

School teachers' perception and challenges towards online teaching during COVID-19 pandemic in India: an econometric analysis

School
teachers'
perception and
challenges

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Abstract

Purpose – Coronavirus disease 2019 (COVID-19) outbreak has impacted catastrophically every sector of the economy throughout the world. And, the education sector is not leftover from the devastating effects of lockdown, especially in South Asia. It has led to the prolonged closure of schools/universities, subsequently, traditional teaching expeditiously transformed into online teaching. In the light of the events, this study is pertinent to examine teachers' perceptions of online teaching and the obstacles they face in online teaching during this pandemic.

Design/methodology/approach – The research takes a quantitative and sample survey approach. A Google Form Questionnaire was used to obtain a sample of 200 Delhi school teachers in March and April 2021. Data were analyzed in SPSS by using Descriptive Statistics, Factor Analysis, Reliability and Chi-Square test, etc.

Findings – The result of the study indicates that on average, teachers have a positive perception about virtual teaching amid COVID-19 for reducing the learning gap and shaping pupils' future during the crisis. Nevertheless, they encountered several obstacles in online teaching such as technical obstacles, difficulties in online exams and assessment, etc.

Practical implications – The findings of this study would persuade educational institutions and policymakers for enhancing the quality of online teaching by embracing the newest instructional strategies and providing continuous training to teachers.

Originality/value – Several studies described obstacles confronted by instructors in virtual teaching in higher education during the Coronavirus while disregarding the perception and challenges of school teachers toward e-learning in an ongoing outbreak. The present study replenishes this gap.

Keywords COVID-19, Online teaching, ICT device, Teachers' challenges, Perception

Paper type Research paper

1. Introduction

The novel coronavirus (Coronavirus disease 2019 [COVID-19]) outbreak was discovered in China in December 2019 and become a global pandemic on March 11, 2020, as declared by World Health Organization (WHO) (Cucinotta and Vanelli, 2020). The effect of the COVID-19 pandemic did not only lead to standstill global economic growth but also retroverted many countries' developmental progress (Statista, 2020). The worldwide education system is facing a new crisis due to the prolonged closure of schools and universities since March 2020 to curb the transmission of the disease and suddenly traditional classrooms have shifted into virtual

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classrooms having a staggering effect on the Indian educational sector because of the enormous digital divide (Khan *et al.*, 2021). According to National Sample Survey Organisation (NSSO) 75th round report (2017–2018), less than 15% of the rural households had Internet access compared to 42% of urban Indian households (NSSO, 2019) that not only leads to a wide rift in educational inequality but also exacerbates existing socio-economic disparities (Modi and Postaria, 2020). Due to the COVID-19 outbreak, 63 million teachers have been affected globally and hardly any country provided training to the teachers on virtual teaching (UNESCO, 2020). Besides this, more than 320 million students, especially 130 million learners from secondary schools in India have been severely affected due to the nationwide lockdown (Sharma, 2020).

Around the world, there is one common drift in the education system that is “emergency e-learning” which means an expeditious transition to online education owing to COVID-19 as a highly infectious virus (Murphy, 2020). However, virtual teaching was not very common in India before this pandemic but now it is the only medium/source used to reduce the knowledge void that appeared because of lockdown (Henderson *et al.*, 2020). Electronic learning [e-learning] can be defined as methods for instruction that includes electronic devices and tools and the interaction between teachers and students associated with the educational process (Dobre, 2007). Online teaching has both pros and cons for teachers and students during this pandemic. The overwhelming professors confronted obstacles in e-learning due to the lack of online teaching experiences (Bao, 2020), dubious effectiveness of online assessment and evolution (Kumar, 2015), dearth of technical infrastructure in a home as well as lack of interaction, inadequate and costly Internet connection. Nonetheless, online education has led to flexibility in time and space, easy and rapid share of study material, quick feedbacks, more freedom to connect with faculty (Khan *et al.*, 2020), transportation and financial cost reduction, improvement in the technological skills of teachers and students (Kim, 2020) and increase in the convenience and comfort of learners (Aithal and Shubrajyotsna, 2016).

Online education was common in developed countries, nevertheless, the COVID-19 pandemic has made it obligatory for the educators of underdeveloped nations to use digital platforms for instruction and evaluation of students to perpetuate their academic interest. This crisis has animated innovation and development inside the education sector for continuity of students’ learning. United Nations Educational, Scientific and Cultural Organization (UNESCO) began the Global Education Coalition program (United Nations, 2020), and the Ministry of Human Resources Development (MHRD) shared different free computerized e-learning programs that include the National Program on Innovation Enhanced Learning, e-pathshala, Study Webs of Active–Learning for Young Aspiring Minds (SWAYAM), SWAYAM Prabha, etc. for pupils so that they can take advantage of the situation and continue their education during the shutdown (MHRD, 2020). Online education is not quite famous in India. The majority of the instructors lacked the necessary skills to teach and organize exams online. As a result of nationwide lockdown, educators began to teach virtually as they had no other option. They confronted obstacles like lack of basic infrastructure at home, technological problems, etc. Thus, it is appropriate that virtual teaching cannot be effective without knowing the positive and negative perceptions along with obstacles faced by teachers toward e-learning, as they are frontline employees of any educational foundation. With this backdrop, present research endeavors to scrutinize school teachers’ perceptions as well as challenges concerning online teaching so that their experiences can be used by educational institutions and policymakers to bring about requisite changes through incorporating newer methods and techniques of teaching and learning during and after the pandemic.

The remaining part of the study is laid out as follows: Section 2 covers materials and methods incorporating review of literature, research gap and objectives. Section 3 covers research methodology. Results and findings are delineated in Section 4. Section 5 concludes the paper and recommends policy implications.

2. Materials and methods

2.1 Review of literature

The COVID-19 grew rapidly and spread all over the world. It has wreaked havoc on education like never before; due to the shutdown of schools/universities at very short notice and forced transmission toward an online mode of learning without preparation that led to a change in the relationship between the students and teachers (Graham and Sahlberg Pasi, 2020). One study showed that teachers faced problems during online classes due to lack of technical skills, absence of student's interest and drop in participation. Students made a lot of excuses which were difficult for the teachers to identify the genuine reasons (Yusnilita, 2020). Another study mentioned the variety of issues from the perspective of teachers in moving from conventional teaching to virtual learning such as actively engaging students and encouraging them to participate in the online teaching-learning process and developing quality content for teaching. There are numerous technological challenges, such as downloading problems, app installation difficulties, poor Internet connection, login id issues, inaudible voice, video, etc. (Sangeeta and Tandon, 2020). Pakistan's medical university faculties opined that e-learning has promoted student-centeredness in lockdown period while some teachers faced difficulties in teaching practical and clinical work (Mukhtar *et al.*, 2020). The Uttarakhand University teachers revealed that overall teachers have a positive perception of online education during the COVID-19 and young teachers have more actively engaged in online learning. Further, e-learning not only enhanced teachers' knowledge but also improved their technical skills. It extends work hours for teachers due to the required art of knowledge related to advance multimedia teaching aids and also creates a communication gap between pupils and teachers (Dubey and Singh, 2020).

The study from Indonesia has analyzed that teachers have a positive perception of ease of use and usefulness of virtual learning during an ongoing outbreak, while older teachers faced problems in creating engaging content, describing and giving feedback through e-learning systems (Rahayu and Wirza, 2020). Since the emergence of the pandemic, university students believed that professors' online teaching abilities have strengthened (Chakraborty *et al.*, 2021). On the other hand, university teachers faced challenges during online teaching in Bangladesh due to shortage of technology, infrastructure, costly and low speed of Internet connection, economic and financial hardship (Ramij and Sultana, 2020). Also, teachers put a lot of effort and time to create successful online classes as compared to conventional classes. Subsequently, at certain times, teaching which includes practical and project work and using specific laboratory tools are not well suited for virtual learning (Jacques *et al.*, 2021). On the other hand, university teachers have a negative perception toward distance learning due to dissatisfaction with the institution's training and assistance. They felt that virtual classes are unable to replace the emotional bond that existed between pupil and teacher in conventional classes and would raise unemployment among teachers (Kulal and Nayak, 2020).

The survey of Learning Spiral indicated that Digital learning is a challenging task for 84% of teachers and not more than 20% of teachers received training on how to deliver education in a distant mode (Roshini, 2021). Another study divided obstacles into four groups, *obstacles in a home setting* such as paucity of basic facilities and family disruption while teaching. Under *institution support*, obstacles included lack of training and unclear direction of teaching and *teacher technical and personal obstacles* such as pessimistic attitude become obstacles in e-learning (Joshi *et al.*, 2020). Due to the shift toward online learning, it was difficult for teachers to keep track of students' moods and their phone activities simultaneously with their engagement in studies during online classes (Sumanth, 2021). And it is quite challenging to provide additional time to pupils that require physical attention (Hindochoa, 2020). Although some teachers have an optimistic and encouraging perspective toward online teaching, they felt that they can be taught better in conventional teaching because of inadequate training and efficiency in virtual teaching (Sareen and Nangia, 2020).

2.2 Research gap

Thus, several studies (Yusnilita, 2020; Mukhtar *et al.*, 2020; Ramij and Sultana, 2020; Kulal and Nayak, 2020; Joshi *et al.*, 2020) described issues confronted by instructors in virtual teaching within universities and colleges throughout the COVID-19 crisis while neglecting school teachers' perception and challenges toward e-learning in an ongoing epidemic. Many types of research (Hindochoa, 2020; Sumanth, 2021; Roshini, 2021; Ramij and Sultana, 2020) have been associated with the negative attitude of teachers about virtual learning; however, in this research, both negative and positive perspectives regarding teachers and challenges faced by them are discussed. It represents the research void that the current investigation aims to address.

2.3 Objectives

The objectives of the study are as follows:

- (1) To examine the perceptions of school teachers concerning virtual teaching amid of COVID-19 pandemic.
- (2) To examine the school teachers' difficulties and challenges looked at by them in e-learning throughout the COVID-19 outbreak.

3. Research methodology

This research investigates the perspective and difficulties of Delhi school teachers (school teachers here means those who teach from primary to secondary level of education) regarding online teaching. A quantitative cum sample survey method are used in this study. It uses both primary and secondary sources for data collection. Purposive sampling was used to select the respondents who are school teachers. An organized Google Forms questionnaire was used to gather essential information. The questionnaire was divided into two segments. Segment 1 accumulates data associated with the demographic status of the teachers and information and communications technology (ICT) gadgets used by them. Segment 2 of the survey evaluates teachers' insight and difficulties toward e-learning during the COVID-19. During the second wave of the pandemic, March and April 2021, a sample of 200 teachers responded to a survey from various schools of Delhi. Teachers' perceptions toward online classes were gathered using a two-point Likert scale, with one representing agreed and zero representing disagreed. The Statistical Package for Social Science (SPSS) version 20 was used to analyze the data.

For data minimization and to classify latent variables assessed by the observed components, the principal component analysis (PCA) was used. PCA is a statistical data depletion method that belongs to the factor analysis family and its objective is to find out the number of items that describe the variation in the original data set using just a few underlying components (Todhunter, 2015; Tabachnick and Fidell, 2014). The items which have an Eigenvalue (EV) higher than one are considered representative (Hair *et al.*, 2006). The Cronbach's alpha was used to assess the questionnaire's reliability and internal accuracy. The Cronbach's alpha value varies from 0 to 1, with a defined threshold value of 0.7 being regarded as good, indicating high internal consistency. Sekaran and Bougie (2016) mentioned that if Cronbach's alpha has a reliability value that lies within ± 0.41 and ± 0.70 , it indicates moderate reliability, whereas a value higher than 0.70 suggests good internal consistency. Besides these, various statistical methods such as descriptive statistics, chi-square test and other statistical approaches were applied.

4. Results and findings

This segment delineates the demographic information of school teachers; ICT gadgets and tools used by the teachers for virtual teaching, teachers' perception regarding virtual

teaching; and difficulties and problems confronted by the teachers amid of COVID-19 pandemic.

4.1 Demographic profile of the respondent teachers

The demographic information of the respondent teachers is demonstrated in Table 1. Most of the respondent teachers (66.5%) were males, whereas 33.5% were females, as can be observed. The majority of respondents (82.5%) said they were teaching in government schools, while 8.2% were teaching in private schools and 9% were in aided schools.

4.2 ICT device knowledge and online platform use for virtual teaching

Table 2 illustrates the ICT device knowledge of respondent teachers. It is vivid that conventional teaching is not possible in this vague time course of the COVID-19, so virtual teaching has emerged as cutting edge to partially resolving perplexity (Shetty *et al.*, 2020). Though previous understanding of ICT is required for teaching online; therefore, the authors conducted interviews with respondent teachers and observed that 74.5% of the teachers had the experience of using ICT devices. Most of the teachers (65%) used their mobile phones for virtual teaching and only 2% of the teachers used computers. Many teachers opined that online teaching via smartphones is very challenging and time-consuming (Pallavi, 2020). Also, 13% of teachers complained that the quality of their Internet connection is poor which

Variables	Levels	Frequency (N)	Percentage (%)
Gender	Male	133	66.5
	Female	67	33.5
School	Government	165	82.5
	Private	17	8.5
	Aided	18	9.0

Table 1.
Demographic profile of
the respondent
teachers

Source(s): Authors' calculation from Google Forms questionnaire

Statements	Levels	Percentage (%)
Prior knowledge of ICT device	Yes	74.5%
	No	25.5%
ICT device used by teachers	Computer	2%
	Laptop	4.5%
	Mobile phone	65%
	Both mobile phone and laptop	29.5%
Quality of Internet	Best	17%
	Good	70%
	Poor	13%
Connection disconnected during virtual teaching	One	36.5%
	Two	25.5%
	Three	7%
	More than three	31%
Digital resources helped in online teaching	Digital textbook	11.5%
	Videos	48.5%
	PowerPoint presentation	20%
	Quizzes/assessment question	20%

Table 2.
ICT device knowledge
of respondent teachers

Source(s): Authors' calculation from Google Forms questionnaire

leads to connection disconnected during virtual classrooms more than three times for 31% of teacher respondents. This created a hassle for students and teachers in live online classes as videos got paused due to poor connectivity issues that generate communication gaps within teachers and pupils (Mitra, 2020). Most of the teachers (48.5%) taught through videos, whereas 20% of total teachers used PowerPoint presentations and quizzes/assessments for online teaching. It has increased teachers' workload due to creating digital videos, PPTs and e-notes for pupils, and they are required to work 24×7 to clear students' doubts any time (Hindochoa, 2020). During the lockdown, digital tools are the sole means to interact with students for filling the knowledge gap that arises as a result of the closure of schools. Most of the teachers (38%) have preferred to use Google meet for online teaching, while 37.5% of teachers are using Whatsapp groups in schools of Delhi. The third chosen app for virtual teaching is the Zoom app that is used by 19.5% of teachers, whereas 3.5% of teachers used YouTube and 1.5% preferred school websites for online teaching as portrayed in Figure 1.

4.3 Virtual teaching and assessment problems confronted by respondent teachers

Table 3 demonstrates that around 46% of school teachers of Delhi were facing problems while conducting online classes. Several teachers complained "non-availability of smartphones for students, network issues, data pack problem, less participation of students" are major problems during online classes. More than half of the teachers (57.5%) confronted the problem of student assessment and evaluation online. As per Respondent-32 in online evaluation, "authenticity of students' work, their understanding and behavioral changes cannot be checked". More than 60% of the teachers faced the problem of tracking attendance during online teaching. Respondent-166 said, "very few students joined online classes and after joining they off their videos." A total of 35% of the teachers felt that students were misbehaving/disrespecting during virtual classes, as mentioned by Respondent-125 "Students do not listen properly; they do not answer any question from the teachers." Some teachers have had to face the problem of students logging in with fake IDs many times (Pallavi, 2020). Half of the teachers perceived anxiety regarding the delivery of content, electricity or Internet connection during online teaching. More than 50% of the teachers received training from

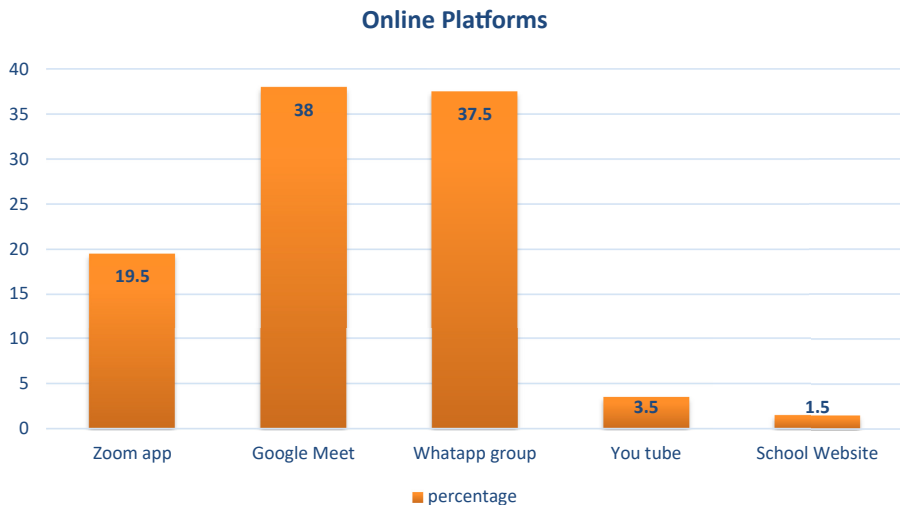


Figure 1.
Online platform used
for online teaching

Source(s): Authors' calculation from Google Forms questionnaire

the government or schools for how to conduct online classes, while 36% had not received any training during this pandemic.

4.4 Principle component analysis and reliability analysis of perceptions and challenges

In the present study, authors enquired about respondent teachers' positive and negative perspectives of virtual teaching and the obstacles confronted by them. The PCA with varimax rotation was used one by one for both perceptions and challenges. The Kaiser–Meyer–Olkin test (KMO = 0.795) (used for checking sample adequacy) value greater than 0.7 which means data was adequate and Bartlett's test of sphericity (chi-square value = 141.422, $p < 0.001$) showed that inter-correlation between variables was clearly described for PCA. The result indicated that two factors have an Eigenvalue greater than one, which implied two-component solutions. Four of the eight components broadly reflected the negative perceptions of teachers about online teaching while three represented positive perceptions. The first factor was a negative perception that described 40.97% of the variance and the second factor, a positive perception that explained 56.11% of variance as portrayed in Table 4. The items with a communality value smaller than 0.5 were then deleted. The variable "continuity and efficiency get affected in online classes" had a communality value of 0.425, which was less than the threshold value, was eliminated.

Further, PCA has applied to issues and challenges confronted by teachers in distance learning. The result showed that three factors have an EV > 1 indicating three-component solutions. There were a total of seven statements, three out of seven variables reflected technical obstacles, two items represented online exams and assessment and one indicated lack of basic infrastructure. The first factor that was technical obstacles explained 24.98% of the variance, the second factor, i.e. online exams and assessment delineated 40.70% of the variance, and the third factor which was lack of basic infrastructure described 51.14% of total

S. no	Statement	Yes (%)	No (%)	Cannot say (%)
1.	Facing any problem while conducting online classes	45.5	47	7.5
2.	Problem of student's assessment and evaluation in online teaching	57.5	42.5	0
3.	Problem of tracking attendance during online teaching	60.5	31.5	8
4.	Students misbehaving/disrespecting during online classes	35	50	15
5.	Feel anxiety during online classes regarding delivery of content, electricity or Internet connection	50.5	20.5	29
6.	Received any training from government or school for how to conduct online classes	64.5	35.5	0

Table 3. Virtual teaching and assessment problems faced by teachers

Source(s): Authors' calculation from Google Forms questionnaire

Components	Statement retained	% Of variance explained
Negative perception	Facing difficulties in student retention	40.97%
	Lack of interaction with student	
	Not satisfied to deliver content in online classes	
	Online teaching is inconvenient and ineffective	
Positive perception	Ease and quick share of reading material	56.11%
	Flexibility in time and space	
	Fast feedback	

Table 4. Principle component analysis for perception

Source(s): Authors' calculation from Google Forms questionnaire

variance that is illustrated in Table 5. The item “Scheduling and conducting online classes” was deleted as their communality value was smaller than 0.5.

Later, Reliability Analysis (Cronbach’s coefficient alpha) is used to assess the reliability of several statements that have been chosen after PCA analysis. When evaluating the questionnaire’s internal reliability and scrutinizing the qualities of measuring scales, the reliability test is a crucial step (Hair *et al.*, 2006). Table 6 represents the value of Cronbach’s alpha for three items is greater than 0.7, indicating that the items have a high level of internal consistency.

4.5 Further analysis of teachers’ negative and positive perception of online teaching

As the Coronavirus outspreads, there has been an expanding shift toward online teaching, as a result of the closure of schools/universities for an uncertain time frame as the solitary alternative left (Martinez, 2020). Now, it is the moment to seriously reconsider, upgrade and reinvent our educational institution, which is in desperate need in the light of the current circumstances as e-learning might become inevitable in the forthcoming years. Hence, it is significant to know the positive and negative perspectives of school teachers of Delhi with regard to virtual teaching amid pandemic because if teachers are dissatisfied and discover that online teaching is unsatisfactory then the education system will deteriorate.

4.5.1 Positive perception of teachers toward virtual teaching. Table 7 shows the positive feeling and perspectives of teachers regarding online teaching. The majority of teachers

Table 5.
Principle component
analysis for challenges

Components	Statement retained	% Of variance explained
Technical obstacles	Adapting to remote teaching	24.98%
	Creating digital content	
	Lack of technical knowledge	
Online exams and assessment	Online evaluation of students	40.70%
	Problem in conducting online examination	
Lack of basic infrastructure	Lack of basic facilities like printer, whiteboard, marker, etc	51.14%

Source(s): Authors’ calculation from Google Forms questionnaire

Table 6.
Reliability analysis for
perception and
challenges

Variables	Initial number of variable	Number of variables retained	Cronbach’s alpha
Negative perception	5	4	0.718
Positive perception	3	3	0.705
Challenges	7	6	0.783

Source(s): Authors’ calculation from Google Forms questionnaire

Table 7.
Teachers’ positive
perception of online
education

S. no	Statements	Frequency	Percentage (%)
1	Ease and quick share of reading material	47	23.5%
2	Flexibility in time and space	75	37.5%
3	Fast feedback	39	19.5%

Source(s): Authors’ calculation from Google Forms questionnaire

(37.5%) opined that in virtual classes time and space are flexible because it has appeared as a convenient option as it is cost-effective, traveling time can be saved and no geographical space barrier. Similarly, the viewpoint of Pakistani medical faculty members revealed that online teaching methods are a flexible and effective source of teaching (Mukhtar *et al.*, 2020). The second highest positive response rate was 23.5%, as teachers felt that in online teaching “ease and quick share of reading material” between instructor and pupil any time without much impacting on the environment. In terms of fast feedback, the result revealed that 19.5% of respondents have opined this factor as a positive one. Fast and quick feedback in the online classes encourages the learners to participate in the discussion with an instructor that leads to fulfilling the objectives of teaching.

4.5.2 Negative perception of teachers toward online teaching. The analysis of the negative perspective of teachers for online teaching is depicted in Table 8. The highest response rate was 71% about to “lack of interaction with students” in e-learning which leads to an inability to determine pupils’ psychological and emotional needs, difficulty in communicating with learners and lack of capacity to successfully dispel pupil’s doubts. The second highest response received on the factor, teachers were “facing difficulties in student retention” in online classes is 47.5%. Similarly, lack of interaction and motivation, technological and Internet concerns, data privacy and security issues have all been mentioned by Jordan faculty and students in online learning (Almahasees *et al.*, 2021). A total of 33.5% of the teachers opined that they are not satisfied to deliver content in online classes. There were fagged out in virtual classes due to technical glitches, privacy issues in using the open-source app and emotional connection with students was not fulfilled. The statement “online teaching is inconvenient and ineffective” got 28.5% of responses which indicates that the majority of teachers were not a tech-savvy and outside disturbance, etc. Likewise, some teachers struggled with using ICT, creating engaging content, presenting it, evaluating it and providing feedback. These issues lead teachers to believe that teaching online is neither more comfortable nor more convenient (Rahayu and Wirza, 2020).

4.5.3 Combined mean of teachers’ positive and negative perceptions. The descriptive statistics of teachers’ positive and negative perspectives of virtual teaching which were amalgamated are shown in Table 9. The combined mean value for positive perception of teachers concerning virtual teaching is 2.20, which is greater than the average value of 1.82 for teachers’ negative perception. Consequently, overall teachers’ perspective on online teaching during the COVID-19 was discovered to be positive. However, teachers’ working

S. no	Statements	Frequency	Percentage (%)
1	Facing difficulties in students retention	95	47.5%
2	Lack of interaction with students	142	71%
3	Not satisfied to deliver content in online classes	67	33.5%
4	Online teaching is inconvenient and ineffective	57	28.5%

Source(s): Authors’ calculation from Google Forms questionnaire

Table 8.
Teachers’ negative perception of online education

Descriptive statistics	N	Minimum	Maximum	Mean	Std. deviation
Positive perception	200	1	3	2.20	1.884
Negative perception	200	1	4	1.82	1.307
Valid (N) listwise	200				

Source(s): Authors’ calculation from Google Forms questionnaire

Table 9.
Combined mean of perception of teachers

hours have escalated as a result of virtual teaching despite that they are positively available for pupils because it is the only viable option to teach amid lockdown for accomplishing syllabus, reducing learning gap and retaining the academic interest of learners during an ongoing epidemic.

4.5.4 Chi-square test. A chi-square test was used to observe the correlation between negative perception of teachers regarding virtual teaching within gender, i.e. male and female teachers. As indicated in Table 10, there was no significant difference at a 5% significant level in the negative perception of male and female teachers concerning online teaching (calculated chi-square value (χ^2) = 5.412, df = 1, $p > 0.05$).

Similarly, regarding teachers' positive opinions of online teaching, the result showed that the calculated chi-square value was χ^2 (1, $N = 200$) = 7.279 and p -value less than 5% significant level as shown in Table 11. That means there was a significant difference between male and female positive perspectives toward virtual teaching.

4.6 Major challenges and issues confronted by teachers in virtual teaching

The challenges and issues confronted by school teachers in online teaching during the ongoing pandemic are presented in Table 12. The majority of the teachers (63%) faced difficulties in the online evaluation of students due to connectivity issues; many teachers were unaware of virtual evolution portals for assessment and lacked the necessary equipment and training to do them. The second-largest response rate was 49.5% with regard to "Lack of basic facilities like a printer, whiteboard, marker, etc." It depicts that teachers need requisite infrastructure for conducting online classes which includes a marker, whiteboard, etc.

Table 10.
Chi-square analysis on the negative perception of teachers within gender

Negative perception	Chi-square value (χ^2)	p value
Facing difficulties in students retention	2.410	0.12
Lack of interaction with students	0.644	0.42
Not satisfied to deliver content in online classes	1.429	0.23
Online teaching is inconvenient and ineffective	0.929	0.33

Source(s): Authors' calculation from Google Forms questionnaire

Table 11.
Chi-square analysis on positive perception of teachers within gender

Positive perception	Chi-square value (χ^2)	p value
Ease and quick share of reading material	0.069	0.002
Flexibility in time and space	0.073	0.004
Fast feedback	7.137	0.008

Source(s): Authors' calculation from Google Forms questionnaire

Table 12.
Challenges and issues faced by teachers in online classes

S. no.	Statements	Frequency	Percentage (%)
1	Adapting to remote teaching	58	29%
2	Creating digital content	73	36.5%
3	Lack of technical knowledge	53	26.5%
4	Online evaluation of students	126	63%
5	Problem in conducting online examination	96	48%
6	Lack of basic facilities like a printer, whiteboard, marker, etc	99	49.5%

Source(s): Authors' calculation from Google Forms questionnaire

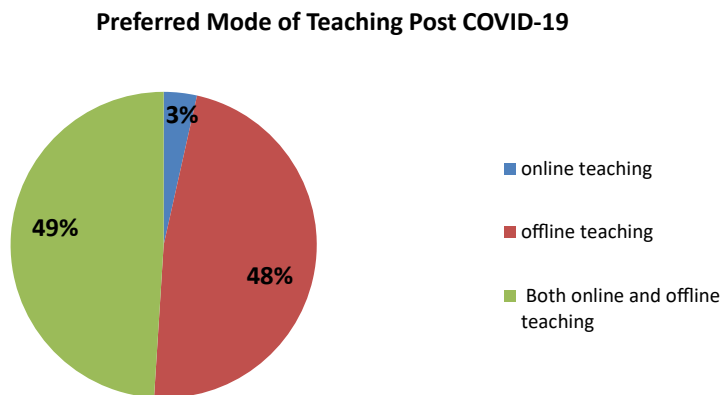
Because of that teachers were unable to clarify and describe themselves in virtual classes due to inadequate facilities at home. Similarly, lack of basic amenities, external distraction and family disturbance during teaching and conducting online assessments were key problems faced by university professors' in Uttarakhand (Joshi *et al.*, 2020). A total of 48% of the teachers confronted the problem in conducting online examinations and 36.5% have a problem in creating digital content. The statement "adapting to remote teaching" indicated 29% of responses due to old-age teachers not being tech-savvy and 26.5% of teachers did not have technical knowledge for how to conduct online classes.

4.7 Preferred mode of teaching post-COVID-19

The COVID-19 outbreak has drawn out an extreme change in the education framework not only in India but across the world. The researchers inquired about the favored mode of teaching which is better for knowledge imparting and character building of students post-COVID-19. The majority of Delhi school teachers (49%) preferred the combined mode of teaching – both online and offline for their learners' education after this pandemic, whereas 47.5% of total teachers recommended that offline classes in schools are better for knowledge imparting. Only 3.5% of teachers chose online teaching as a preferable option for pupils' future character building as delineated in Figure 2. A total of 77.5% of teachers opined that virtual teaching is not better than offline teaching for a better quality of education, while 9.5% of respondents said that online teaching is better for quality of education and 13% of teachers were indifferent between them as portrayed in Figure 3.

5. Conclusion and policy implications

The present study examined school teachers' opinions besides issues and challenges toward virtual teaching confronted by them during the ongoing COVID-19 pandemic. Our analysis demonstrates that on average, teachers of any sort of school – whether government, aided and private have a positive opinion of online teaching amidst of COVID-19 outbreak as a combined mean of positive opinion was greater than negative one for minimized learning gap. A similar result was discovered for university teachers in Jordan as they felt that e-learning is beneficial during the present pandemic (Almahasees *et al.*, 2021). Although some university teachers in Karnataka have mixed feelings toward online classes (Kulal and Nayak, 2020).



Source(s): Authors' calculation from Google Forms questionnaire

Figure 2.
Preferred mode of teaching post-COVID-19

**Online Teaching is Better For Quality of
Education**

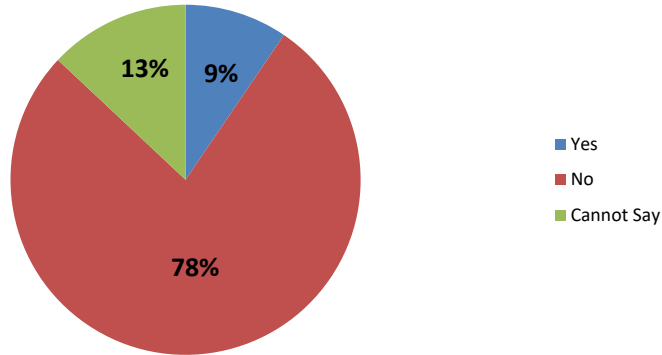


Figure 3.
Online teaching is
better for quality of
education

Source(s): Authors' calculation from Google Forms questionnaire

Contrarily, university professors have a negative opinion of distant learning due to disappointment with the institution's training and support (Kulal and Nayak, 2020).

The result of this research delineates that there is no correlation between the negative opinions of teachers about online learning within gender, whereas there is a noteworthy association between gender and positive perception of the teacher. Teachers are confronted with many challenges in virtual classes such as online evaluation and creating digital content for students, lack of technological knowledge, etc. Most of the school teachers preferred a combination of both online and offline teaching for knowledge imparting and character building of students in the post-COVID-19 period. Although, 77.5% of school teachers said that online teaching is not better than conventional teaching for the superior quality of education. Advanced economies may have a benefit when it comes to launching emergency online and virtual teaching amid crises. However, this may not be true for all nations around the globe, especially for India. In India, issues such as the digital divide among the wealthy and the underprivileged, the haves and have-nots must be properly handled because the weakest and most marginalized students are the ones who are impacted the worst by the COVID-19 outbreak.

Thus, the results of this study would persuade educational institutions and policymakers for enhancing the quality of online teaching with the latest technique of teaching along with the support of government for improving basic infrastructure, Internet connectivity, reducing the digital divide and developing rural areas for making e-learning more successful and widely accepted across India. Furthermore, proper technological training for teachers on how to deliver virtual classes should be emphasized, as it has been discovered to be a prerequisite for effective online class adoption and delivery. Government must make available basic infrastructure for online teaching to teachers. Online education in India is still in its early stages of growth, having a clear understanding of the challenges encountered and the perceptions of teachers can aid in the creation of successful and organized ways for conducting online classes.

This research used a quantitative research approach that included surveys to investigate teachers' perceptions of the influence of online learning during the COVID-19 pandemic in 2021. This study included a limited sample of thousands of school teachers that teach online in Delhi, India. The constraints of this research are that it only focuses on school teachers in

Delhi, India, by using a restricted set of factors and techniques. As far as the scope of future research in this field is concerned, a comparable kind of study can be rehashed later on and outcomes can be summed up to different regions or nations. As a result, future work will need to be more detailed, including qualitative or mixed-methods investigations. Further research can investigate instructors' discernments, alongside students' and parents' insights toward virtual classes.

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