

**AN OPINION SURVEY ON THE TECHNOLOGY FEASIBILITY  
OF ONLINE TEACHING AND LEARNING**

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**ABSTRACT**

*Online education system is an unprecedented new method for both teachers and students. Not only students but also teachers face many challenges during online classes. In that sense, the researcher presents in this paper various challenges faced by teachers and students in the online teaching and learning process. This paper is entirely based on primary data collected through structured questionnaires from all respondents via Google Forms. The researcher has collected data from 50 teachers and 78 students from various educational institutions. These sample respondents were selected through the convenience sampling method which comes under non-probability sampling. The reliability and validity of the collected data were tested and found fit for further analysis. While teachers and students faced many challenges in online teaching and learning, factor analysis found that adequate digital infrastructure was the biggest challenge for teachers and lack of motivation among students was the biggest challenge for students.*

**Keywords:** *Learning, Online, Teaching, Technology, Teachers and Students.*

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**I. Introduction**

In today's world technology plays a huge role in the education system, learning, or the process of acquiring knowledge, skills, values, beliefs and habits [12]. Online teaching offers wonderful opportunities to expand the learning environment to a diverse student population. Online teaching shares much in common with face-to-face teaching, but it has a unique set of skills and requirements. Online learning is a form of distance education and is also referred to as web-based learning, e-learning and digital learning. It is provided on the Internet and uses Internet-based

products and functions [15]. Many educational institutions based on traditional learning and teaching methods have completely switched to online learning and teaching [7]. Now teachers sit in their homes and teach students with the help of internet facilities. However, teachers have to face many challenges to fulfill their mission of teaching and learning. Conducting online classes is a major challenge for teachers who are used to conducting classroom teaching for years [6].

## II. Review of Literature

Barrot et al. (2021) found that students' greatest challenge was connected to the learning environment at home, while their least challenge was technological literacy and competence. Using a mixed-methods approach, they found that college students' online learning challenges varied in terms of type and magnitude. Their findings also revealed that the Covid-19 pandemic had a huge impact on the quality of the learning experience and the mental health of students.

Gurung, S. (2021) found that while respondents faced many challenges in online teaching, reaching out to students in remote areas and teaching numeracy was the biggest challenge. He also found that after facing all the challenges, several respondents were satisfied with online teaching and willing to face many challenges to make learning possible for the students.

Siddiquei & Kathpal (2021) identified the appropriateness of the technology infrastructure and the commitment of top management to make e-learning effective. Their results also emphasize the role of staff and student motivation in making digital learning valuable. They also say that in times of emergency like Covid-19, while distance learning has proven to be a viable alternative to traditional teaching, students' performance may deteriorate due to the challenges posed by this new mode of education.

Jindal & Chahal (2021) identified the main factors promoting online education in India. In that respect, they found that internet penetration, low cost of online education, ease of study, government initiative, employer recognition and bridging gap are the main factors of the growth of online education. But they also found that some factors hinder this growth, including inadequate digital infrastructure, reliability and the language used in online education.

Khanna, D., & Prasad, A. (2020) found that most people faced internet problems and lacked the knowledge to use and solve technology-related problems.

### **III. Research Methodology**

The main objective of the study is to identify the challenges faced by teachers and students in online teaching and learning. Extensive use of primary data was collected through structured questionnaires from 50 teachers and 78 students via Google Forms. Secondary data was collected from thesis papers, websites of social work organizations, relevant articles and reviews on online teaching and learning. These sample respondents were selected through the convenience sampling method which comes under non-probability sampling. The reliability and validity of the collected data were tested and found fit for further analysis. A descriptive statistical procedure, including frequency distributions and percentage analysis, was used to analyse both teachers' and students' profile and also the satisfaction level of respondents in online teaching and learning. Factor analysis was used to evaluate the challenges faced by teachers and students in online teaching and learning.

### **IV. Results And Discussions**

#### **A. Profile of the Faculty**

From the analysis, 34 percent are male teachers and 66 percent are female teachers. 24 percent of teachers are in the age group of 21-30 years, 42 percent are in 31-40 years, 14 percent are in 41-50 years and 20 percent are in above 50 years. According to residential status, 24 percent are from the rural area, 56 percent from the urban area and 20 percent from the semi-urban area. 52 percent of teachers' nature of job is temporary and 48 percent is permanent. 44 percent of teachers are working in regularly and 56 percent of teachers are working in self-financing. 56 percent of teachers earned a monthly income of upto Rs.25000, 14 percent are earned between Rs.25000-Rs.50000, 4 percent are earned between Rs.75000-Rs.100000 and 26 percent are earned above Rs.100000. 48 percent of teachers are from Government colleges, 22 percent are from Government aided colleges and 30 percent are from Private colleges.

#### **B. Profile of the Learner**

As per the analysis, 30.8 percent are male students and 69.2 percent are female students. 80.8 percent of students are in the age group of 15-20 years, 16.7 percent are in 21-25 years and 2.6 percent are in 26-30 years. According to residential status, 33.3 percent of students are from the rural area, 62.8 percent are from urban area and 3.8 percent are from the semi-urban area. 79.5 percent of the students are undergraduates and 20.5 percent are post-graduates. 39.7 percent of students are

from Government colleges, 26.9 percent are from Government aided colleges and 33.3 percent are from Private colleges.

### C. Challenges in Online Teaching and Learning

**Table 1 Reliability Analysis**

Challenges	Cronbach's Alpha	Number of Items
Teacher's Challenges	0.952	17
Student's Challenges	0.923	17

Source: Primary data

The reliability analysis for Challenges in Online Education is tested through Cronbach's Alpha test. It is noted from the above table that the value of Cronbach's Alpha for challenges faced by teachers in online teaching is 0.952 consisting of 17 statements and for challenges faced by students in online learning is 0.923 consisting of 17 statements. It is inferred from the above table Cronbach's Alpha value for all the challenges are good, so all 34 statements are taken for further testing.

**Table 2 KMO And Bartlett's Test For Challenges**

		For Teachers	For Students
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.811	.851
Bartlett's Test of Sphericity	Approx. Chi-Square	715.14	697.53
	df	136	136
	Sig.	.000	.000

Source: Primary data

Kaiser-Meyer-Olkin measure is an index that defines of Sampling Adequacy. Kaiser (1974) recommends accepting values greater than 0.5 as acceptable. Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. For these data, the value for teachers is 0.811 and the value for students is 0.851, in both cases, the values fall into the range of being great and valid to conduct data

reduction technique. The Bartlett's test of Sphericity helps a researcher to decide, whether the results of factor analysis are worth considering and whether we should continue analyzing the research work. In both cases, Bartlett's Test of Sphericity significant to a level of significance is <0.001 which shows that there is a high level of correlation between variables, which makes it adequate to apply factor analysis.

**Table 3 Challenges Faced By Teachers In Online Teaching**

<b>Components</b>	<b>Challenges</b>	<b>Rotated Loading</b>	<b>%of Variance</b>	<b>Eigen Value</b>
Teaching Barriers	Health Issue	<b>.779</b>	57.192	9.723
	Lack of appropriate material and resources	.761		
	Do not discuss our doubts to the co-workers	.754		
	Misconduct of students	.699		
	Difficult to teach the numerical subject online	.677		
	Lack of cooperation from the parents	.655		
	Communication Barriers to online teaching	.638		
Monitoring Barriers	Insufficient monitoring of discipline	<b>.793</b>	9.207	1.565
	The problem of keeping students engaged	.775		
	The difficulty of tracking students' progress	.708		
	Changes in teaching style for online teaching	.703		
	Security Issues	.462		
Technology Barriers	Insufficient digital infrastructure	<b>.798</b>	6.834	1.162
	Lack of technical knowledge	.782		
	Effective Time management	.658		
	Digital Literacy and Technical Issues	.641		
	Limited access to pertinent study material	.635		

Source: Primary data

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The idea of rotation is to reduce the number of factors on which the variables under investigation have high loadings. Rotation does not change anything but makes the interpretation of the analysis easier. Three factors can be extracted which amount to a cumulative percentage of 73.233 percent.

### **Teaching Barriers**

The first factor namely 'Teaching Barriers' had seven variables. In the teaching barriers, health issue was the biggest challenge faced by teachers in online teaching with the highest factor loading of 0.779 followed by lack of appropriate material and resources (0.761), do not discuss our doubt to co-workers (0.754), misconduct of students (0.699), difficult to teach the numerical subject through online (0.677), lack of co-operation from the parents (0.655) and communication barriers in online teaching (0.638). The Eigen value of 'Teaching Barriers' is 9.723 with 57.192 percent of the variance.

### **Monitoring Barriers**

The second factor namely 'Monitoring Barriers' had five variables. Among the monitoring barriers, insufficient monitoring of discipline was the biggest challenge faced by teachers in online teaching with the highest factor loading of 0.793, followed by the problem of keeping students engaged (0.775), the difficulty of tracking students' progress (0.708), changes in teaching style for online teaching (0.703) and security issues (0.462). The Eigen value of 'Monitoring Barriers' is 1.565 with 9.207 percent of the variance.

### **Technology Barriers**

The third and final factor namely 'Technology Barriers' had five variables. In the technology barriers, insufficient digital infrastructure was the biggest challenge faced by teachers in online teaching with the highest factor loading of 0.798, followed by lack of technical knowledge (0.782), effective time management (0.658), digital literacy and technical issues (0.641) and limited access to pertinent study material (0.635). The Eigen value of Technology Barriers is 1.162 with 6.834 percent variance.

**Table 4 Component Transformation Matrix**

Components	Teaching Barriers	Monitoring Barriers	Technology Barriers
Teaching Barriers	.573	.587	.571
Monitoring Barriers	.811	-.506	-.294
Technology Barriers	.116	.632	-.766

Source: Primary data

The component Transformation Matrix displays the correlations among the components before and after rotation. In that respect, the first component Teaching Barriers was positively correlated with teaching barriers (0.573), monitoring barriers (0.587) and technology barriers (0.571). The second component Monitoring Barriers was positively correlated with teaching barriers (0.811), negatively correlated with monitoring (-0.506) and technology barriers (-0.294). The third and final component Technology Barriers was positively correlated with teaching (0.116) and monitoring barriers (0.632), and negatively correlated with technology barriers (-0.766).

**Table 5 Challenges Faced By Students In Online Learning**

Components	Challenges	Rotated Loading	% of Variance	Eigen Value
Technical Issues	Stress among students	<b>.813</b>	45.377	9.723
	Do not discuss our doubts to the co-students	.772		
	Feelings of isolation	.737		
	Lack of fieldwork and access to laboratories	.679		
	Digital Literacy and Technical Issues	.653		
	Poor learning space at home	.621		
	Difficulties of sudden transition	.595		

	Effective Time management	.559		
	Language of the Course	.518		
Distraction Issues	Health Issue	<b>.690</b>	8.601	1.462
	Managing distractions and staying focused	.684		
	Insufficient digital infrastructure	.672		
	Security Issues	.660		
	Lack of Practical Knowledge	.651		
	Gadgets Shortage	.622		
Interaction Issues	Lack of Motivation in Students	<b>.832</b>	6.874	1.169
	Limited Social Interaction	.606		

Source: Primary data

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

### Technical Issues

Technical Issues were the first factor that had nine variables. From these variables, stress among students was the biggest challenge faced by students in online learning with the highest factor loading of 0.813 followed by do not discuss our doubt to the co-students (0.772), Feelings of isolation (0.737), lack of fieldwork and access to laboratories (0.679), digital literacy and technical issues (0.653), poor learning space at home (0.621), difficulties of sudden transition (0.595), effective time management (0.559) and language of the Course (0.518). The Eigen value of 'Technical Issues' is 7.714 with 45.377 percent of the variance.

### Distraction Issues

Distraction Issues were the second factor had six variables. In the distraction issues, Health Issue was the biggest challenge faced by students in online learning with the highest factor loading of 0.690, followed by managing distractions and staying focused (0.684), insufficient digital infrastructure (0.672), security issues (0.660), lack of practical knowledge (0.651) and gadgets shortage (0.622). The Eigen value of 'Distraction Issues' is 1.462 with 8.601 percent of the variance.

## Interaction Issues

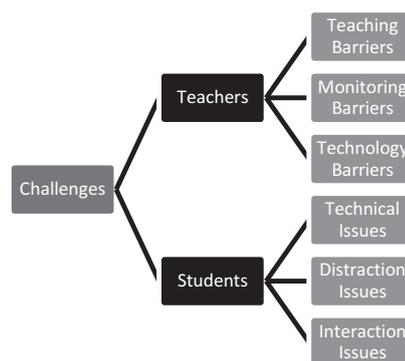
Interaction Issues were the third and final factor and had only two variables. From these two variables, lack of motivation in students was the biggest challenge faced by students in online learning with the highest factor loading of 0.832 and the other one was limited social interaction (0.606). The Eigen value of ‘Interaction Issues’ is 1.169 with 6.874 percent variance. The three factors can be extracted which amount to a cumulative percentage of 60.852 percent.

**Table 6 Component Transformation Matrix**

Components	Technical Issues	Distraction Issues	Interaction Issues
Technical Issues	.702	.589	.401
Distraction Issues	-.640	.768	-.006
Interaction Issues	-.311	-.252	.916

Source: Primary data

The first component Technical Issues was positively correlated with technical issues (0.702), distraction issues (0.589) and interaction issues (0.401). The second component Distraction Issues was negatively correlated with technical issues (-0.640) and interaction issues (-0.006), positively correlated with distraction issues (0.768). The third and final component Interaction issues was negatively correlated with technical issues (-0.311) and distraction issues (-0.252), positively correlated with interaction issues (0.916).



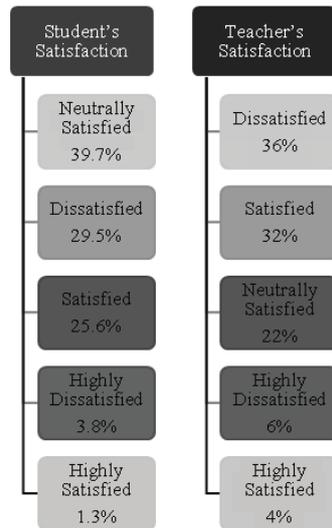
**Figure 1 Model Derived from the Study**

**Table 7 Overall Satisfaction with Online Teaching and Learning**

Satisfaction Level	Student Satisfaction in Online Learning			Teacher's Satisfaction with Online Teaching		
	Frequency	Percent	Cumulative %	Frequency	Percent	Cumulative %
Highly Satisfied	1	1.3	1.3	2	4.0	4.0
Satisfied	20	25.6	26.9	16	32.0	36.0
Neutral	31	<b>39.7</b>	66.7	11	22.0	58.0
Dissatisfied	23	29.5	96.2	18	<b>36.0</b>	94.0
Highly Dissatisfied	3	3.8	100.0	3	6.0	100.0
Total	78	100.0		50	100.0	

Source: Primary data

The above table explained the overall satisfaction of students in online learning and teachers in online teaching. 1.3 percent of the students are highly satisfied with online learning, 25.6 percent are satisfied, 39.7 percent are neutrally satisfied, 29.5 percent are dissatisfied and 3.8 percent are highly dissatisfied. 4 percent of the teachers are highly satisfied with online teaching, 32 percent are satisfied, 22 percent are neutrally satisfied, 36 percent are dissatisfied and 6 percent are highly dissatisfied.



**Figure 2 Overall Satisfaction in Online Teaching and Learning**

## V. Suggestions

1. Populate the course calendar with deadlines and send reminders to your students so they stay on track. If a student falls behind, make time to speak with that student about what he or she can do to get back on track. Using a variety of content-delivery methods and learning activities will help keep them engaged. If the course is text-based, consider including images or graphs to clarify concepts. Replace some of the text with videos or audio depending on the topic. Even small changes can go a long way in motivating students.
2. Reducing the dependency on reading via computers. Having proper sleep. Let computers and laptops be shut down at least two hours before sleep time. Avoid using very bright designs for any e-learning programs to reduce eye strain.
3. Encourage students to talk to you about their feelings so you can address any concerns they may have. If necessary, continue communication through email, online chat, or virtual meeting places.
4. The government's "Digital First" approach facilitates the entire range of educational activities, provides a diverse educational ecosystem framework for expanding digital infrastructure, and future-proofs the education sector.
5. Teachers can monitor student discipline by engaging students in discussion activities, asking questions, and sharing ideas in the online classroom. Teachers cannot measure student progress if students do not participate or ask doubts. So, don't trust others and ask questions; Be proactive and take charge of learning.

6. Turn off all notifications on the smartphone as it can distract students and waste time. By ensuring that unnecessary tabs or chat windows are closed while studying online, students can eliminate distractions and increase their motivation.

## VI. Conclusion

The sudden move to online teaching was a drastic step for not only the students but also the faculty and institutions as well. As per factor analysis, the KMO value for both teachers' and students' challenges was greater than 0.5 and it was acceptable. The challenges faced by teachers in online teaching were classified into three factors namely teaching barriers, monitoring barriers and technological barriers. It was found that health issue was the biggest challenge among the teaching barriers, insufficient monitoring of discipline was the biggest challenge among the monitoring barriers and finally, insufficient digital infrastructure was the biggest challenge among the technological barriers. Likewise, the challenges faced by students in online learning were classified into three factors namely technical issues, distraction issues and interaction issues. It was found that stress among students was the biggest challenge among the technical issues, health issue was the biggest challenge among the distraction issues and finally, lack of motivation in students was the biggest challenge among the interaction issues. At last majority of the teachers were dissatisfied with online teaching and the majority of the students were neutrally satisfied with online learning.

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