each), and facebook (7%). Apart from the above, teachers also used Microsoft teams, Webex, extra marks smart classes, Moodle with big blue button, SWAYAM MOOCs, Zoom, LMS of Oxford advantage, Gyandarshan based teleconferencing and interactive radio counselling sessions, Google Meet, using OBS, etc.

Data on previous use of such media revealed that 24.6% teachers had not used such media or technology to teach students earlier, whereas 13.4% had used it earlier, and 62% had used few of the above online technology/media earlier to teach the students.

Responses to the question on how did they learn to use such media were as follows (Figure 2):

10. How did you learn to develop learning materials and also use the media, tools and technologies to teach the students during the Covid-19 Pandemic period?

187 responses

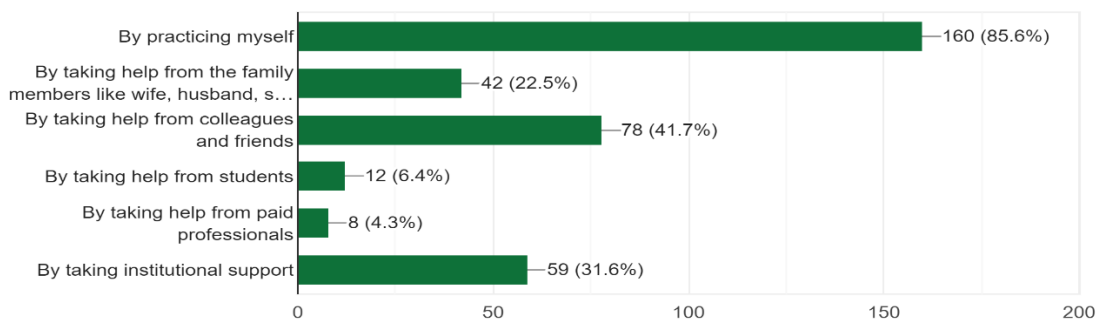


Figure 2: Nature of learning to use the tools

Data revealed that 85.6% teachers had prepared the materials and learnt to use the media and tools by practicing themselves, where as 22.5% had learnt it by taking help from their family members. 41.7% teachers had learnt to prepare materials and also using tools by colleagues and friends from the institutions where they worked, and 31.6% teachers took the help of their institution. 6.4% teachers did it by taking help from their students, and interestingly 4.3% teachers had engaged paid professionals to learn the use of such tools.

On the question ‘other engagement of teachers apart from online teaching’, the responses were as follows (Figure 3):

11. What are the other academic activities did you perform apart from the above?

179 responses

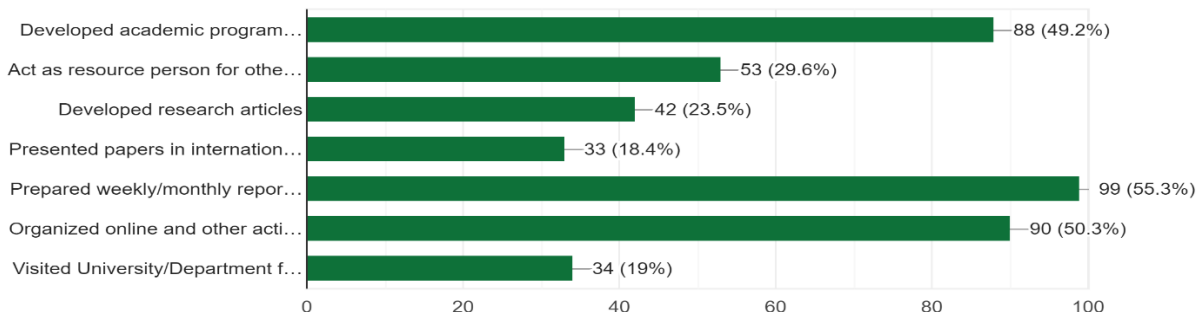


Figure 3: Teachers' engagement in other activities apart from online teaching

Data revealed that 49.2% teachers were engaged to develop new academic programmes apart from their online teaching; 55.3% teachers were engaged with preparing weekly and monthly reports as institutional compulsion to submit the work report; 50.3% teachers were engaged to organise online and other activities. Around 30%

teachers were engaged to work as resource persons for other institutions. 23.5% teachers had engaged themselves to develop research articles, and around 18% teachers participated in online national and international conferences during the lockdown period. As and when required, 19% teachers also visited their colleges and universities with special permission for emergency work.

Opinion and suggestions of teachers

49.2% teachers responded that it was quite exciting, whereas 46.6% teachers had got average satisfaction. Around 4.2% teachers were not satisfied in online teaching.

On the question, ‘teachers experience in developing learning materials by using technology tools’, it was found that 63.3% teachers had learnt to a large extent in developing online learning materials by using technology tools, whereas around 31% teachers enjoyed developing learning materials and using technology tools in an average satisfaction level. Around 6% teachers had learnt it as new learning to a small extent.

Teachers were asked a question ‘why did they perform online teaching during the Covid-19 pandemic’. The responses were as follows (Figure 4):

14. Why did you perform such online teaching work during the Covid-19 Pandemic period?
188 responses

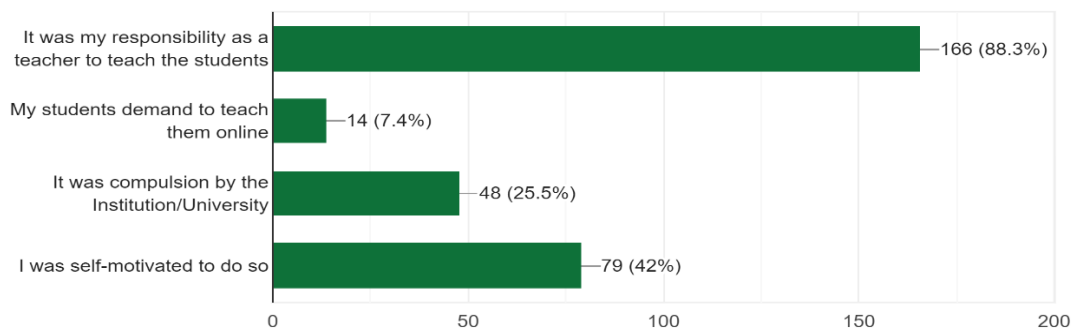


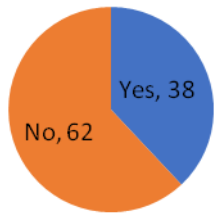
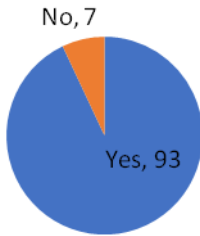
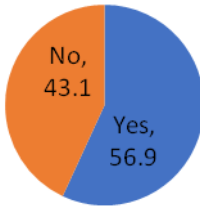
Figure 4: Reason behind performing online teaching

88.3% teachers responded that teaching online during Covid-19 pandemic was their own responsibility as a teacher, whereas 25.5% teachers responded that it was a compulsion by the institution/university where they worked. 42% teachers responded that the teachers were self-motivated to do that, whereas in 7.4% cases it was demanded by the students to teach them online.

Around 75% teachers responded that teaching online to the students’ during pandemic was not at all a tension for them, whereas 25% teachers opined that it had created an unnecessary stress and tension to teach online to the students.

Table 5: Teachers’ opinion on the use of online teaching

Question	%			Figure (in %)
	23 (In a large extent)	72.7 (whenever required)	4.3 (not at all)	
Do you want to continue online teaching even post covid-19?				

Did you experience online teaching is more interesting than conventional teaching?	38 (yes)	62 (no)	
Do you think, a part of conventional teaching should be made online?	93 (yes)	7 (no)	
Do you think that online teaching is also equally effective for professional and technical programmes?	56.9 (yes)	43.1 (no)	

Findings revealed the following (Table 5):

- Majority of the teachers (95.7%) agreed to continue online teaching in post Covid-19.
- 62% teachers opined that online teaching was not interesting in comparison to face-to-face teaching.
- 93% teachers suggested that online teaching should be a part of face-to-face system of education.
- 56.9% teachers opined that online teaching is also equally effective for the professional and technical programmes.

Reasons behind non-effectiveness of online programmes for the professional and technical programmes as suggested by the teachers were as follows:

- Difficult to address the development of affective and psychomotor domains of the students.
- Digital divide among the students is another barrier.
- Practical and lab-based hands-on activities are not possible effectively through online learning.
- Students' engagement and participation may not be effectively monitored online.
- Subjects like mathematics and science need rigorous face-to-face interaction of the teachers.
- Classroom observation plays a very crucial role for monitoring students' development, and mostly it also works as an effective technique for assessment.
- Required skills and competencies may not be achieved in online professional programmes.
- Peer and group learning activities, projects, field-based activities, case studies, etc. may not be carried out effectively in professional online programmes.

Some critical responses were recorded when the teachers were asked about their suggestions for effective use of online teaching during (and post) Covid-19 pandemic.

- ICT infrastructure facilities need to be provided to the institutions and the students as well.
- Schools and colleges should ensure that the students have required facilities of smart phones, laptop, desktop, etc. with proper internet connection.
- Digital teaching needs to be an integral part of teaching-learning.

- Blended learning approaches need to be used in curriculum designing.
- Teachers need to be provided proper orientation to create and use necessary technology tools.
- A positive attitude towards teaching online needs to be developed among teachers for addressing stress and anxiety.
- Teachers should be provided support services in terms of resource materials, managing technology, technology support, etc.
- Assessment should be done by using multiple assessment tools.
- Syllabus should be reduced and self-paced learning modules should be developed by practitioners for the students.
- Learning should be managed with a well-defined Learning Management System, not through teaching online compartment-wise.
- Faculty development programmes should be organised on the use of technology tools and that may further empower the teachers to teach online in critical situations.

Discussion of Results

Covid-19 pandemic gave birth to new challenges for teachers to pursue their teaching online. Teachers realised that the knowledge and transaction methodologies that they are using are not enough to deal with the challenges. They had realised that using multiple media in the teaching-learning process can improve the situation. Teachers already using multiple media, especially those who were teaching in ODL and online education institutions, were a little more comfortable to manage students during the Covid-19 situation, whereas teachers teaching in face-to-face institutions had found it difficult to deal with students online. In spite of many challenges, most of the teachers, irrespective of their age and experiences, had tried to learn teaching online by using different ICT tools. Many a time, they had created special learning materials by using different tools and apps for their students. Though students had not benefit fully from online learning, but majority of them had engaged in active learning during the Covid-19 pandemic because of the online teaching strategies adopted by the teachers.

Teachers teaching in schools across India had faced more challenges to teach students online on a regular basis and to assess their learning too. Teachers dealt with three different crises in this regard such as, lack of understanding in using ICT tools, managing with their stress level, and dealing with remote students having no access to gadgets and connectivity. There was also lack of understanding in dealing with skill-based courses online.

The remote teaching during the pandemic period was a new avenue for teaching and learning for teachers, students and educational administrators to follow some sort of Blended Learning approaches. It was realised that Blended Learning practices can be effectively used in all types of courses. Learning cannot be limited to only synchronous situation, rather a contextual synchronous and asynchronous learning environment need to be practiced for achieving the futuristic goal of education. This can be achieved by placing a well-defined Learning Management System (LMS) in every academic programme. The findings also suggest that institutions should develop ICT infrastructure and their own Learning Management System to provide Blended Learning experiences to students, not only during the crisis period but also in regular process of teaching and learning post-pandemic.

Educational Implications

The overall implications of the study are that a positive confidence among conventional and ODL teachers had been built to use technologies in teaching; that there is a need to orient teachers for using technology in remote teaching. It also suggests developing online teaching infrastructure by the government and institutions, and that a blended-learning environment is essential in all modes of teaching and learning. Teachers had come across to know many online tools for the first time, and they had built confidence to use even the post-pandemic time. Use of technology in education is not limited to a particular age, experiences, gender, mode, levels of teaching, and disciplines. It is an integrated part of every teaching-learning process. A customized online programme can be effectively used for professional programmes. Democratizing education and to achieve equity and equality in education is possible by using technology. Online infrastructure needs to be developed in the institutions on priority basis. Transparent and authentic assessment system needs to be practiced in online education to assess all domains of students' development.

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