Outcome of Online Teaching-Learning over Traditional Education during Covid-19 Pandemic

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ABSTRACT

The purpose of this study is to assess the impact, issues, and tools of online teaching-learning throughout the various higher educational bodies (colleges/Universities) across India. An online survey was conducted from 29th June to 20th July 2020. The questionnaire has closed-ended questions with multiple choice answer options for analysis using quantitative methods. During the investigation, it has been observed online teaching played a crucial role in education during the COVID-19 pandemic but lack of resources and proper training are the major issues during ICT based/Online teaching-learning. The problem in the selection of a perfect tool for teaching-learning electronically was the reason that could not make it impactful as compared to the conventional education system. This study will help government authorities, educational bodies to draft a training/advisory program for students and teachers to overcome the issues found in the study. It will help in making online education a more attractive and powerful medium for teaching-learning activities that ensure the development of young scholars, skill-set, employability.

Key words: COVID-19 Pandemic, ICT, Online education , Web-based education.

1. INTRODUCTION

The novel coronavirus disease (nCoV-19) was firstly reported in Wuhan, Hubei Province of China at the end of the year 2019. The World Health Organization [19,21] declared it as 'pandemic' on 11th March 2020; due to the rapid spreading of coronavirus disease 2019 (COVID-19) [17]. A common goal was initiated to curb the spread of nCoV-19 by most of the governments globally through striking lockdown, maintaining social/physical distancing, avoiding face to face (conventional) teaching-learning, and restricting immigration [5]. Over the globe, around 600 million learners are affected due to the shutting down of educational bodies [6]. In a report by [16], it was stated that near about 320 million learners are affected in India. On 30th Jan 2020, in India (Kerla) the first patient was reported COVID-19 positive [18].

Currently, India has a speedy growth in COVID-19 cases. As of 6th September 2020, India has reported 862,320 active cases, 3,180,865 recovered cases, and 70,626 death cases [10]. The central government of India along with state governments have initiated several strategies like Janta curfew and lockdown to curb the spread of the disease [14]. From 25th March 2020 to 31st May 2020, India has observed four phases of nationwide lockdown. In India, the unlock process started from 1st June 2020 and essential services are resuming in a well-planned way. Currently, its unlock 4.0 from 1st to 30th September 2020.

During the COVID-19 outbreak, closure of academic ventures left unprecedented impacts on education (teaching-learning process) [1]. During the lockdown, Teachers are instructed to teach through online learning platforms like zoom, MSteams, YouTube, etc. stating that there is a need for adoption of new technologies to continue the teaching-learning process. Students are in the dilemma of accepting the new education system "e-learning" [2]. The COVID-19 outbreak results in the digital revolution in the higher education system through online lectures, teleconferencing, digital open books, online examination, and interaction at virtual meeting platforms [9, 15, 22]. "Distance education has managed very well without any theory" it was remarked Over 39 years ago [12] The same can be said today about e-learning and ICT (Information Communication Technology) based learning. In the last decades, online learning practice has achieved momentum and it will be the central tool for future education. WhatsApp also played an effective role in higher education as a platform for sharing information about learning [4]. The main issue in shifting to e-learning from conventional learning is a barrier to adoption, so, it is important to select an e-learning process with the use of different technologies for education as well as for daily routine activities to improve the knowledge of learners [13, 23]. The online mode of the teaching-learning process is often discriminatory to poor and marginalized students [20]. During this lockdown period, the closing of academic ventures hampered the education system and the teaching-learning

process. Understanding the teaching-learning process in this crisis period is imperative to design effective interventions for the smooth running of teaching and learning [11]. Online education became the panacea for teaching-learning in the time of the current crisis [3]. with these backdrops, the present study aims to identify the impacts of e-learning compared with conventional learning during this lockdown amidst the COVID-19 pandemic[7,8].

2. DATA AND METHODS

2.1 Subjects

The study was based on the 210 participants (156 students, 54 teachers) belonging to various institutions/ Universities across India (Table 1).

Table 1: The state wise number of participants during an online survey.

S. No.	State	No. of Teachers (54)	No. of Students (156)	Total Participants (210)
1	Assam	0	1	1
2	Bihar	0	17	17
3	Delhi	2	0	2
4	Gujrat	1	1	2
5	Haryana	24	110	134
6	Himachal Pradesh	0	1	1
7	Jammu &Kashmir	1	1	2
8	Jharkhand	0	2	2
9	Madhya Pradesh	0	2	2
10	Maharashtra	2	1	3
11	Orissa	1	0	1
12	Punjab	3	2	5
13	Rajasthan	2	0	2
14	Tamil Nadu	1	6	7
15	Telangana	2	2	4
16	Uttar Pradesh	14	10	24
17	Uttarakhand	1	0	1

2.2 Data collection and procedure

This is an online survey based on a questionnaire focussing on current issues in higher education after adopting the online teaching/ learning system. The e-survey was conducted using 'Google form' from 29th June to 20th July 2020 to collect the information. The questionnaire comprised eighteen questions dealing with various dimensions of constraining, merits, demerits, relevance, optimal application, and impact of conventional and online teaching/learning techniques (Table 2). A structural questionnaire link was sent to participants through e-mail and social media platforms. The participants were provided full consent and confidentiality of their personnel information before participating in the online survey.

Table2: The summary of questions in an online survey.

S. No.	Question
I.	Face-to-face interaction during class time in the traditional system increases the confidence level of a student.
II.	Adopting ICT and e-learning allows us to acquire new knowledge and enhance their skill set.
III.	Everyone knows the power of digital media and their usage in e-learning; but it reduces practical exposure in real life especially in the field of medical, civil, dental, architecture, etc.
IV.	Lack of digital resources (computer/PC/laptop) and their usage in rural/interior areas of India while adopting ICT and e-learning.
V.	The big challenges while adopting ICT-based eLearning are data privacy and security.
VI.	Learners can't see the real-world implications of the e-learning course.
VII.	Which technical platform you are using for online classes?
VIII.	How do you feel during online teaching/learning as compared to classroom teaching/learning?
IX.	Which problems have you faced during online classes?
X.	What is the reaction of your family about online classes?
XI.	Which online resources and portal best suit your requirement for e-teaching?
XII.	Which is the best medium to disseminate course contents and notes to the e-learner?
XIII.	Have you used ICT for the e-Learning platform before the Covid-19 pandemic?
XIV.	Did you feel a lack of classroom-like teacher presence?
XV.	Did you agree, everyone, who are part-time students or are working full time, can take advantage of web-based learning.
XVI.	Did you face a lack of learner motivation and engagement among students during online classes?
XVII.	Did you face difficulty in finding the perfect e-learning authoring tool or learning platform?
XVIII.	Have you completed the course at the scheduled time through online classes?

2.3 Data analysis

Descriptive statistics were carried out to understand the view of participants using advanced numerical tools. The simple percentage distribution was estimated to assess the learning status, mode of learning, and opinion on educational proposals, and problems related to study due to the lockdown were depicted through various pie/bar charts.

3. RESULTS AND DISCUSSION

The findings were based on the distributed questionnaire among the participants of all categories including

students, teachers at post-secondary and higher education standards, skilled e-learning professionals, countrymen of rural and urban areas throughout India (Tables 3-5). The questions compiled for distribution among participants were categorized in three standards based on analysis aptitude (Table 3), multiple choices (Table 4), and fixed action (Table 5) for comparative accounts of conventional pedagogy and e-learning pedagogy adopted after the commencement of the current COVID-19 (Coronavirus Disease- 2019) pandemic due to SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus-2).

Table 3: Questions based on analysis aptitude in the questionnaire

S. No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		The response of participants against the given options				
1.	Face-to-face interaction during class time in the traditional system increase the confidence level of a student:	11	10	27	90	72
2.	Adopting ICT and e-learning allows us to acquire new knowledge and enhance their skill set:	13	18	57	91	31
3.	Everyone knows the power of digital media and their usage in e-learning; but it reduces the practical exposure in real life especially in the field of medical, civil engineering, dental, architecture, etc.:	7	8	36	110	49
4.	Lack of digital resources (computer/PC/laptop) and their usage in rural/remote areas of India while adopting ICT and e-learning:	12	10	46	88	54
5.	The big challenges while adopting ICT-based e-learning are data privacy and security:	5	11	48	103	43
6.	Learners can't see the real-world implications of the e-learning course:	12	17	74	83	24

The question focussed on 'May face-to-face interaction during class time in the traditional system increases the confidence level of a student?' received the responses from 210 participants. Among them 72 (34.29%) strongly agree, 90 (42.85%) agree, 10 (4.76%) disagree, 11 (5.24%) strongly disagree and 27(12.86%) neutral against question (Figure 1).
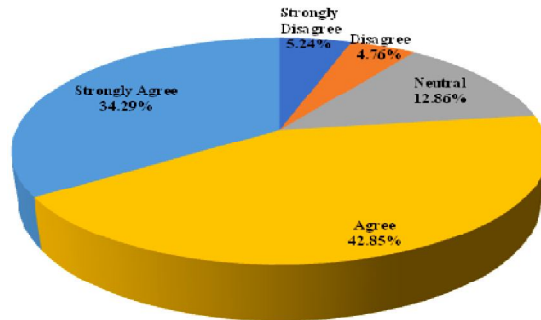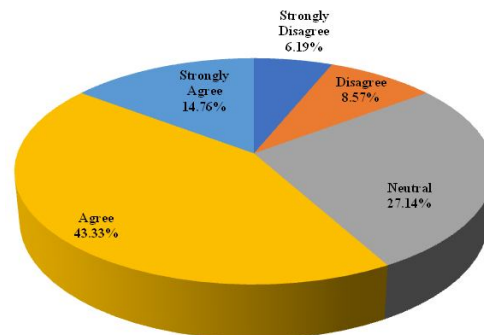

Figure 1: The opinion (%) about 'does face to face interaction increase the confidence of students?'.

For the question 'Does adopt ICT and e-learning allows to acquire new knowledge and enhance their skill set?' out of 210 participants 31 (14.76%) were strongly agree, 91 (43.33%) agree, 18 (8.57%) disagree, 13 (6.19%) strongly disagree. however 57 (27.14%) neutral (Figure 2).

Figure 2: The opinion (%) about 'does ICT and e-Learning allows acquiring new knowledge and enhancing their skill set?'

The response of 210 participants against the question 'Does e-learning reduces the practical exposure in real life' was recorded. It showed that 49 (23.33%) strongly agreed, 110 (52.38%) agreed, 8 (3.81%) disagreed, 7 (3.33%) strongly disagreed and 36 (17.14%) found neutral (Figure 3).
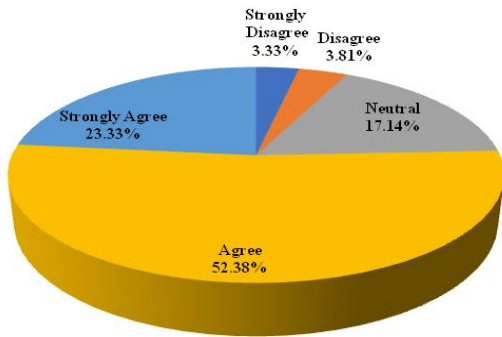

Figure 3: The opinion (%) about does e-learning leads to less practical exposure in real life.

The next question was related to 'The lack of digital resources (computer/PC/Laptop) and their usage in rural/remote areas in adopting ICT based education system'. Out of 210 participants 54 (25.72%) were strongly agree, 88 (41.90%) agree, 10 (4.76%) disagree, 12(5.72%) strongly disagree and 46 (21.90%) neutral in response (Figure 4).
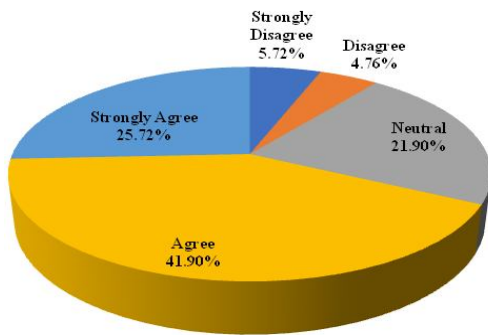

Figure 4: The opinion (%) about Lack of digital resources (computer/PC/laptop) in Rural/remote areas of India

The responses of 210 participants for the concern about data privacy and security as a big challenge in adopting ICT-based learning were recorded. The 43 (20.48%) were strongly concerned, 103 (49.04%) concerned, 11 (5.24%) not concerned, 5 (2.38%) strongly not concerned and 48 (22.86%) neutral (Figure 5).
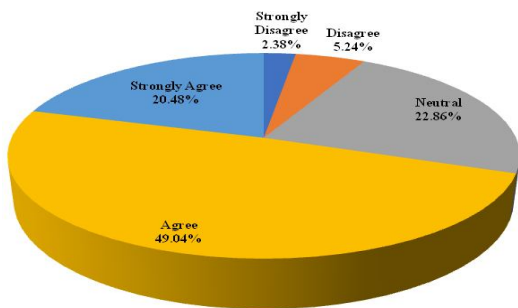

Figure 5: The opinion (%) about Data Privacy and Security is a big challenge while adopting eLearning

For the question 'Learners can't see the real-world implications of the eLearning course' out of 210 participants 24(11.43%) are strongly agree, 83(39.52%) agrees, 17(8.10%) disagrees, 12(5.71%) strongly disagrees and 74(35.24%) neutral in (Figure 6).
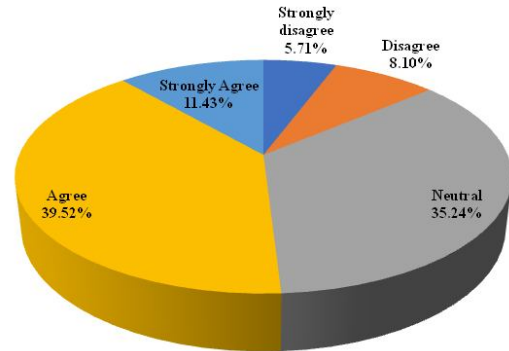

Figure 6: The opinion (%) about Learners can't see the real-world implications of the eLearning course

Table 4: Multiple choices questions in the questionnaire

S. No.	Questions	The response of participants against the given options								
1	Which technical platform you are using for online classes?	Tools provided by institute	WhatsApp	Zoom app	Google Meet	Google classroom	YouTube	Team viewer	MS Teams	(LMS) Moodle
		35	69	133	70	31	58	14	46	10
2	How do you feel during online teaching/learning as compared to class room teaching/learning?	More effective	Wastage of time	Tired	Lack of person-to-person communication	Less costly				
		36	41	12	109	12				
3	Which problems have you faced during online classes?	Poor internet connectivity	Time management	Students do not have resources	Students are not tech-savvy	Teachers are not tech-savvy	Issue related to student's concentration during class	Problems in the estimation of student's learning in class		
		149	48	73	31	26	100	66		
4	What is the reaction of your family about online	Very Good	Good	Average	Poor	Very Poor				

	classes?	25	53	99	25	8			
5	Which Online Resources and portal best suit your requirement for e-teaching?	Google	Udemy	Spoken tutorial	Nptel	Swayam	YouTube channel		
		77	20	27	14	8	64		
6	Which is the best medium to disseminate course contents and notes to the e-learner?	LMS	WhatsApp	Email	Slide share	Others			
		11	92	66	30	11			

For the question 'Which technical platform you are using for online classes?' participants can choose multiple answers against the question.35, 69, 133, 70, 31, 58, 14, 46, and 10 votes were recorded respectively for an application provided by institute/college/University, WhatsApp, Zoom app, Google classroom, YouTube, Team viewer, Microsoft teams, and Learning Management System(LMS)/Moodle in (Figure 7).
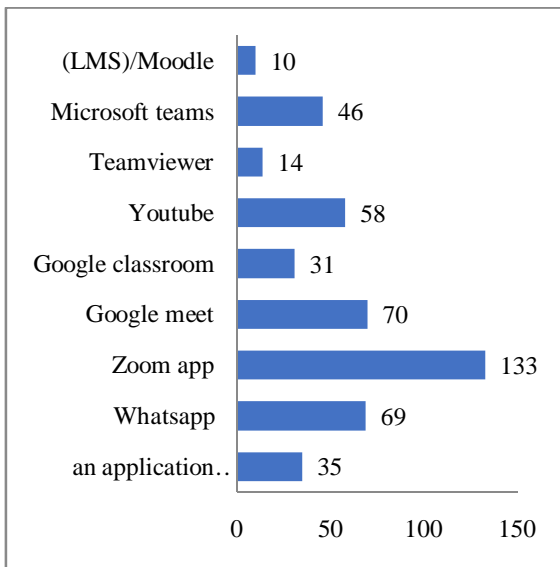

Figure 7: Which technical platform you are using for online classes?

For the question 'How do you feel during online teaching/learning as compare to classroom teaching/learning?' out of 210 participants 36(17.14%) choose the more effective, 41(19.52%) choose the wasting of time, 12(5.72%) choose tried, 109(51.90%) choose lack of person to person communication and 12(5.72%) choose the less costly option (Figure 8).
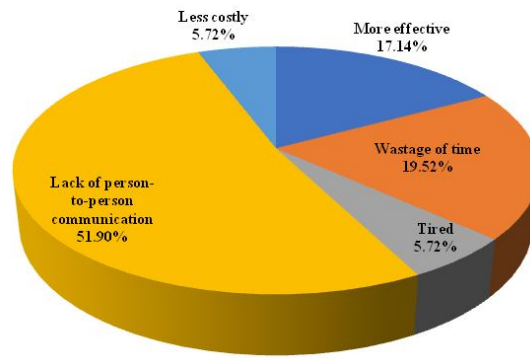

Figure 8: The opinion (%) about feeling during online teaching/learning as compared to classroom teaching/learning

For the question 'Which problems have you faced during online classes?', participants can choose multiple issues/problems out of given options.149, 48, 73, 31, 26, 100 and 66 vote were recorded respectively poor internet connectivity, time management, Students do not have resources, Students are not tech-savvy, Teachers are not tech-savvy, Issue related to student's concentration during class, and Problem in the estimation of student's learning in class (Figure 9).
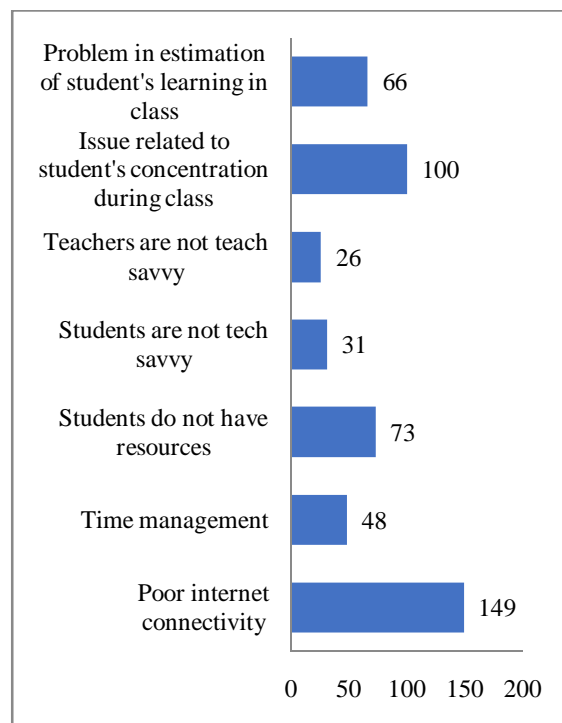

Figure 9: The opinion about problems have you faced during online classes.

For the question 'What is the reaction of your family about online classes?' out of 210 participants 25(11.90%) choose very good, 53(25.24%) choose good, 99(47.14%) choose average, 25(11.90%), choose poor, 8(3.82%) choose very poor (Figure 10).
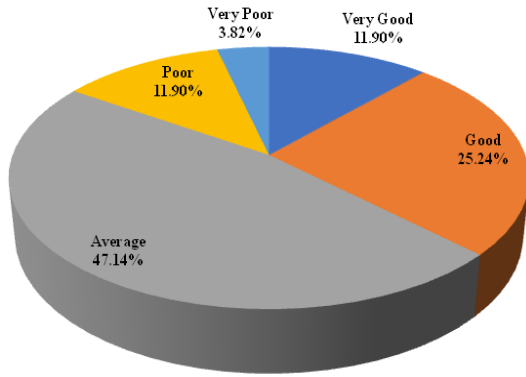
Figure 10: The opinion (%) about the reaction of your family about online classes.

When it was asked to participants which online resource and portal suits to fulfill their requirement for e-learning and teaching, 77(36.67%) chose Google, 20(9.52%) choose Udemy, 27(12.86%) choose spoken tutorial, 14(6.67%) choose NPTEL, 8(3.81%) choose Swayam Portal, 64(30.48%) choose YouTube (Figure 11).
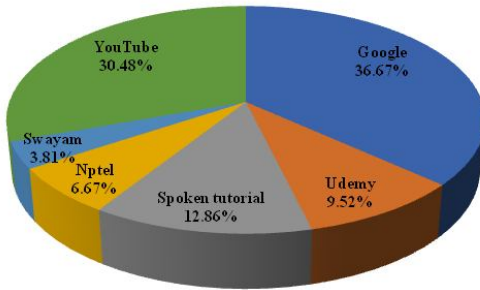

Figure 11: The opinion (%) about online resources and portal that suits requirement for e-teaching

Out of 210 participants 11(5.24%) choose LMS, 92(43.81%) choose WhatsApp, 66(31.43%) choose E-mail, 30(14.29%) choose Slide share and 11(5.24%) choose the others, for the best medium to disseminate course contents and notes to the e-learner (Figure 12).
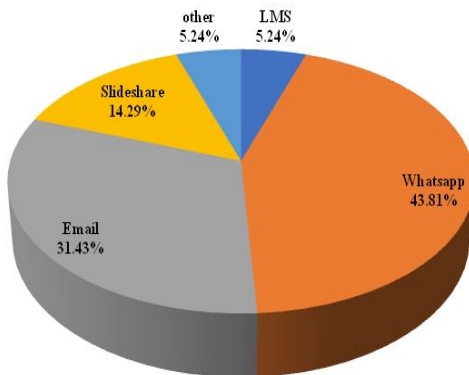

Figure 12: The opinion (%) about the best medium to disseminate course contents and notes to the e-learner.

Table 5: Fixed action based questions in the questionnaire

S. No.	Questions	Response		
		Yes	No	May be
1	Did you feel a lack of classroom-like teacher presence?	121	44	45
2	Did you agree, everyone, who are part-time students or are working full time, can take advantage of web-based learning	129	23	58
3	Did you face a lack of learner motivation and engagement among students during online classes?	120	31	59
4	Did you face difficulty in finding the perfect e-learning authoring tool or learning platform?	105	53	52
5	Have you completed the course at the scheduled time through online classes?	82	54	74
6	Have you used ICT for the e-Learning platform before the COVID-19 pandemic?	102	108	-

Out of 210 participants, 102(48.57%) participants used the ICT For e-learning platform before the COVID-19 pandemic where 108(51.43%) participants never used ICT for e-learning before the pandemic (Table 5). 121(57.62%) participants feel a lack of classroom-like teacher presence and 44(20.95%) participants do not feel a lack of classroom-like teacher presence during online classes and 45(21.43%) participants respond neither positive nor negative (Table 5). Out of 210, 129(61.43%) participants agree part-time and full-time students can take the advantage of web-based learning, 23(10.95%) participants do not agree with the same, and 58(27.62%) participants respond neither positive nor negative (Table 5). 120(57.14%) yes, 31(14.76%) no, 59(28.10%) may be Did you face a lack of learner motivation and engagement among students during online classes? (Table 5). 105(50.00%) yes, 53(25.24%) no, 52(24.76%) maybe Did you face difficulty in finding the perfect e-learning authoring tool or learning platform? (Table 5). 82(39.05%) yes, 54(25.71%) no, 74(35.24%) Have you completed the course in scheduled time through online classes? (Table 5).

4. CONCLUSIONS

India is the second-largest populated country in the world. A large group of people is involved in teaching-learning activities in India. The education sector is exploring information communication technology (ICT) for making teaching and learning attractive and useful. During the COVID-19 pandemic, teaching-learning activities shifted to online education practices from the conventional way of education. The study through the online survey reflected as people felt that the face to face interaction can build the confidence of learner, however ICT based education could help to explore the new edges of education. Most of the people said that online education has less exposure to real-time implementation for practical knowledge. Since India is a developing country, information technology infrastructure is not as good as developed countries. More especially in rural and remote areas people facing scarcity of resources that is the hurdle for adopting online education in the current scenario. During the investigation, the zoom app was widely used for online education, and the users were concerned about data security and privacy. Poor internet connectivity, student's learning estimation, and lack of concentration during online classes are the major problem faced by the teachers and students. The internet played a crucial role in education, Google and YouTube were the highly applicable platform for educational activities during Govt. enforced lockdown to curve the effect of the COVID-19 pandemic. E-mail and WhatsApp were the best medium to disseminate course contents and class notes to the e-learner. There were 51.43% of participants never used ICT based education before the COVID-19 pandemic that revealed the lack of motivation, training, and engagement of students and teachers. ICT based education could be a cutting edge technology for education but during the survey people felt constrains of the perfect tools for the teaching-learning activities. Online teaching-learning can't replace the conventional methodology of education but it can build the conventional education system more effective. Thus it is the time to adopt online education after proper training of both teachers and students.

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