

# A Comparative Analysis of the Online and Offline Modes of Learning

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## ABSTRACT

The traditional method of learning has always been followed in India. The global COVID-19 pandemic has resulted in the closure of schools. Educational institutions that practiced the traditional approach had to shift entirely either to online or blended mode. Before the pandemic only a handful of students had experienced online mode of learning in India. During the pandemic, students experience either online or blended modes of learning. A survey was conducted on 202 undergraduate student's post-pandemic period to analyze their experience with the mode of learning. The primary objective of this study was to obtain evaluative from students who attended all three modes of teaching (online, offline, and blended). In this article, we analyze students' perception of offline, online, and blended modes of learning, their choices on online platforms, offline mode, and whom are they comfortable approaching to get their doubts clarified.

**Keywords** Online mode, offline mode, blended mode, covid-19, Information technology, virtual mode.

## INTRODUCTION

Covid-19 is a global pandemic caused by the SARS-CoV-2 coronavirus, which has resulted in lockdowns in a number of nations. In March 2020, the World Health Organization identified COVID-19 as a worldwide pandemic. Due to the pandemic, the Indian government had ordered a nationwide lockdown from March 24 to May 13, 2020. Also, during the second wave and third wave lockdowns were imposed by state governments. Most governments throughout the world, including India, have sanctioned unprecedented social containment measures in an attempt to limit the spread of COVID-19. Some of the measures used were social separation and the temporary physical closure of educational institutions. Traditional in-person classroom training had to be radically changed to predominantly distance learning, which involves teaching remotely via digital platforms. Educational institutions have struggled to find options to address this problematic situation. The challenges faced during this period were expected to hinder the learning process. Slowly institutions were able to provide support for online learning, but lack of interactions took away the personal aspect of teaching. Access, affordability, monitoring, and lack of interaction were some of the drawbacks of online learning. The mental health of students was affected. Once the lockdown was lifted, institutions resumed operations in both online and offline modes.

Since students have had exposure to online, offline, and blended learning, there are certain disadvantages as well as benefits to both online and offline learning modes. Students in the offline mode of learning faced a number of disadvantages, including a lack of opportunity to learn advanced technology, time management was a significant issue for students who lived far from the institution, recorded lectures or other forms of digital data were rarely available, and so on., while talking about drawbacks of online mode is that many students found it quite challenging to manage the screen time as it requires students to stay logged-in for a long time which was harmful to eyes due to long usage of screens, there were also frequent technical glitches due to poor internet connection or say device errors which resulted into not able to listen properly in the ongoing class, in online mode of teaching chances of distraction were high as well as group work were not efficient as they were not able to get peer help and mentoring by their mentor properly. When

considering the benefits of offline mode, teachers discovered that students were very attentive in class, and that teachers were also able to provide individual attention to students, address their issues, and solve them immediately. When considering the benefits of online mode, teachers discovered that it was flexible (as it could be accessed from anywhere with a device and an internet connection), budget-friendly, class recordings were available for future reference, and a lot of data was also available.

## RESEARCH METHODOLOGY

For this study, a small survey was conducted by the authors. The survey questions assessed the general perception and experience of 202 students about online and offline learning.

Here qualitative method was used to analyze student’s perception of the mode of learning. We used several questions to figure out how students might react to various scenarios. Students from different branches of engineering and from second-year to fourth-year students were asked a total of 13 questions like what kind of mode of learning students prefer(online, offline, or blended), whom they approach for clarification of doubts(faculty, friends, online platforms, etc.), online platforms they prefer for studying/understanding the concept, which mode of offline teaching they preferred (black/whiteboard, PowerPoint presentation or both), how many hours a day do they study (apart from college/university, assignments or lab work), how do they study any unknown concept (by reading the textbook, regularly writing notes or on writing important notes), do they find lectures beneficial, did they attended the lectures for learning or for sake of attendance etc..

This research demonstrates how students behave when it comes to the type of learning. We analyse the kind of decisions the students make under the given conditions and the most common behavior of the students.

As many students have encountered all three types of learning modes (online, offline and blended), students’ learning patterns have changed dramatically.

## DATA ANALYSIS

The main agenda of this study was to collect evaluative feedback from students who attended all three modes of teaching (online, offline, and blended mode). Responses to these questions were collected and categorized into each question to identify similar responses. Frequency counts of frequently received responses have been compiled. Statistical hypothesis along with SPSS is used for comparative study.

## RESULTS

During the pandemic students all over experienced online learning. To understand students’ preferences, a question was included in the survey on the mode of teaching they prefer whether online, offline, or blended mode.

Out of many survey questions, we have used these four questions for our analysis.

- Since you have experienced both online and offline modes of teaching, which mode of learning do you prefer? (Give your opinion based on learning)

	Options	Frequency
A	Online	47
B	Offline	117
C	Blended	38

- When you do not understand a concept whom do you approach for clarification? (Student is allowed to choose more than one option)

	Options	Frequency
A	Ask the respective faculty	51
B	Take help from friends	128

C	Online platforms like YouTube, Udemey, etc.	172
D	Others	10

- Which online platform do you use for learning your course? (Student is allowed to choose more than one option)

	Options	Frequency
A	YouTube	183
B	Udemy	52
C	Edx	7
D	Coursera	26
E	E-books	54
F	Others	39

- Which mode of offline learning do you prefer?

	Option	Frequency
A	Black/White board	97
B	PowerPoint presentation	35
C	Blended	100

We have used SPSS software to analyse the data which we have received. Firstly, we check whether our analysis is unbiased.

Table 1: Students preference on online/offline/blended mode of teaching

			Since you have experienced both online and offline mode of teaching, which mode of learning do you prefer? (Give your opinion based on learning)			Total
			Blended	Offline	Online	
Branch	Bio-Technology	Count	0 <sub>a</sub>	1 <sub>a</sub>	0 <sub>a</sub>	1
		% of Total	0.0%	0.5%	0.0%	0.5%
	Civil Engineering	Count	1 <sub>a</sub>	1 <sub>a</sub>	0 <sub>a</sub>	2
		% of Total	0.5%	0.5%	0.0%	1.0%
	Computer Science and Engineering	Count	4 <sub>a</sub>	43 <sub>b</sub>	17 <sub>b</sub>	64
		% of Total	2.0%	21.3%	8.4%	31.7%
	Electrical and Electronics Engineering	Count	0 <sub>a</sub>	2 <sub>a</sub>	0 <sub>a</sub>	2
		% of Total	0.0%	1.0%	0.0%	1.0%
	Electronics and Communication Engineering	Count	2 <sub>a</sub>	6 <sub>a</sub>	1 <sub>a</sub>	9
		% of Total	1.0%	3.0%	0.5%	4.5%
	Electronics and Instrumentation Engineering	Count	0 <sub>a</sub>	0 <sub>a</sub>	1 <sub>a</sub>	1
		% of Total	0.0%	0.0%	0.5%	0.5%
	Electronics and Telecommunication Engineering	Count	0 <sub>a</sub>	1 <sub>a</sub>	0 <sub>a</sub>	1
		% of Total	0.0%	0.5%	0.0%	0.5%

	Information Science and Engineering	Count	26 <sub>a</sub>	55 <sub>a</sub>	21 <sub>a</sub>	102
		% of Total	12.9%	27.2%	10.4%	50.5%
	Machine Learning	Count	4 <sub>a</sub>	5 <sub>a</sub>	4 <sub>a</sub>	13
		% of Total	2.0%	2.5%	2.0%	6.4%
	Mechanical Engineering	Count	1 <sub>a</sub>	1 <sub>a</sub>	2 <sub>a</sub>	4
		% of Total	0.5%	0.5%	1.0%	2.0%
	Medical Electronics	Count	0 <sub>a</sub>	2 <sub>a</sub>	1 <sub>a</sub>	3
		% of Total	0.0%	1.0%	0.5%	1.5%
Total		Count	38	117	47	202
		% of Total	18.8%	57.9%	23.3%	100.0%

H<sub>0</sub>: Branch has no impact on student’s preference for mode of learning.

H<sub>1</sub>: Branch has an impact on student’s preference for mode of learning.

Table 2: Chi-Square Tests

	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	23.047	20	.286
Likelihood Ratio	26.371	20	.154
N of Valid Cases	202		

Here we observe that p-value 0.286 is greater than 5% level of significance, there is no enough evidence to reject.

H<sub>0</sub> So we conclude that branches have no impact on student’s preference for teaching mode.

Table 3: Students preference on online/offline/blended mode of teaching

			Since you have experienced both online and offline mode of learning, which mode of teaching do you prefer? (Give your opinion based on learning)			Total
			Blended	Offline	Online	
year of study	Fourth	Count	0 <sub>a</sub>	2 <sub>a</sub>	1 <sub>a</sub>	3
		% within year of study	0.0%	66.7%	33.3%	100.0%
	Second	Count	35 <sub>a</sub>	111 <sub>a</sub>	44 <sub>a</sub>	190
		% within year of study	18.4%	58.4%	23.2%	100.0%
	Third	Count	3 <sub>a</sub>	4 <sub>a</sub>	2 <sub>a</sub>	9
		% within year of study	33.3%	44.4%	22.2%	100.0%
Total	Count	38	117	47	202	
	% within year of study	18.8%	57.9%	23.3%	100.0%	

H<sub>0</sub>: Year of study have no impact on student’s preference on teaching mode.

H<sub>1</sub>: Year of study has impact on student’s preference on teaching mode.

Table 4: Chi-Square Tests

	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	2.055	4	.726
Likelihood Ratio	2.436	4	.656
N of Valid Cases	202		

Since the p-value 0.726 is greater than a 5% level of significance, there is no enough evidence to reject Ho. So, we conclude year of study has no impact on students' preference for teaching mode.

As a student's choice is not based on the branch or year he is in, the analysis to be conducted further is unbiased.

### Research Question 1

Is there any relationship between question 3 and question 4? A chi-square test with alpha = 5% as a criterion for significance was done.

Table 5: Cross Table

	Which mode of offline learning do you prefer?		
	Black/White board	Blended	Power Point Presentation
YouTube	37.2%	54.6%	8.2%
Udemy	38.3%	59.6%	2.1%
Edx	57.1%	42.9%	0.0%
Coursera	37.5%	54.2%	8.3%
E-books	28.6%	65.3%	6.1%
Others	37.6%	51.8%	10.6%

Statement 1: Which online platform do you use for learning your course?

Statement 2: Which mode of offline learning do you prefer?

Ho: There is no significant relationship between students' preference of any choice in Statement 1 and responses in Statement 2.

H1: There is a significant relationship between students' preference for any choice in Statement 1 and responses in statement 2.

Table 6: Chi-square table

		Value	df	Asymp. Sig. (2-sided)
YouTube	Pearson Chi-Square	3.340	2	0.188
	Likelihood Ratio	2.645	2	0.266
Udemy	Pearson Chi-Square	3.854	2	0.146
	Likelihood Ratio	5.011	2	0.082
Edx	Pearson Chi-Square	1.68	2	0.432

	Likelihood Ratio	2.233	2	0.327
Coursera	Pearson Chi-Square	0.039	2	0.981
	Likelihood Ratio	0.04	2	0.98
E-books	Pearson Chi-Square	3.433	2	0.18
	Likelihood Ratio	3.506	2	0.173
Others	Pearson Chi-Square	2.854	2	0.24
	Likelihood Ratio	3.281	2	0.194

Here p-value is greater than the level of significance value of 0.05. Therefore, there is no evidence to reject  $H_0$ . This concludes there is no significant relationship between students' preference for any online platform in Statement 1 and responses in Statement 2.

### Research Question 2

Is there any relationship between question 2 and question 3? A chi-square test with  $\alpha = 5\%$  as a criterion for significance was done.

Table 7: Cross table

	Which online platform do you use for learning your course					
	Youtube	Udemy	Edx	Coursera	E-books	others
Ask the respective faculty	88.2%	19.6%	3.9%	11.8%	33.3%	15.7%
Take help from friends	92.3%	23.1%	2.2%	13.2%	22.0%	18.7%
online platforms like YouTube, Udemy, etc.	99.1%	26.3%	2.6%	14.9%	29.8%	19.3%
Others	75.0%	25.0%	0.0%	12.5%	37.5%	37.5%

Statement 1: When you do not understand a concept whom do you approach for clarification?

Statement 2: Which online platform do you use for learning your course?

There is no significant relationship between students' preference of any choice in statement 1 and responses in statement 2.

There is a significant relationship between students' preference of any choice in statement 1 and responses in statement 2.

Table 8: Pearson Chi-Square Test

	Online platform	Value	df	Asymp. Sig. (2-sided)
	Ask the respective faculty	Youtube	0.445	1
Udemy		.512	1	.474
Edx		.042	1	.837
Coursera		.001	1	.976
E-books		3.059	1	.080
Others		.001	1	.972

Table 9: Pearson Chi-Square Test

	Online platform	Value	df	Asymp. Sig. (2-sided)
	Youtube	.571	1	.450
	Udemy	.003	1	.954
Take help from	Edx	.795	1	.372
friends	Coursera	.270	1	.604
	E-books	.468	1	.494
	Others	1.002	1	.317

Table 10: Pearson Chi-Square Test

	Online platform	Value	df	Asymp. Sig. (2-sided)
	Youtube	22.338	1	.000
	Udemy	1.362	1	.243
Online platforms like YouTube,	Edx	.544	1	.461
Udemy, etc	Coursera	2.296	1	.130
	E-books	4.414	1	.036
	Others	2.345	1	.126

Table 11: Pearson Chi-Square Test

	Online platform	Value	df	Asymp. Sig. (2-sided)
Others	Youtube	2.377	1	.123
	Udemy	.014	1	.906
	Edx	.299	1	.584
	Coursera	.003	1	.956
	E-books	.795	1	.373
	Others	2.931	1	.087

When a student chooses an online platform, he chooses YouTube over any other online platform as p-value is 0. Here we reject  $H_0$ .

But any other p-value is greater than the level of significance value 0.05. Therefore, there is no evidence to reject  $H_0$ . Hence, we conclude that there is no significant relationship between students' preference of any choice in question 2 and responses in question 3.

### Research Question 3

Is there any relationship between question 2 and question 4? A Chi-square test with alpha = 5% as a criterion for significance was done.

Table 12: Cross table

	Which mode of offline teaching do you prefer?		
	black/white board	blended	PowerPoint presentation
Ask the respective faculty	37.3%	54.9%	7.8%
Take help from friends	36.3%	53.8%	9.9%
Online platforms like YouTube, Udemy, etc.	34.2%	58.8%	7.0%
others	12.5%	75.0%	12.5%

Statement 1: When you do not understand a concept whom do you approach for clarification?

Statement 2: Which mode of offline teaching do you prefer?

Ho: There is no significant relationship between students’ preference of any choice in Statement 1 and responses in statement 2.

H1: There is a significant relationship between students’ preference for any choice in Statement 1 and responses in statement 2.

Table 13: Chi-Square tests

		Value	df	Asymp. Sig. (2-sided)
Ask the respective faculty	Pearson Chi-Square	.196	2	.907
	Likelihood Ratio	.203	2	.904
Take help from friends	Pearson Chi-Square	.048	2	.976
	Likelihood Ratio	.048	2	.976
Online platforms like YouTube, Udemu, etc.	Pearson Chi-Square	3.129	2	.209
	Likelihood Ratio	3.121	2	.210
others	Pearson Chi-Square	2.092	2	.351
	Likelihood Ratio	2.452	2	.294

Here p-value is greater than the level of significance value of 0.05. Therefore, there is no evidence to reject Ho. This concludes there is no significant relationship between students’ preference for any online platform in Statement 1 and responses in statement 2.

**Research Question 4**

Is there any relationship between question 1 and question 4? A Chi-square test with alpha = 5% as a criterion for significance was done.

Table 14: Cross Table

	Which mode of offline teaching do you prefer?		
	black/white board	blended	PowerPoint presentation
Blended	18.4%	68.4%	13.2%
Offline	42.7%	52.1%	5.1%
Online	36.2%	46.8%	17.0%

Statement 1: Since you have experienced both online and offline modes of teaching, which mode of teaching do you prefer?

Statement 2: Which mode of offline teaching do you prefer?

Ho: There is no significant relationship between students’ preference for multiple responses in Statement 1 and 2.

H1: There is a significant relationship between students’ preference for multiple responses in Statement 1 and 2.



Table 15: Chi-Square Tests

	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	12.365	4	.015
Likelihood Ratio	12.811	4	.012

Here p-value (0.015) is less than the level of significance value 0.05. Here we conclude there is a significant relationship between students’ preference of multiple responses in Statement 1 and 2.

## CONCLUSION AND FURTHER SCOPE OF STUDY

Higher education in India is currently limited by a lack of clarity when it comes to regulating e-learning channels. It is important to note that the survey indicated that students are open to online learning. The students agreed that online learning was effective but the majority of them (around 58%) still prefer the traditional method of learning. There could be various possible reasons for students to prefer offline mode over online mode of learning. As disasters or such pandemic situations are not under our control, it is better to investigate this issue which will help to analyse and act on the same. Since YouTube videos are easily accessible students prefer this over any other online platform. When a student has attended classes online, offline or, blended mode to clarify his doubts he is more likely to use the online platform (around 85%) than approaching faculty (around 25%) who has taught the subject. There seems to be a gap in the process. Further investigation is to be done to bridge this gap. The results of this survey are important for future research.

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