Impact of Covid-19 on Teaching-Learning Perception of Faculties and Students of Higher Education in Indian Purview

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Abstract

The education system has been brought to a halt due to pandemics around the globe. This study outlines the effect of Covid-19 on the teaching-learning perception of faculties and students of higher education in India. The recent pandemic has provided an impetus for the improvements in teaching and implementation of virtual education. Given the lack of information about how long the pandemic will go on, the demand for the current crisis is a steady move to e-education. The authority has introduced several e-platforms with online shops, e-contents, and other online material. Combining conventional technology (radio, TV, landline phone) with mobile/web technologies would

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improve connectivity and versatility with all tools. The paper employed a quantitative method to examine the perceptions of teachers and students' perceptions of e-teaching and e-learning methods. It underlined the application practice of online teaching-learning modes by considering 500 respondents. This study aims to give a holistic view of the ongoing online teaching-learning activities during the pandemic lockdown. The study also found no considerable difference between teacher/learner satisfaction during this academic disruption. Soil recommendations, managerial implications, future scope and conclusion can also be helpful for policymakers, academics, and content analytics to draw a plan of action for e-learning.

Keywords: E-learning, higher education (HE), remote centres, virtual platform, pandemic.

1 Introduction

As the higher education system develops and diversifies, society is progressively concerned about the quality of programs, public reviews, and the international ranking of higher education institutions [1]. During the pandemic time, it was very tough to deliver the content and maintain the quality of teaching. Similarly, it is easy to connect with several users at a time but difficult to identify the impact of the contents amongst users [2, 3]. India has always been a land of scholars and apprentices. At the time of independence, there were limited universities in India, with around 2,230,000 students enrolled in 500 colleges [5]. In the word of [4], India has made significant progress in terms of HE statistics. This number has expanded to 762 universities and 33,223 institutions by January 2018–19 and a total enrolment ratio of 26.20% for the age group of 20–25 years in HE.

The Covid-19 pandemic contributed to a global disruption in higher education that involved online work [7]. Imperative response to the present state called for an upsurge in online education recognition among online educators [8]. Several research studies [9–12] have established the usefulness of emerging technologies for lifelong e-learning and ongoing professional growth. E-learning has been developed globally due to the scarcity of trained educationalists and the necessity to move to a virtual platform. The e-learning market will augment 1970 million by 2022 in India [13].

Since social distance is the safest way to thwart the spread of Covid-19, educational institutions face an unparalleled task to ensure that everyone is working from a distance [10]. Therefore, business people in India have

chosen online working options, but educational institutions have opted for different ways to facilitate their students' learning [4, 8]. Once again, questions have been raised about rural learners, the education system in rural areas, and their development. Various colleges in Pune, especially engineering and design colleges, have been working to educate students through video conferencing through applications like Zoom [13]. Regardless of the safety measures posed to such cinematic conferencing appliances, these modes are commonly used and beneficial and with many benefits. A clear concept makes it valuable for both the lecturer and the scholar to provide knowledge and learning.

In the word of [14, 15], a clear, easy-to-follow, step-by-step guide means that anyone can watch the training session multiple times, making it a highly representative practice available while practising in the software. The best and easiest way to learn e-learning is a technology [16]. Many researchers reveal that tutors play a distinct role from traditional classroom instructors when they teach online courses and residential courses with the rise of the web [17]. The same phenomenon [18, 19] articulated that online instructors need training and support for new roles. A study of some aspects of faculty development programs indicates that the transfer of instructors from such programs must be read face-to-face, leading to face-to-face online settings [20].

[18, 24] conducted a hybrid experimental study to investigate teacher and learner perceptions of the effectiveness of current content delivery modes in various HEIs of India. The authors analyzed the current statistics of the Ministry of HRD and found that India's higher education institutions have grown significantly (see Table 1). There are total 1043 universities in India, and most universities are privately managed and are located in rural areas where ICT is not adequately available. The majority of colleges in the country (78.7%) are privately operated; 65.2% are private unaided, 13.5% are private aided, and 21.4% are government colleges. The number of private colleges varies significantly between states. Enrollment at all levels has increased over time. The CAGR has been 1.9% for the last five years.

By considering the extensive literature review, the researchers consensed that there is a necessity to integrate the perception of students and faculties regarding online teaching-learning and comparison with conventional teaching. This process helps the researcher to frame the following research questions:

> *RQ.1 To analyze the comprehensive view of teacher-learner towards virtual platforms during the pandemic situation.*

Table 1 HEIs in the country

Type of University	Numbers of Universities	Number of Response*
Central University	48	46
Central Open University	1	1
Institution of National Importance	135	133
State Public University	386	379
Institution Under State Legislature Act	5	5
State Open University	14	14
State Private University	327	315
State Private Open University	1	1
Deemed University – Government	36	36
Deemed University – Government Aided	10	9
Deemed University – Private	80	80
Grand Total	1043	1019

Source: aishe.gov.in [54].

The paper is concatenated as follows: After the overview of education during covid-19, the study reviewed the existing studies relevant to both ends, i.e., e-learning and higher education. Next, the authors elucidated the research questions and research design. Then the paper analyzed the experimental outcomes of various tools to test the soil hypotheses, validate the research frame, and results are elucidated in the data analysis section. The last section discusses implications, future scope, discussion, recommendation, and conclusion.

2 Review of Literature

[21] outlined how lockdown affected the network of Torino campus, and he suggested some solutions for virtual teaching. In this study, the researcher analyzed the pattern of e-learning during the lockdown. He explored the problem of networking issues during the lockdown period. The researcher found that students from different regions suffered from connecting problems in this study. The university advised them to use remote devices to work from home. [10] opined on the securitization during the learning not only on Covid-19 but also after the Covid-19 crisis passes. This study was built on a survey of American universities. The present study suggested that every university comply with the e-learning protocols and suggested some policies be made about offline teaching.

[22] highlighted the challenges of education methods during the phase of the pandemic. The study focused on how flexible ways can be generated to repair the damage to students' learning. [23] proposed some opinions about distance learning and suggested a few necessary digital tools to facilitate learning from a distance. The researcher advised the universities to adopt remote operations and make it a part of a standard curriculum. [24] analyzed mobile learning as a learning strategy at the time of pandemic Covid-19. This article focused on mobile learning as an inevitable substitute during this crisis. This study described benefits of the mobile learning because mobile learning provides anytime and anywhere learning.

[3] studied autoethnography of the students at the Beijing Normal University during the pandemic period. This study included 15 auto ethnographical texts detailing student experiences. This study answered the students how to connect virtually but without physical presence. The study also focused on the problem of social life with online learning. In this study, researchers showed the students' experience during Covid-19. [25] disclosed the future of education after Covid-19. This study was based on the situation in which most educational institutions temporarily closed and were uncertain. The study provided an innovation of the education that is 'disrupted classes, undisrupted learning'. [26] were firm believers that the requirement of the future education system is online learning.

[4] highlighted alternative sources of education and described some strategies for online teaching. This study clarified how online learning could become an opportunity at the time of the Covid-19. Few previous studies [28–30] suggested distance learning as an option during the Covid-19 pandemic and for the future. At the end of the discussion, this study proposed improving the same quality in distance learning. [31] discussed some challenges of online learning in entrepreneurship education. The researchers focused on the solutions to the challenges in entrepreneurship education during the period of the Covid-19. They suggested that universities make some protocol about education policy during this period. [32] confirmed some scholarships and assistance to the students to face the present pandemic challenges. [33] explored five styles of engagement in MOOC: Viewers, Solvers, All-rounders, Collectors, and Bystanders. The results are based on quantitative investigations of more than 3,00,000 students' behaviour in several large Stanford. The study found the same importance of offline learning and suggested MOOC providers make the content accessible. This study also found that the traditional system will survive and not substitute for virtual learning.

2.1 Reviews on E-learning and Higher Education

[7] examined the reasons for choosing online classes and highlighted some economic factors that affect online classes' promotion followed by advantages and disadvantages. The result concluded that most students preferred offline classes to virtual study. [2] explored E-learning, expectations, feedback, and problems encountered in e-learning of the students. The study analyzed the perception of students from public and private institutions.

[34] explained the importance of virtual learning and how virtual learning changed the way of teaching. This study surveyed 200 students and defined how virtual learning can make it easy to understand all the subjects. After the analysis, it was found that virtual learning environments are the best way to make life more straightforward and effortless for students. The researcher also highlighted some drawbacks of virtual learning, like maintenance and budget problems.

[26, 35] explored the need for online learning in distance education mode in Ghana. This study is based on the opinion of the 360 first-year students who enrolled in the University of Cape Coast in distance mode. This study defined how students can use technology to improve their learning skills through online content. [36] converged the education policy to implementation of online learning. It was concluded that universities must take the essential step to readiness for online learning for distance education. [16, 28, 51] focused on the technological aspect of e-learning readiness. The previous one is based on a survey of 374 academicians who use e-learning platforms and highlighted the performance of e-learning and asked how to improve the performance of the e-learning process. The second one examined the efficacy level of the students about online learning. This paper reviewed 30 research papers to check the efficiency of e-learning.

[12] outlined the role of institutions in providing the best infrastructures for e-learning. This study concluded that institutions should develop a workforce for distributing responsibility of the e-learning programs and maintaining the students' enrollment. [38] contributed to the role of e-learning in higher education and clarified the contemporary role of e-learning. This study highlighted the tools of e-learning by which e-learning can be used easily. [11] suggested that education and learning have the same importance. Today education without learning is just a formality. The study focused on combining traditional and modern methodologies, and each method of learning is essential for a sound education system.

In the word of [29], learning is a combination of skills development and emotional touch, E-learning can improve skills, and traditional learning can

give a vibrant touch to the learning. [39] found that blended learning can be predictive and has immense opportunities to explore. [9, 34] defined the students' perceptions about e-learning and articulated how technology can play a significant role in the education system and how the challenges of virtual learning can be resolved to facilitate a better learning environment for the scholars. They further outlined the problems related to implementing the e-learning portal viz. lack of internet, lack of ICT, server, non-availability of cloud, hardware, software etc. [36] investigated the attitudes of the male and female students regarding traditional and online learning and concluded that there should be a valuable source of motivation to use more and more e-learning.

[11] investigated the importance and issues related to e-learning in HE. This study mainly focused on the advantages and effectiveness of virtual content. In the word of [17], "technology is playing a significant role in the development of every country", so it is essential for every nation adopting technology even in the education field. [31] discussed a theory that defines the perception of students and faculty about online learning by considering socio-culture factors. [33, 50] articulated the changing learning pattern in a digital scenario that is conducive to teachers and learners.

[27] contributed some outcomes about the possibilities and limits of e-learning, suggested how to use modern technology in the learning process, and proposed a model to be adopted for undergraduate studies. [28] presented some policies on making the easy way to learn mathematics with the help of the electronic modes of the study. This study focused on using online libraries and internet sources to consolidate the knowledge of mathematics. He found that the students got higher marks in mathematics by using the e-mode of learning.

[6] attempted to distinguish the efficiency of the students enrolled in online and offline courses. The efficiency concerning the students was explored in the context of learning ability. In this study, researchers used the DEA approach and observed that the online course format is more efficient than offline. This research can be helpful in business schools to make a better decision regarding course format. [35] observed that virtual learning held many positions in the education and learning system. The outcome of this research asserted that satisfaction is the primary factor for a succession of e-learning models.

In the word of [40, 41], "satisfaction plays the main role in the E-learning system because satisfaction relates to the social facets". [32] defined the contentment level of students towards e-education. The author disclosed the

principles of e-learning and how students can adopt e-learning to satisfy themselves and enhance life skills. [42, 43] showed in their studies that e-learning through social media had gained much attention in the recent past. Similarly, [15] suggested that the physical study material should be similar and aligned to e-content. [48] also explored the need for professional learning through the virtual platform for the economical and capital growth of the nation. [45] explored the factors which influenced the environment of e-learning and examined the perception of teachers about e-learning. This study revealed many unique models for e-learning as a replacement for teachers. [48] highlighted the students' perceptions about the online tutorials and engrossed in the opportunities in online synchronous tutorials. [20] recommend the use of e-learning for faculty development in medical education. This study extolled the e-learning by which education can make a practical and straightforward approach. Recent studies [26, 40, 49] focused on developing the infrastructure to support e-learning with culture and value systems to improve the digitalization of learning systems.

2.2 Novelty and Gap

A substantial body of literature links e-learning to the pandemic situation. Thus, most previous studies explored teaching-learning perception with students, teachers, or both. Still, the same has not been investigated during the pandemic where life has completed stuck, and the emerging way of digital learning is gaining much attention in the recent past. Despite the extensive effort to comprehend the level of student-teacher perception, the previous studies did not quantify the teaching-learning statistics of the higher education system. In the pandemic situation, there is a need of exploring the teaching-learning perception of faculties and students of higher education. There are still challenges in gauging the users' perception of e-learning, delivering the content online, assessing, monitoring, and evaluating. Due to this lack of complete understanding, the study quantifies the impact of the pandemic on users' viewpoint to e-learning with particular reference to HEIs of India. Therefore, the current research assumes a great significance of learning virtually in the Indian context.

3 Research Design and Methodology

To fulfil the specified research objective, an exploratory study was employed. The analysis used sources of primary as well as secondary data. A quantitative

methodology to research was employed for data collection using a pre-tested standardized sample survey method [4, 15]. The secondary statistics was collected through websites and reviews in various magazines, newspapers, and related articles. India's public, private, and deemed universities have been chosen for the survey. There were 150 universities and 28 colleges. The data was collected from 550 respondents. Out of the 550, only 50 respondents had a disability from non-response to some questions. So, 500 responses were found valid for all purposes to measure. The Google form was used to collect the relevant data from the academicians and students (hosted online from 15 February and 15 November 2020). Contact information of actors was obtained from the websites of selected universities. Where the communication details of the appropriate respondents were not accessible, the university's registrar and the administrative officer were approached with the authorization to share the necessary information with the proper authority. Information on research goals and requests for inclusion in the study was given to all respondents. Further, this digital data of the participants has been compiled and processed in word press [49]. The following is a flow chart to conduct the research.

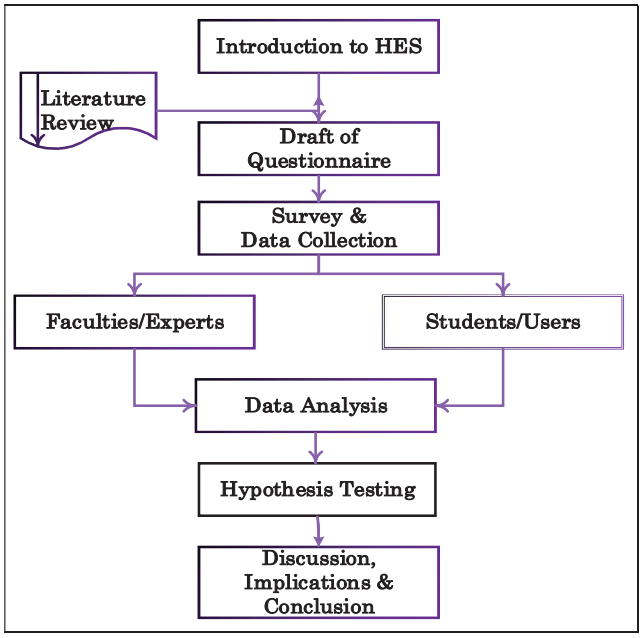

Figure 1 Research framework of the study.

The questionnaire consists of predictive, interpretive, descriptive, comparative questions. The scale statements were selected based on the previous studies in the context of teaching-learning perception of teacher-students [7]. In the ultimate questionnaire, various segments related to teaching-learning intention were incorporated from different actors of the education fraternity. Hence, the proposed hypotheses are as follows:

H_1: There is no change in the learning perception of faculties and students during the Covid-19 lockdown.

H_2: There is no considerable difference between teaching-learning satisfaction of faculties and students for e-classes.

4 Data Analysis and Interpretation

The identity and confidentiality of the respondents were removed from the study to obtain a clear understanding of teaching-learning awareness of e-learning. The demographic overview of the respondents is depicted below.

Table 2 Demographic profile of faculty

Particular	Variables	Freq.	%
Academic rank	Lecturer	66	28.60
	Assistant Prof.	95	41.10
	Asso. Prof.	45	19.50
	Professor	15	06.50
	Instructor	10	04.30
		231	100
Gender	Male	125	54.10
	Female	106	45.90
		231	100
Domain Specialization	Social Sciences	72	31.10
	Engineering	63	27.30
	Education	64	27.70
	Health Sciences	32	13.90
		231	100

The above table exhibits the faculties' general profile, including their rank viz. 28.60% were lecturers, most of the respondents were assistant professors, 41.10%, 19.50% were associate professors and 4.30% referred to educational instructors. 54.10% of actors were male, and the share of female respondents was 45.90%. This comprehensive study comprises different domain

profiles of the actors, 31.10% faculties from social sciences, 27.30% were engineering, educational respondents 27.70% followed by health sciences 13.90%.

Table 3 Demographic profile of students

Particular	Variables	Freq.	%
Gender	Male	138	51.30
	Female	131	48.70
		269	100
Subject Specialization	Social Sciences	92	34.20
	Engineering	74	27.50
	Education	66	24.50
	Health Sciences	37	13.80
		269	100
Age	>18 years	105	39.10
	18–25	108	40.10
	26–30	41	15.20
	<30 years	15	05.60
		269	100

The students' profile is also pertinent to discuss because they are ultimate users of e-learning platforms, so the above table depicts that 51.30% share of male and 48.70% was female students. Their subject specialization was also different viz. 34.20% were from social sciences, 27.50% were from technical studies, 24.50% were from educational backgrounds, and 13.80% were from health sciences. Most respondents were under the age of 25 years, 39.10% were less than 18 years, 40.10% between 18–25, 15.20% between 26–30, followed by 5.60% who were more than 30 years.

Table 4 Online aspect during covid-19

Statements	Yes	%	No	%
Use online tools before Covid-19 lockdown	269	58.80	231	46.20
Using tools & training to start online classes post lockdown	427	85.40	73	14.60

Table 4 represents the usage of online tools before lockdown; most respondents (N = 269, percentage = 53.80) said yes, followed by no opinion with respondents (N = 231, percentage = 46.2). It can be clasped from the table that the highest number of actors (N = 427, percentage = 85.4) said yes about using online tools and training post lockdown while only (N = 73, percentage = 14.60) denied any training. This finding is in accordance with

that of [19], who claimed that actors learned a lot about e-education during the lockdown period.

Table 5 Methods use in online teaching-learning

	Yes		No	
Methods	N	%	N	%
Multimedia presentations	349	69.80	151	30.20
Computer-based assignment	224	44.80	276	55.20
Subject notes	230	46.00	270	54.00
SlideShare/ PPTs	295	59.00	205	41.00
YouTube videos	378	75.60	122	24.40
Online live classes	286	57.20	214	42.80
WhatsApp	109	21.80	391	78.20

When asked about the methods were being used while teaching online, most respondents responded to YouTube videos (N = 378, percentage = 75.6), multimedia presentations (N = 349, percentage = 69.8), Slide share/ PPTs (N = 295, percentage = 59), online live classes (N = 286, percentage = 57.2), subject notes (N = 230, percentage = 46), WhatsApp (N = 109, percentage = 21.8). Thus, it can be inferred that users utilized and learned various instruments/methods of teaching-learning during the lockdown, and this finding agrees with previous work [49] of e-learning studies.

Table 6 Using portal while e-learning

Portal	N	%
Cisco Webex	23	04.60
Microsoft team	50	10.00
Zoom	172	34.60
Google Classroom	170	34.00
Any other	85	17.00
Total	500	100.00

Equal figures (N = 172, percentage = 34.40) of the respondents believed in Zoom and Google classroom. Out of remaining (N = 85, percentage = 17.00) were using others platform while (N = 50, percentage = 10.00) accomplished the task through Microsoft team and a negligible percentage for Cisco Webex.

Table 7 View towards teaching-learning experience

Variables	SA	A	N	D	SD	Total
e-teaching is time consuming than traditional teaching	70 (14%)	13 (02.60%)	110 (22.00%)	147 (29.40%)	160 (32.00%)	500 100%
Technology friendly after Covid-19	139 (27.80%)	196 (39.20)	112 (22.40%)	06 (1.20%)	47 (9.40%)	500 100%
Qualities of lectures improved during online teaching	85 (17.00%)	170 (34.00%)	172 (34.40)	50 (10%)	23 (4.60%)	500 100%
Work efficiency increased after online teaching	118 (23.60%)	195 (39.00%)	132 (26.40%)	42 (8.40%)	13 (2.60%)	500 100%
Knowledge increased after this Covid-19	81 (16.20%)	170 (34.00%)	137 (27.40%)	76 (15.20%)	36 (7.20%)	500 100%
Skill increased after Covid	197 (39.40%)	173 (34.60%)	91 (18.20%)	31 (6.20%)	8 (1.60%)	500 100%
Attitude changed towards e-learning	154 (30.80%)	212 (42.40%)	71 (14.20%)	54 (10.80%)	9 (1.80%)	500 100%
Changed teaching perception	81 (16.20%)	170 (34.00%)	137 (27.40%)	76 (15.20%)	36 (7.20%)	500 100%

The above table exhibits that most respondents strongly disagreed that online teaching is more time-consuming than traditional classroom teaching. Similarly, when the respondents were asked about their view regarding the techno-friendly mode of online learning tools, (N = 196, percentage = 39.20) agreed with the statement, and the respondents (N = 139, percentage = 27.80) showed strong agreement with this statement. (N = 112, percentage = 22.40) were unclear about it while the defendants (N = 47, percentage = 09.40) were passionately arguing, and respondents (N = 6, percentage = 1.20) disagreed with the assertion. The users were more technology-friendly after the lockdown. This result is consistent with those of [25, 35] who verified that technology drives education.

Further, equal numbers (N = 172, percentage = 34.40) of the actors had an impartial opinion about the quality of lectures. Out of the remaining (N = 85, percentage = 17.00) agreed, while 10% of adherents (N = 50) disagreed with this argument. Most of the respondents (N = 118, percentage = 23.60) strongly agree that work efficiency has increased after having online teaching, whereas (N = 13, percentage = 02.60) disagreed with that

statement. The majority of respondents (N = 170, percentage = 34.00) agreed with the statement that domain knowledge has increased after this lockdown, and 16.20% of defendants (N = 81) have exhibited a strong deal towards e-learning. Most respondents indicated that skill has increased after this Covid-19, averages score of 4.048 projects that skill has increased after this Covid-19 lockdown. Most of the respondents (N = 154, percentage = 30.80) agreed with the statement that attitude towards online teaching has improved after this lockdown. Moreover, most respondents opined that teaching perception about traditional to online education has changed after the Covid situation.

Table 8 Problem faced during online teaching-learning

	Yes		No	
Problem	N	%	N	%
Technology issue	295	59.00	205	41.00
Computer literacy	381	76.20	119	23.80
Network issue	256	51.20	244	48.80
Time management	195	39.00	305	61.00
Two Way communication	346	69.20	154	30.80
Lack of human interface	303	60.60	197	39.40
Any other	156	31.20	344	68.80

When asked about the problem faced during online teaching, majority of the respondents respond to computer literacy (N = 381, percentage = 76.2), two-way communication (N = 346, percentage = 69.2), lack of human interface (N = 303, percentage = 60.60), technology issue (N = 295, percentage = 59), network issue (N = 256, percentage = 51.20), time management (N = 195, percentage = 39) and others (N = 156, percentage = 31.20). The same has been addressed by previous studies [23, 52, 53], who found that the availability of networks and computer literacy were the major impediments.

Table 9 Group statistics of overall satisfaction with online teaching

Particular	S/F	N	X	σ	St. Err.
Overall satisfaction with online teaching	Students	269	3.4833	1.2565	0.07662
	Faculties	231	3.3853	1.2797	0.08420

Table 9 outlines group statistics, i.e., mean, (σ) and standard error mean of the overall satisfaction of the faculty and the students.

Table 10 Independent t-test of overall satisfaction with e-teaching

		Levene's Test		t-test for EoV						
						Sig.	Mean	St. Er.	95% CoD	
Particular		F	Sig	t	d-f	(2-tail)	Dif.	Dif.	Low	Up.
Satisfaction with online teaching	Eq.- var.-assumed	0.731	0.393	0.86	498	0.38	0.09	0.11	−0.12	0.32
	Eq.-var.- not assumed			0.86	498	0.39	0.09	0.11	−0.12	0.32

Table 10 articulates F-value 0.731 and significant level 0.393 for Levene's test for EoV, so it can be concluded that both variants are indifferent. Furthermore, the t-test that uses unequal variances assumed shown (Sig. 2-tailed) figure is 0.390, which is more than 0.05. Thus, H_0 is accepted, and it can be inferred that there is no considerable difference in the overall satisfaction level of teacher-learner. While holding the analytical lens at the core of the study, it offers a range of perspectives on the issues facing online learning today [36, 43].

5 Implication and Future Scope

This pandemic situation necessitated a study to investigate students-teachers satisfaction with the emergency education processes in place at that time. Using online virtual classrooms as a substitute for traditional face-to-face teaching presented some difficulties. The limitations of student-student and student-teacher interactions were the most significant. To address this issue, the author suggests implementing various outcome-based teaching strategies that encourage proactive learning. Alternative assessment methods were used during the lockdown to alert teachers to the importance of using them. Nonetheless, because students have less experience with alternative evaluation methods, they must be accompanied by a student-friendly guide to understanding the required actions and the evaluation procedure. The paper is preliminary descriptive research on students' perceptions of online learning during the first phase of Covid-19. Still, other depth methods such as focus groups and unstructured interviews may be used in future studies to describe student-teacher perceptions of this urgent issue. Study with more sample units and education sections can also refine the outcomes of this work. The perspectives of various educational administrators and teaching assistants should be studied in the future investigation of urgent remote learning. Thus, a cross-sectional study of primary, middle, and higher education will be a future scope of this paper.

6 Discussion and Recommendations

To the authors' knowledge, this is the first study to assess the students' acceptance and perceptions of e-learning in India during the first phase of Covid-19 closure period. Full-time virtual e-learning may be considered a newly adopted learning modality among higher education students. New perspectives were noticed by understanding the views of teachers and students about the novel learning technology (e-learning), and this finding agrees with earlier results of e-learning lessons [31, 46]. The education ministry has unveiled many simulated platforms with online stores, free e-content, and teaching software. [26, 30] suggested using ICT for modern and traditional technology (radio, TV, landline phone) with mobile/web technologies enhance access and flexibility for the learners. This also includes modernizing the assistance policy to meet the required number of students' educational needs. Backward groups also need to mobilize all service providers to implement ample access to the educational cloud. There is considerable literature [12, 40] that showed that virtual education had become a preferred choice during an outbreak of Covid-19. Online/virtual education may be a widely accepted tool during Post-covid, but the relevance of traditional classroom teaching and learning cannot be substituted. The study discussed various aspects of virtual learning by considering 500 respondents from various universities and colleges of India. Most students and faculty agreed that learning is more critical because there is no physical watch or a valid feedback assessment process. Scholarly reviews [21, 46] were firm believers in the need for interactive educators, content developers, and feasible cloud services to facilitate e-learning in the present scenario.

The study also found no considerable difference between teacher-learner satisfaction while using these virtual platforms for education. These results are consistent and relevant with the findings of previous studies [5, 43]. Moreover, there was a change in the learning perception of faculties and students during Covid-19; most of the respondents preferred the virtual platforms of gaining knowledge but perceived that these platforms could not be a perfect substitute for traditional classrooms. The current study recommends that e-learning resources, LMS, ICT be monitored at higher education institutions. Several webinars and workshops suggested improving the faculty development programme to raise student and staff awareness of online teaching and assessment. Moreover, the use of complete and partially online courses and a complete shift from physical attendance to online ones is encouraged in the future.

7 Conclusion

This study describes the impact of Covid-19 on the teaching-learning perception of faculties and students of HE in India. Online education is a learning or teaching tool that depends on electronic equipment and technology instead of paper and the classroom. The recent pandemic has formed an opportunity for notable changes in education and introduced virtual teaching at every level of learning. The mixed-methods research explored the views of teachers and students at various Indian universities. The data in this study about users' perceptions of emergency remote teaching show that students are very concerned in learning how to use this new system to perform well academically. An appropriate educational environment and system that enable academic achievement must be prepared to aid student learning and achievement. Since teachers and students are unfamiliar with this educational method, it is vital to get an understandable and practical manual for accessible e-learning. There is a need to advance the class models, enhance the reach, reinforce the existing advantages of ICT, all of which are mentioned in this study for a more successful e-teaching environment. Eventually, the study concluded that e-learning could improve learning effectiveness and help facilitate learners' life skills.

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