

# E-Classrooms: - Impact of Online Learning platforms on students studying in different schools of India during Covid 19

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## ABSTRACT

Rapid growth of e-learning has proven that it is one of the finest ways of learning in the contemporary world as synchronous and asynchronous interactive sessions are convenient for the learners and hence, it is improving with time. Most of the Schools and institutions understood the importance of e-learning and adopted it on a wide scale so that they can provide quality learning online from their home. With further technological advancements, it became necessary to be updated with the current technological aspects which are helpful in order to stand out in such a tech-savvy world. This paper helps to identify the factors determining student's satisfaction towards online study for students studying in various schools and further, to determine the effect of these dimensions on students' preference towards using online platforms. Structured questionnaire was used to conduct survey in Kolkata, Mumbai, Delhi and Chennai in India. 250 responses were collected from the students of various schools. From the study, it has emerged that three factors have been identified, that is "**Knowledge**", "**Mixed Learning**" and "**Cognizance**". It has also been found that dimensions, mixed learning and knowledge have significant impact over students' preference towards using online learning platforms. In the present study, data has been taken only from different metropolitan cities. Thus, for the greater representation of samples, few more cities needed to be selected for pan India understanding whether school students prefer virtual classrooms.

**Keywords:** virtual study, student satisfaction, education, learning, preference

## INTRODUCTION

The educational community is getting engulfed with a new era called online learning, which refers to the instructions delivered electronically via Internet, Intranets, or multimedia platforms such as CD-ROM or DVD (Hall, 2003; O'Neill, Singh, & O'Donoghue, 2004). Due to the widespread virus of COVID-19 and its drastic effects, we all were directed towards the usage of online or virtual platforms to keep work and

studies going on. In such a situation, online platforms acted as the only medium for all to interact and communicate with each other. Schools made use of virtual platforms at the maximum, especially for secondary and higher secondary classes, to avoid any fallback in the studies of the students due to which, it is gaining popularity in the schools and higher education sector (Tsai, Shen, & Chiang, 2013; Wu, 2016; Alon & Li, 2020). Online learning can be carried out in various ways, like self-paced study units,

asynchronous interactive sessions (where participants interact at different times), or synchronous interactive settings (where learners meet in real time) (Ryan, 2001). Being cost-effective and convenient to use online learning is growing rapidly. It is quite flexible, and students have the advantage over the period as they can learn according to their convenience. It has progressed to the point where face-to-face interaction is not so needed to learn and complete a course. While, the prevalent pandemic from last year has made it mandatory for the students as well as for the teachers to continue their academic activities over online or the virtual platforms (Alon & Li, 2020; Burbules & Callister, 2000).

Historically, looking at the facts and figures it has been found that there is a feeling of isolation among students in distant courses as compared to face-to-face studies (Shaw & Polovina, 1999). (Keegan, 1990) mentioned that this isolation and lack of required interaction among the instructors and students lead to incompleteness of the courses or affects their studies or academic performance. In the past studies and pieces of literature, student satisfaction is not only overlooked in the traditional learning environment (Astin, 1993; DeBourgh, 1999; Navarro & Shoemaker, 2000) but also was not given proper attention in the distance learning environment (Biner, Dean, & Mellinger, 1994). (Richards & Ridley, 1997) suggested that further research is needed to understand the factors for student satisfaction and enrolment. Studies revealed that there is a high correlation between student satisfaction and retention in classroom-based courses (Astin, 1993; Edwards & Waters, 1982), which is also found in studies consisting of distance learners (Bailey, Bauman, & Lata, 1998).

Increasing competition among schools to attract students led universities to adopt customer-oriented business models to compete effectively (Newman & Jahdi, 2009; Parahoo, Harvey & Tamim, 2013). Satisfied students are more likely to engage in desirable behavior like spreading positive word-of-mouth, collaborating with the institution after they complete their studies (Alves & Raposo, 2009), which makes these satisfied students an asset to the schools and colleges. As a result, the strategic focus of Higher Education institutions has shifted from a teaching-oriented model to a customer-oriented

model (Kuo et al., 2013; Parahoo et al., 2013; Martinez-Arguelles & Batalla-Busquets, 2016) so that universities may be considered as a provider of products and services to their customers, namely students.

An exceptional rise in the usage and demand of these platforms has been seen during the pandemic COVID-19, which also resulted in the noticeable attention towards the roles being performed by the teachers teaching online (Bennette & Lockyer, 2004; Lee & Tsai, 2010; Major, 2010; Natriello, 2005). On the other hand, its success and improvement rely heavily on the satisfaction of the students taking up the classes and their active participation in the virtual classroom over these online platforms. It has been found that the students who are self-reliable and attentive are more likely to get improvements in their overall academic performance in their schools. Thus, it is necessary that the students are satisfied and interested enough to engage themselves during learning online and they become self-regulated to think and act independently.

Despite the perceived benefits of online learning, looking at the growth of the online learning market in recent years, research indicates that a high rate of students who start online learning get distracted or do not take that much interest in learning (Dutton & Perry, 2002). This reflects that something is not going well with the online learning systems. (Bouhnik & Marcus, 2006) stated that student's online learning dissatisfaction was based on a few disadvantages like the absence of an encouraging framework for the students to learn, need for a high level of self-discipline or self-direct, absence of a learning atmosphere in e-learning systems, distance - learning minimizes the level of contact, as well as the level of discussion, among students, lack of interpersonal and direct interaction among students and teachers, the learning process, is less efficient, in comparison to the face-to-face learning, online learning requires students to dedicate more time to learn the subject matter, lack of technological knowledge, technological issues or the related glitches and such related issues.

Although online learning continues to grow rapidly, it is still at an early stage of its development. Consequently, developers and instructors of online learning need to have an

understanding towards student's perceiving and reacting to the online learning elements (since student perception and attitude is critical to motivation and learning) along with the application of these approaches effectively to enhance learning (Koochang & Durante, 2003). If applied well online learning can be used as an effective tool for imparting knowledge and skills via electronic modes and it benefits not only the students but to the teachers and schools too in various aspects (Fazlollahtabar & Muhammadzadeh, 2012; Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek, 2012).

## REVIEW OF LITERATURE

Understanding users' attitudes toward online learning facilitate the creation of appropriate online learning environments for teaching and learning. Various studies are carried out in order to understand the factors triggering the satisfaction and perceptions of the students towards learning in both traditional and virtual learning (Parves & Ho Yin, 2013; Martinez-Arguelles, Callejo, & Farrero, 2013). If noticed carefully we can see that most of the studies are being done with respect to online learning mostly in developed countries providing various factors responsible for the student's satisfaction and their loyalty towards online learning while a handful of studies being conducted in developing and underdeveloped countries with this respect, which reflects the wide opportunity lying in this field (Dursun, Oskaybas, & Gokmen, 2014; Machado-Da-Silva, Meirelles, Filenga, & Filho, 2014; Martinez-Arguelles et al., 2013). The single linear methodology cannot access the methods of online learning. In other words, there is a need to build a multidisciplinary approach to survey individual attitudes toward online learning (Liaw, 2002, 2007; Wang, 2003). Measurement of online learning must incorporate different aspects of user perceptions to form a useful diagnostic instrument (Wang, 2003).

Online learning is being used by higher education universities widely through the online education paradigm. Being an attractive approach for delivering education in the online environment, its growth rate is 35.6% with a lot of failure cases (Albaugh & Dray, 2002). Application of Information and Communication Technology (ICT) widely lead to rising in the

improvements of online or virtual learning currently (Tsai, Shen, & Chiang, 2013; Wu, 2016; Saravanan, J., Jafarzadeh, H. & Shame Anjani, M., 2017). It has emerged as an effective tool for both the students and the teachers to learn and improve themselves. Inspire of being convenient a time-effective method adoption of online platforms by the schools provides them the benefit of teaching their students easily and quickly in much more simple way with the help of advanced technologies. This, in turn, improves the technological knowledge of the students as well as the teachers (Fazlollahtabar & Muhammadzadeh, 2012; Taylor, 2007).

Learning over virtual platforms is not only limited to the schools of an area but worldwide. Students are no more restricted to the schools of their country but they can learn from the schools and colleges out the country as well with the help of virtual platforms that is, it promotes international cooperation and thus links the students and schools from different parts of the world without any havoc of traveling and visiting from one place to another (Lee & Tsai, 2010; Pham, L., et al., 2019), which in turn, increases the positive action on the part of the students and improves their satisfaction. Apart from this, there are so many factors that are affecting students' satisfaction with online learning.

According to Passerini & Granger, 2000, the first and foremost thing to be identified regarding learners is their characteristics like self-efficacy, self-directed behavior, and autonomy. Multimedia instruction enables learners to develop complex cognitive skills, such as understanding important elements of conceptual complexity, the ability to use acquired concepts for reasoning and inference, and the competence to apply conceptual knowledge to novel situations with the flexibility (Spiro, Feltovich, Jacobson, & Coulson, 1995). While other main factors are the instructor, the interface of the online learning environment, and technical assistance. Students feel more confident when they are self-directed and have timely interaction with their teachers. Another factor boosting their confidence is technological knowledge.

In addition to learners' active involvement and interaction students better understand and apply materials when problems and situations are in context to real-world issues and situations (Eble,

1998), along with interactive course content. It creates a stimulus for learning by creating students' motivation and excitement, thus providing an important structure for student thinking (Quitadamo & Brown, 2001). A practical set of problems and practical assignments boosts the working of the brain thus contributing to the improvement of academic performance.

Without the teacher's timely response there will be a lack of interaction and interest on the student's part, which majorly depends on the teacher's attitude towards online learning. According to (Liaw et al., 2007), learners, when increasing their interactions with instructors and other learners it help to build their knowledge and confidence as much of the learning takes place within the social context through mutual construction of understanding. A friendly and easy-to-use interface for online education is very important for students. They feel good and relaxing in learning with new tools and methods as it helps them to learn, understand and explore more. Students of higher education are more interested in the quality of course content. They need more information compared to the traditional learning environment. Technical flaws in the online learning interface lead to student anxiety which makes them reluctant in taking online lectures next time.

However, there are also potential disadvantages or limitations of online learning which includes a sense of learner isolation (Brown, 1996); learner frustration, anxiety, and confusion (Hara & Kling, 2000; Piccoli, Ahmad, & Ives, 2001); higher student attrition rates (Frankola, 2001; Laine, 2003; Ryan, 2001); the need for greater discipline, writing skills, and self-motivation; and the need for online users to make a time commitment to learning (Golladay, Prybutok, & Huff, 2000; Serwatka, 2003); feeling of fear, anxiety and isolation among the students if they are unfamiliar with any new method and lack of interaction is there with their teachers (Kidd, 2017; Kidd, Davis, & Larke, 2012); lack of technological knowledge which affects the confidence and success of the students which can be achieved by providing required knowledge to the students in order to increase their awareness and engagement (Rienties, B., Brouwer, N., Lygo-Baker, S., & Townsend, D., 2011; Rienties, B., & Townsend, D., 2012; Ebert-May et al., 2011; & Nevgi, 2008). Thus, is

it necessary to understand the extent to which students are satisfied and to examine their attitude towards e-learning or online learning. Understanding users' attitudes toward online learning facilitate the creation of appropriate online learning environments for teaching and learning. All the factors discussed should be taken into consideration in order to improve the productivity of the students as well as the teachers of schools, which in turn will contribute to the further growth and improvement of the virtual platforms.

## OBJECTIVE

- To explore and understand the factors affecting student's satisfaction while studying online in various schools
- To measure the effect of these dimensions on students' preference towards the usage of online learning platforms

## RESEARCH METHODOLOGY

In the present study, Delhi, Mumbai, Kolkata, and Chennai were used as a data collection point and samples were collected with the help of a structured questionnaire. Informal discussions were held with the participants to get the responses from the participants. For any study, sample size is a key factor, larger the sample size better will be the outcome of the study. Number of authors presented the basic requirements of sample size to conduct a study. Sample size of 150 is considered the minimum, while above 500 is best. Hence in this study 250 samples were collected. Five-point Likert scale ranging from 1: Strongly disagree to 5: Strongly agree as used by (Cronin & Taylor, 1992) was introduced for the measurement of each dimension. Data after proper cleaning and validation was used for several multivariate analyses to attain the objective of the study.

## RESULTS AND ANALYSIS

**OBJECTIVE 1: To explore and understand the factors affecting student's satisfaction while studying online in various schools**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.882
Bartlett's Test of Sphericity	Approx. Chi-Square	1200.241
	Df	191
	Sig.	.000

The approximate Chi-Square statistic (Table 1) is 1200.241 with 191 degrees of freedom, which is significant at 0.05 level. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy usually varies or lies from 0-1. Values closer to one are considered better, with minimum value of 0. In the table given above (Table 1), KMO value is

0.882, that is greater than 0.5. From the table, it can be seen that the Bartlett's Test of Sphericity is significant, as the significant value is less than 0.05.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.800	48.572	48.572	6.660	48.572	48.572	4.067	29.950	29.950
2	1.700	12.142	60.714	1.700	12.142	60.714	2.818	21.139	51.089
3	1.200	8.571	68.745	1.200	8.571	68.745	2.545	18.767	69.856
4	.566	4.040	72.785						
5	.549	3.936	77.421						
6	.539	3.851	81.273						
7	.512	3.655	84.927						
8	.498	3.557	88.484						
9	.399	2.849	91.333						
10	.353	2.524	93.857						
11	.276	1.970	95.827						
12	.236	1.683	97.510						
13	.191	1.366	98.876						
14	.157	1.124	100.000						

Extraction Method: Principal Component Analysis.

In the table Total Variance Explained (Table 2), each factor holds a quality score or an eigenvalue which can be signified by the column

'Total' of 'Initial Eigenvalues'. Factors with eigenvalue of at least 1 are considered and selected in the study as they represent true value.

From the table we can see that Factor 1 (**Knowledge**) accounts for a variance of 4.067, which is 29.95% of the total variance and likewise Factor 2 (**Mixed Learning**) accounts for a variance of 2.818, which is 21.139 of the total variances, and Factor 3 (**Cognizance**)

accounts for a variance of 2.545, which is 18.767% of the total variance. Hence, the three factors combined account for 69.856 %.

	Component		
	1	2	3
V1	.809		
V2	.720		
V3	.678		
V4	.682		
V5	.648		
V6	.675		
V7	.610		
V8	.560		
V9		.811	
V10		.789	
V11		.610	
V12			.854
V13			.891
V14			.725

Rotated Component Matrix (Table 3) shows the relationship between the factors and their variables taken in the study. Basically, a factor represents common feature that all the variables possess. The rotated factor matrix (TABLE 3), represents the list of factors and their variables. With the help of these variables, we generated the names of the factors which is shown in the table (TABLE 4) below, which help us to reduce

the dimensions and thus further proceed with the study. It can be interpreted that from the list of variables (as mentioned in the table 4) Factor 1 is labelled as "**Knowledge**", while, Factor 2 is labelled as "**Mixed Learning**", and factor 3 labelled as "**Cognizance**".

**Table 4. Names of the factors after EFA**

<b>FACTOR 1: KNOWLEDGE</b>
V1. Online study is a convenient method
V2. I am well aware of the platforms, schools are using for online study
V3. I know how to use the online study platform

V4. I learned using the online tools by myself
V5. I am aware of the facilities provided by the online platforms being used in schools
V6. I make use of facilities being provided by online platforms used in schools
V7. I have smooth flow of connection for online study
V8. I always look for the information uploaded on online platforms by the schools
<b>FACTOR 2: - MIXED LEARNING</b>
V9. E-learning should be adopted in place of in person learning
V10. In person learning should be supported with online learning
V11. In person lectures and demonstrations should be replaced with online lectures and e-notes
<b>FACTOR 3: - COGNIZANCE</b>
V12. Blended learning results in better output than either online or in person learning
V13. It is necessary to be updated with technological aspects in order to support online learning
V14. Further improvement is required to support online learning

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.703 <sup>a</sup>	.494	.485	1.00107
a. Predictors: (Constant), Cognizance, Mixed_Learning, Knowledge				

Model Summary presents the fitness of the regression model to the data, taken in the study. In a model summary R or multiple correlation coefficient measure the quality of prediction of the dependent variable. While, R Square value represents the variance proportion in dependent

variable which can be interpreted with the help of independent variable. Here the R-Square value (Table 5) is 0.494, which indicates 49.4% of the total variation in the dependent variable, Student satisfaction that can be explained by the independent variables

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	93.808	3	31.269	31.259	.000 <sup>b</sup>
	Residual	146.103	146	1.000		
	Total	239.911	149			
a. Dependent Variable: STUDENT_SATISFACTION						

b. Predictors: (Constant), Cognizance, Mixed\_Learning, Knowledge

From the ANOVA Table (Table 6) we can see that the Regression Model predicts the dependent variable significantly well and it is

statistically significant as p value is less than 0.05.

**Table 7. Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.710	.082		34.130	.000
	Knowledge	.644	.082	.505	8.166	.000
	Mixed Learning	.364	.082	.294	4.566	.000
	Cognizance	.180	.082	.164	2.431	.000

a. Dependent Variable: STUDENT\_SATISFACTION

The Coefficient Table (Table 7) helps to predict Satisfaction derived from the factors and whether these factors are contributing to the study or not. Therefore, we can say that Satisfaction depends mainly on these three factors and can be shown by the equation given below with the help of regression equation being formed:

$$\text{Student Satisfaction} = 2.710 + 0.505 * (\text{Knowledge}) + 0.294 * (\text{Mixed Learning}) + 0.164 * (\text{Cognizance})$$

**OBJECTIVE 2:** *To measure the effect of these dimensions on students' preference towards the usage of online learning platforms.*

**H0: B1 = 0**

The null hypothesis implies that there is no linear relationship between Student Preference of Using Virtual Platform and the factors **Knowledge, Mixed Learning and Cognizance.**

**H1: B1! = 0**

The alternate hypothesis implies that there is linear relationship between Student Preference of Using Virtual Platform and the factors **Knowledge, Mixed Learning and Cognizance**

**BLOCK 0: Beginning Block**

**Table 8. Classification Table<sup>a,b</sup>**

Observed			Predicted		
Step 0	STUDENT_PREFERENCE		STUDENT_PREFERENCE		Percentage Correct
			Yes	No	
	Yes	Yes		210	0
No	No		40	0	.0



	Overall Percentage				84.0
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a. Constant is included in the model.

b. The cut value is .500

From the Classification table mentioned above (Table 8), it can be interpreted that the model always guesses 'YES' as students' preference of YES in using online platform is more than NO

(210 compared to 40, as per first column of the Student Preference). The overall percentage row tells us that this approach to prediction is true 84.0% of the time.

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 0	Constant	-1.658	.173	92.391	1	.000	.190

Step	Chi-square	Df	Sig.
1	6.088	8	.637

The Hosmer & Lemeshow test or the table of the goodness of fit (Table 10) suggests that the model is a good fit to the data

as  $p=0.637 (>.05)$ . Thus, the model is very good fit.

		STUDENT_PREFERENCE= Yes		STUDENT_PREFERENCE = No		Total
		Observed	Expected	Observed	Expected	
Step 1	1	23	22.385	2	2.615	25
	2	22	22.043	3	2.957	25
	3	22	21.906	3	3.094	25
	4	20	22.599	6	3.401	26
	5	23	21.479	2	3.521	25
	6	21	21.211	4	3.789	25
	7	23	20.863	2	4.137	25
	8	21	20.352	4	4.648	25
	9	17	19.462	8	5.538	25
	10	18	17.701	6	6.299	24

**BLOCK 1: Method = Enter****Table 12. Classification Table<sup>a</sup>**

Observed			Predicted			
Step 1			STUDENT_PREFERENCE		Percentage Correct	
			Yes	No		
	STUDENT_PREFERENCE		Yes	207	3	98.6
			No	35	5	12.5
Overall Percentage					85.5	

a. The cut value is .500

Classification Table (Table 12) is one the most important tables in the study. This classification table is based on the descriptive variables in our study and is equivalent to the table in Block 0 (Table 8). It can be seen that the model is now

correctly classifying the outcome for 85.5% of the cases compared to 84.0% in the null model. A good improvement is being calculated in the model.

**Table 13. Variables in the Equation**

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Knowledge	.567	.331	5.071	1	.000	.727
	Mixed_Learning	.208	.169	1.367	1	.040	.529
	Cognizance	.252	.165	2.337	1	.126	.777
	Constant	1.729	.184	88.047	1	.000	.177

a. Variable(s) entered on step 1: Knowledge, Mixed\_Learning, Cognizance.

From the table of variables in the equation (Table 13), logistic regression results can be seen. Since the significant value of the factor 1 is less than 0.05 and higher than the Wald's value, it can be inferred that there is significant effect of the factor 1 on the student preference with the usage of virtual platforms. Factor 2 or the Mixed Learning too have the significant effect on the student preference with the usage of virtual platforms as the significant value is less than 0.05 and the Wald's value is low. While, factor 3 or the Cognizance does not have significant effect as the significant value is greater than 0.05 and Wald's value is low. The

logistic regression equation for the same is given below: -

$$\text{Log (p/1-p)} = 1.729 + 0.567 * \text{Knowledge} + 0.208 * \text{Mixed Learning}.$$

**CONCLUSION**

The significance of online education has increased a lot as students are understanding the importance of it in a current tech-savvy world. Online education or virtual classroom is one of the best ways of distance learning and is regarded as the future of the education industry.

Satisfied students are more likely to engage in desirable behavior like spreading positive word-of-mouth. Students are interested in learning online as it is leveraging them to learn new technology and their applications as well. But to some extent satisfaction of the students while learning online is not given much attention and is not looked after which has resulted in a decline in the use of online study to some extent. So, is highly needed to bridge the gap between the expectations and satisfaction of the students learning online.

In addition, there is a number of students who think that the traditional methods are better as compared to virtual. They need to be given more cognizance or awareness. Similarly, there is a need of imparting training so that they get updated with the latest and upcoming technology. Technology is very important in today's generation and everyone should learn new technology to leverage themselves in a tech-savvy world. It is expected that in the coming future usage of virtual platforms is going to rise as more and more students and schools are adopting them.

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