



Analyzing the Students' Attitudes and Behavior towards Traditional Classes and Technology-Enhanced Online Learning

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Abstract: This work examines students' perceptions and engagement with face-to-face teaching and content-delivery methods and especially with technology-mediated, fully online courses in connection with the Pakistani higher education system. Nowadays, learning technologies are being integrated at unprecedented levels and it important to know their attitude to particular learning environment. To do this, the research seeks to establish the following hypothesis as true: There exists positive relationship between the educational environment and perceptions/interactions among the students. Scalable, the research utilizes 225 participants in regression analysis, correlation analysis and ANOVA to analyses the effect of educational settings on student engagement. Findings show that there is a highly significant positive relationship ($r = 0.648$, $P < 0.001$) and reasonable amount of variance explained by the educational environment on students' perception ($R^2 = 0.420$). Cronbach's Alpha High Coefficients of 0.9941 for Educational Environment and 0.9983 for Student Perceptions revealed that both the measurement tools used in obtaining results are reliable that enhances the validity of the findings. This study offers helpful recommendations for educational organizations in Pakistan to implement useful technological learning experiences alongside the conventional conventional form of face-to-face interactions to improve the students' engagement levels as well as their satisfaction indices.

Keywords: Student Attitudes, Traditional classes, Technology-Enhanced learning, Educational Environment, Student Engagement

1. Introduction

Education systems have to adapt in line with the ways that the world has changed (Linde et al., 2023; Azorín & Fullan, 2022; Sahlberg, 2021). Education is viewed as the investment that will produce a qualified workforce while being seen as the fundamental requirement for the country, economic and social growth (Hwang, 2022). Education is essentials since it inspires national and personal development, goal Adoption, Justice seeking, Intelligence & critical thinking (Sharma & Ankit, 2023). The advancement of modern education is being pursued as a way to bring change in the type of education being offered with an aim of meeting the increasing demand of students in the future in addition to the changes which are being made to the education which is provided today courtesy of advances in technology (Tian, 2023). Thus, it is important for society to embrace new types of employment, increase professional activity, and raise the quality of training for specialists who are undoubtedly going to be in

demand in the workplaces, who can easily transition the use of smartphones and tools and technology based on Internet, and who are willing to create and use the technology of digital education in the process of further professional education (Salas-Rueda et al., 2022; Cortez & Johnston, 2020; Min & Nasir, 2020; Zyubina et al., 2019; Larionova et al., 2018; Mendoza et al., 2018; Kondratenko, 2015).

Because of motivation and learning enhancement on the students today's education system is embracing more laptops and tablet gadgets into the schools. However one might say, common sense tell us that these gadgets are also a challenge to traditional classroom teaching and learning. Extensive literature review indicates that students interact with the learning technology devices for purposes that do not relate to learning and they distract themselves even during learning (Gaudreau et al., 2014; Ravizza et al., 2014; Risko et al., 2013; Sana et al., 2013; Wood et al., 2012 ; Junco & Cotten, 2012; wman, et al., 2010).

These are the changes in the society that the population has been going through in the last few decades leading to a process of education aided by competences approach. On the other hand, the only area that we have seen lately the fast emerging trend of globalization is in. The identified need for educational platforms to accommodate distance learning and instruction, the shift from face-to-face teaching to the newly defined emergency remote teaching, increasing amount of information, multiple sources and electronic media, and their intensive use, as well as constant development of IT ICT (Basilotta et al., 2022; Trust & Whalen, 2020).

Studies on teaching and learning that has been conducted on online schooling has been noted for several years now. Blended and online course design, blended and online teaching, and exceptional blended and on-line learning are the primary concepts found in thousands of scientific papers, models, theories and standards, as well quality assurance frameworks. Comprehensive planning and development in education have been established to require that one must be in a position to apply a complex method of design and development to ensure that he or she gets a success in the online learning process (Dousay & Brach, 2023; Hodges et al., 2020). In the past few decades technology has made sure that the universities located at farthest regions of the world also can vouch for online studies as one of the crucial strands of knowledge dissemination (Lin et al., 2013).

The fast development of modern IT produces enables the appropriate application of the approaches to teach and in recent years, the usage of online instructions tools including MOOCs and mini lectures in the university education system (Xi & Zheng, 2023). Technical and Technology blend, both technical and technology components significantly improved a students' academic achievement of the occupational therapy (Brown et al., 2022).

In higher learning institutions and classrooms especially in the present era, use of technology and other related gadgets has enhanced (Amhag et al., 2019). It has been used on many education reform initiatives that include the Next Generation Studying program of United Kingdom (Chen, 2010). This show that, the growth of the information technology industry has facilitated the implementation of online learning. Special attention was paid to the fact that by employing online learning one can increase students' achievement. More specifically, as (Yusnilita, 2020), educational experience resources are part of online learning. Furthermore, it has a positive implication on new age students, instructors, families in the community and in the institution.

Education systems are being put in place to fit the dynamic world in order to provide for the trained human resource that is required for the development of a particular country. The practice of teaching learning is now at a stage of transformation through application of ICTs to improve professional practice. However, there are always certain factors that hinder the effectiveness of the traditional methods of teaching, such as carrying of gadgets like mobile phones to class and the use of the gadget during class period. Due to advancement in information technology, learning has gone online and the global institutions are coming up with innovative programs such as MOOCs and virtual classes. This change has to be guided and facilitated in order to ensure that learning objectives are met and particularly when there is an enormous expansion in the creation of digital learning materials.

2. Literature Review

Hence, a literature review is a process of searching for data and analyzing them systematically. As it has been quoted by (Aziz et al., 2024) a literature review not only informs the researchers about the data available in the previous research studies but also makes the research work easier, faster, and cheaper.

2.1 Educational Environment

It has been ascertained that, the learning experience and the outcome that the students obtain are highly conditioned by the context in which they are being provided with education. It emphasizes on the context, the social and psychological context of learning. Face to face interactions allow in-person communication and are punctual with

the schedules that students and instructors have and hence create a feeling of togetherness and quick reply (Rogers et al., 2021). However, technology integrated online learning is convenient and prevents the student from learning at one's own pace and also according to one's preferred learning styles (Brown & Thomas, 2020). The effectiveness of each environment might vary depending on the learning needs and choices of each learner concerned (Ullah, A et al., 2024; Lin et al., 2023). Research shows that students' behavior inside and outside the classroom as well as students' online learning environment significantly affect their learning achievement (Wu et al., 2022). It is only possible when the legislators and the educators comprehend every detail of these surroundings so that appropriate learning settings could be created (Ullah, A et al., 2024; Linn et al., 2023).

From (O'Keeffe et al., 2017; Golding, 2011) going to just before the pandemic, there was ample evidence of the decline of face-to-face lecture attendances and hence the doubts among professors regarding this pedagogy's effectiveness. (Edwards & Clinton, 2019; Johnston et al., 2013) noted that it was found out that many research works pointed to the correlation between the increase in use of the digital recording and other electronic resources with the decreasing number of attendance in the traditional classes. A research conducted in year 2020 follow up that in the bio sciences, the 69% of the respondents prefer the traditional classes over the online learning (Doggrell, 2020).

The analysis of the (Seemiller & Grace, 2016) revealed that the majority of the student's outlook on technology-supported online learning. These pupils have a favorite for and the internet competence to work for pupil self-organization and analytical, independent learning as mentioned by (Chicca & Shellenbarger, 2018). Johnson & Dasgupta conducted a survey in 2005 with the student where 37% said that they preferred the traditional class system. The findings in Jones in 1999 demonstrated that out of the 89 participants in the study, 33 preferred technology-enhanced online learning while the rest of the 56 preferred traditional classes from the comparison of the student's demographic information. A survey of many works reveals that there is a higher efficacy of TEST results in ordinary traditional classroom teaching than in e-learning (Figlio et al., 2010; Parsons-Pollard et al., 2008; Brown & Leidholm, 2002).

2.2 Students Perceptions and Engagement

It is evident from the literature that the perceived environment as well as the behavior exhibited by the students in learning contexts determines the extent of learning as well as academic achievement. Perceptions about the classroom may have a positive effect on learners, by increasing participation, enthusiasm and the number of students that remain in the class (Sharma & Shree, 2023). (Roe et al., 2021) confirm that qualitative learner behavior and emotional involvement is key to academic performance and mastery. Research evidence reveals that the supportive and engaging academic climate that facilitates students to take a more active involvement in the classroom (Reschly & Christenson, 2022). Also, customization and flexibility with the help of the technology-enhanced learning environments that facilitate student involvement and impressions (Martin & Bolliger, 2018). But challenges such as information gap like the digital divide and lack of face-to-face contact with other student and the tutor may lead to negative impacts on students' engagement (Giday & Perumal, 2024).

However, there are certain methodological limitations inherent in this corpus of research, which therefore requires the use of certain degree of caution when generalizing. For example, some research compare and compare traditional face-to-face lectures delivered from different tutors with online lectures. In regards to (Brown & Leidholm, 2002) reported differences in this type of research design may be mostly something of a consequence of teacher effects as opposed to the effects of method of delivery. In the systematic review of 86 empirical studies (Shachar & Neumann, 2003) established that those students who receive classes online tend to perform better in final standard tests as compared with those in traditional classes.

The analysis of the literature contributes a large amount of new knowledge about student attitudes and advantages of technology enhanced versus traditional face-to-face online learning. Despite the fact nowadays, learners are tending to enroll in a number of courses where they are not required to attend classes physically many of them prefer more conventional means of learning to virtual instruction. But some students want to learn through the comfort of their homes because it is flexible when it comes to delivering instructions. As opposed to conducting tests in traditionally taught courses, learning outcomes are frequently superior in online learning settings; however, one has to consider methodological limitations inherent in the comparison, such as instructors' influence on the results.

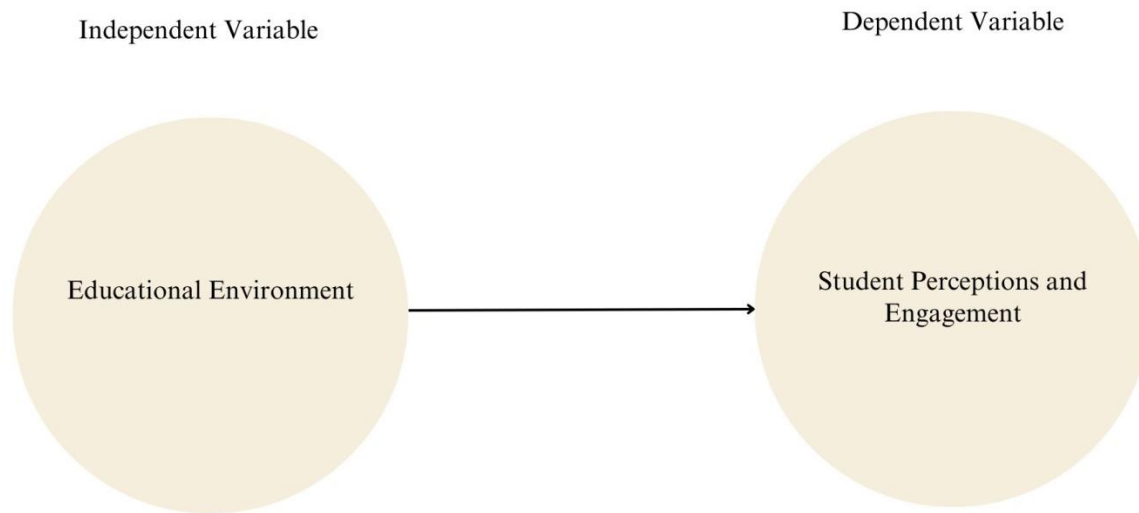


Figure 1. Conceptual Framework

2.3 Hypotheses

The purpose of this study is to examine students' attitudes and behaviors towards traditional classes and technology-enhanced online learning. The study will test the following hypothesis:

H1: There is a significant positive correlation between Educational Environment and Student Perception and Engagement.

2.4 Problem Statement

The emergence of technology supported learning models as well as increase in access to various kinds of distance learning resources in recent years have introduced major changes in context of Pakistan's higher education. Little is known about the effectiveness and the levels of acceptability of these innovations besides face-to-face delivery. Therefore, the aim of this study is to fill the above mentioned gap by exploring Pakistani students' perceptions about OER, technology mediated active learning, and face-to-face instruction. Its objectives are to identify the factors that define the students' preferences of different learning environments. Hence, by providing the detailed distinction of the learning environments and explaining the interactions between them and students, this work is going to provide the practical and valuable information for Pakistani educational institutions about enhancing their teaching practices and increasing the students' satisfaction and engagement levels in the respective educational environment.

2.5 Objectives and Research Questions

1. To examine the impact of the educational environment on student perception.
2. To assess the relationship between the educational environment and student engagement.

2.6 Significance of the study

The significance of this study lies in the fact that, it identifies a shift of customers' needs and expectations in learning institutions. Knowledge of perceptions concerning traditional and technology-based online learning can help educational organizations know the teaching approaches that are most suitable, how learners' engagement may be improved, and ways through which enhanced learning gains may be achieved. Information acquired can help in the formulation of curriculum as well as identifying resources needed and in the application of information technology in education hence enhancing quality of educational activities.

This study's importance is in determining the perceptions which students have concerning conventional class

attendance and taking classes via the internet as a means of facilitating learning in schools in the current digital world. As such, the main focus of the study is to capture these attitudes, which will give insights into the weaknesses and strengths of the virtual and face-to-face modes of learning to enhance efficient teaching methodologies for better learning results, satisfaction levels and engagement by the students. This research will help focus the educators and policymakers as to how to better utilize the technology in current education systems so that they don't lose the essence of face-to-face communication between students and teachers in class.

3. Methodology

This study employs a quantitative research design to examine student attitudes and behaviors towards traditional classes and technology-enhanced online learning. The methodology encompasses the following key components:

3.1 Research Design

The survey research method aiming at collecting the student perceptions towards traditional and technology enhanced learning environments was conducted in a cross-sectional study design.

3.2 Sample

Sample is developed of 225 students coming from different universities in Pakistan. The sampling technique adopted for the study was the random sampling with an aim of having all participants in the population. From the learner sample involved in this study, the male and female learners are equally represented, the learners are of different ages and the learners have different levels of education.

3.3 Data Collection

The target sample was administered a structured questionnaire which includes standard scales for measuring the students' views and their activity level of EE. The questionnaire has sections on traditional face-to-face mode of teaching, online mode of teaching, and respondent's preference towards each of the type of college classes.

3.4 Instrumentation

Cronbach Alpha test was conducted in order to determine the reliability and validity of the questionnaire and the values obtained were high (0.907 for the Educational Environment scale which is 9451 for positive items and 0 for the negative item. Total ILAE of 9983 for the Student Perceptions and Engagement scale presented a favourable internal consistency for the instrument. These items were adopting from other validated sources and modifying accordingly to the context of Pakistani higher education.

3.5 Data Analysis

Data collected were analyzed using program for statistical analysis SSPS. As for descriptive data analysis, percentage was used as the main tool used to present the demographic data of the participants and their educational achievement. Simple regression analysis was carried out to determine the relationship between the students' educational environment and students' engagement. In order to test the hypotheses and draw conclusions as to the statistical significance of the relationships, linear regression analysis and Analysis of Variance (ANOVA) tests were used.

4. Result and Discussion

4.1 Reliability

The Alpha reliability test is applied for measuring the level of reliability in the collected questionnaire data, and the questions herein are adopted from different sources. The validity of the constructed instruments is calculated using Cronbach's Alpha. The reliability of some of the quantitative techniques is depicted in the following table. The efficacy of these error-free and bias-free techniques is shown in the table below. To compute for the alpha values, one has to use the procedures recommended by (Tabachnick & Fidell, 2007). $\alpha > 0.9$ means excellent and the value of α is greater than 0.8 shows very good one; $\alpha > 0.7$ represents good while, $\alpha > 0.6$ acceptable; $\alpha > 0.5$ is doubtful while, $\alpha < 0.5$ is considered undesirable. The findings of the study reveal that reliability of the variables has high coefficient alpha values of ($\alpha = 0.9941$, $\alpha = 0.9983$) that point to a high level of acceptability and dependability of the used questionnaire.

Table 1: Cronbach's Alpha Reliability results

Variables	Cronbach's Alpha	No of Items
Educational Environment	0.9941	10
Students Perceptions and Engagement	0.9983	10

4.2 Data Analysis

A rather profound and important part of the entire marketing research process, data analysis is usually the final stage before the actual conclusion of the research. It becomes almost unbearable for researchers to arrive at recommendations regarding the right individuals for such jobs. For the analysis of the collected primary data, we used SPSS software, and conducted various tests, namely regression analysis, correlation analysis, Analysis of Variance (ANOVA), Model Summary and Coefficients.

Table 2: Gender Wise Distribution

Gender	Frequency	Percentage
Male	117	52.0
Female	108	48.0

Looking at the demographic characteristics of the respondents the gender distribution is almost equal with a slight priority given to the male gender. Of the participants, 52% of participants are males, which is 117 in number, while 48% of the participants are females, 108 in number. Four percent difference in favor of males means that the gender distribution is pretty equal among the members of the group. There is no over representation of either gender thus showing that this level of participation is satisfactory.

Table 3: Age Wise Distribution

Age	Frequency	Percentage
Up 20	93	41.3
21-25	78	34.7
26-30	28	12.4
31-35	14	6.2
36-40	7	3.1
Above 40	5	2.2

We overturn the average age of the respondent, which is 31 years old and more than a third of the participants, 38%, is younger than 25 years old. Specifically, 41.3% which are 93 persons of them are below the age of twenty. Another 34.7% (78 individuals) are within between the ages of 21 - 25 years. These two groups together constitute 76 per cent of the total respondents indicating youngster's dominance in the sample. As age increases, participation decreases: 12.4% having selected a problem, the next major step is to define the measure of success in terms of formal targets, planned milestones or objectives. 6.2% (28 individuals) are somewhere in the vicinity of thirty and thirty seven people are below twenty six years of age. Only 14 or 2% of the respondents are aged between 31-35 years. Another least populated age groups include 36 to 40 with only 3 people. 1% (7 individuals) and above 40 the ratio was 2.2% (5 individuals). This shifts towards the youthful people mean that the people surveyed or involved in the study are young adults.

Table 4. Level of Study

Education	Frequency	Percentage
Bachelors	169	75.1
MS/M.Phil.	45	20.0
PhD	11	4.6

According to the results, the most participants have a bachelor's degree, which equals 75.1 percent (169 individuals). This indicates that a large percentage of the people surveyed have attained an undergraduate level of education and therefore is the most prevalent qualification.

Those with a MS/M. Phil. Degree, 20% (45 individuals) and 4.6% (11 individuals) which shows that higher degree holder's participants are lower numbers. Still, according to this data, most of the participants are rather well-educated, 75% of them having a bachelor's degree or higher, with very few of the participants having never advanced to the doctoral level of education.

4.3 Descriptive Statistics

The Descriptive statistics shows that the Mean value for all the values is over thirty three. 92 with standard deviation of 8. 57, this a little close to the mean shown by the rest of the group, though not deviating significantly. This means that although the measure of central tendency is approximately 33. According to the value of dispersion at the end of the year 92, it can be concluded that the dispersion of data is moderate. The second set of values has the mean of 33. 51 and is within a slightly Lower standard deviation defining a range of 8 among the patients. 32, which also suggests an equal central tendency in the variability of calcium in the group although slightly less variable than what was observed for phosphorus. The two sets of data contain 225 observations each hence a good base on which these statistical measures have been made. This may be attributed to the fact that the figures are closely matched and the variability is closely similar too as seen in the figure above.

Table 5: Descriptive Statistics

Variables	N	Mean	Std. Deviation
SPE	225	33.9200	8.56555
EE	225	33.5067	8.32119

SPE: Students Perceptions and Engagement, **EE:** Educational Environment

4.4 Correlation Analysis

The results of the correlation analysis indicate that sexually the Pearson coefficient between SPE and EE equals to 0. 648. This value customer oriented means high level of positive correlation and reflects the fact that higher score in students' perceptions and engagement tend to have higher score in the quality of the educational environment. There is a positive relationship between CA and Stock Return and the significance value is 0.000 at 1 tailed test, which means that the obtained result could not be casual and the existence of the described connection is highly probable. Both have been operationalized on the basis of 225 observations.

Table 6: Correlation Analysis

		SPE	EE
Pearson Correlation	SPE	1.000	.648
	EE	.648	1.000
Sig. (1-tailed)	SPE	.	.000
	EE	.000	.
N	SPE	225	225
	EE	225	225

SPE: Students Perceptions and Engagement, **EE:** Educational Environment

4.5 Model Summary

Evaluation of the regression model summary shows how the model is able to predict 42 percent of the data. The degree of explanation by the independent variables to the dependent variable is zero percent or with an R Square of 0. 420. As the measure of the proportion of variance in the dependent variable that is predictable from the independent variables, the Adjusted R Square for the current study model is as low as 0. 417 controls for the number of predictors in the model and thus support the fact that the model is good. The standard error of the estimate is 6. 538 to the lower and average distance observed values are located from the regression plane. The

statistic R Square Change of 0.420% and the F Change value of 161.491 with 1 df1 shows that quantity added this predictor significantly enhances the fit of the model because the change in R Square is significant. In total, it can be mentioned that the model offered a close link between the predictors and the dependent variable, which forms a sufficient ground for the developed conclusions.

Table 7: Model Summary

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.648 _a	.420	.417	6.53786	.420	161.491	1

4.6 ANOVA

The ANOVA table for the regression model gives to us the Sum of Squares for the regression as 6902.723. Mean value of 723 with 1 degree of freedom and a Mean Square of 6902.723. The F-statistic is 161.491, with a significance level (Sig.) of 0.000 confirm this inference, he adds.000 which means that the model is statistically significant and we can explain many of the variations in the Students' Perceptions and Engagement. The Sum of Squares for the residuals is 9531.837 with 223 df and Mean Square of 42.744. The total Sum of Squares is 16434.560. The F ratio of 2372.46 implies that the full model of the predictor, Educational Environment has a statistical significance in capturing the Students of Perceptions as well as engagement thus enhancing a good fit of the model.

Table 8: ANOVA

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6902.723	1	6902.723	161.491	.000 ^b
	Residual	9531.837	223	42.744		
	Total	16434.560	224			

a. Dependent Variable: Students Perceptions and Engagement

b. Predictors: (Constant), Educational Environment

4.7 Coefficients

Educational Environment (EE) coefficients table reveals aspects of how they relate with Students' Perceptions and Engagement (SPE). As calculated earlier on, the unstandardized coefficient for EE is 0.667 having a corresponding of standard error of 0.052 in which for every unit rise in the Educational Environment, Students' Perceptions and Engagement also raise at the same rate. 667 units. This relationship is highly significant, t-value of 12 maintained this observation. 708 and Significance level (Sig.) of 0.000. Nonetheless, standardized coefficient or 'Beta' of EE is equal to 0.648 show that Educational Environment has a positive influence on Students' Perceptions and Engagement in a strong sense. The t-value of 4.34 and the significance level of 0.000 in this case indicates that this predictor has a direct significant impact on the dependent variable which consequently validates once again the soundness of the model developed here.

Table 9: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	SPE	11.567	1.812		6.383	.000
	EE	.667	.052	.648	12.708	.000

- a. Dependent Variable: Students Perceptions and Engagement
 b. Predictors: (Constant), Educational Environment

4.8 Limitation of the Study

Despite the fact that this study establishes a positive correlation between Educational Environment and Students' Perceptions in addition to their Engagement, it is important that some few limitations of the study be pointed out. First of all, cross-section nature of underlying data has its disadvantage in that no conclusions can be made regarding changes in variables over time. Also, concerns can be raised about external validity since the study utilized 225 participants thereby limiting the generality of the results. An important threat to internal validity which can affect Students' Perceptions and Engagement as well as Educational Environment measures is response bias that arises from the use of self-reported measures. Finally, the study does apart of other such contingent factors that may affect Students' Perceptions and Engagement in order to have better picture of various factors at play.

5. Conclusion

This research aims at understanding the Pakistan universities students' perceptions and engagement of traditional face-to-face classes and technology-mediated online delivery of courses in the higher education setting. This has provided significant support to the hypothesis that construction of enhanced educational environment fosters students' perceptions and engagement as endorsed by the significant implications from the reported findings. In this case, it emerges that the coefficient of determination, $R^2 = 0.42$, which is quite high, implying that the Educational Environment captures most of the changes in Students' Perceptions and Engagement. Thus, having a high level of reliability and significant statistical results, the study presents the possibilities of both traditional and online learning environment and can be of great use for educational facilities. The findings indicate that, although the widely applied framework of technology enhancement proves highly effective, the traditional learning environment remains an important component of students' learning experience and satisfaction. In conclusion this research highlights the need of applying technology use wisely while keeping an aim of incorporating face to face teaching and learning to help in improving the general results of teaching and learning. The findings of the study will be useful to inform policy decisions and teaching methods among the rapidly advancing and transforming systems of learning.

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