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# VIRTUAL LEARNING: A PANACEA IN THE PHASE OF COVID PANDEMIC AND PROSPECT OF EDUCATION

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## Abstract

The petrifying and extreme impact of COVID-19 has shaken the world to its core. The COVID-19 pandemic has caused the biggest interruption in the history of education systems, affecting almost 1.6 billion learners in more than 190 countries on all continents. When most of the world is experiencing an *e*-learning boom as the aftermath of the COVID-19 crisis, the situation arose many challenges on the execution and effectiveness of online classes in the rural regions. The present study aims at exploring the views and opinions of students in the state of Karnataka in India who switched to online classes due to lockdown which was not their choice, rather the only option available. This study reflects the feasibility of virtual learning in the higher education system during the COVID pandemic, explores the different variables that positively and skeptically affects students in virtual learning, and inspects the impact of virtual learning on student's contentment. The paper employs a quantitative approach to analyze the perceptions of students on online learning. The results of the study indicate the aspects that

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encouraged students to support virtual learning and those aspects that need to be improved to ensure effective teaching-learning in the online scenario. Improving the quality of education provided, activities for engagement and maintaining of social relationships, and scope for participation in co-curricular activities will improve the student satisfaction score in online learning. This study indicated that at present the students are more satisfied with the physical classes. Even though the present crisis is alleviated, the scope of a blended teaching-learning method of online and offline classes might be continuing. Hence the findings of the present study will help instructors to improve the learning experience of their students.

## Introduction

Virtual learning brings with it many benefits to both universities and students in terms of saving substantial cost, become more digitalized, integrate global education, provide students a vast choice of learning, no restriction of time or space, follow one's pace of learning are a few to mention (L. Pham, Y. B. Limbu, T. K. Bui, et al. [21]). At its heart, virtual learning is about learning that takes place outside of the educational institution or brings into the educational institution what is outside of the educational institution. It is not bound by time or venue and achieves a global reach. Online education is a means of linking mentees who might be physically located in an educational institution to their mentors somewhere else. Classrooms at the university level have undergone a major transition from teacher-led to student-centered education, with many courses embracing project-based learning as an efficient learning method (J.-E. Oh, Y. K. Chan and K. V. Kim, [19]).

Learning is a lifelong process that keeps our world-changing so that Mentees are still searching for a successful education (H. P. Blossfeld and J. Von Maurice, [8]. Although some Mentees believe that traditional education is more reliable and the best educational choices, there is evidence that online learning is the best way to learn these days since many Mentees choose to study in the field (F. M. Alsaaty, E. Carter, D. Abrahams and F. Alshameri, [6]. Online learning is the best way to learn these days because it expands in perspectives, resources, and environments to match face-to-face learning (M. Milrad, [17]). Since Socrates and Plato, we have been in the conventional model of class. We had millennia to establish the model of education that we use in the traditional classroom.

Education is the key to success, and in today's world, learning can take

place both in a typical classroom environment and online. Although these are both methods of teaching Mentees, some variations favor the individual learner. A typical classroom atmosphere is where learning takes place and where the Mentor provides Mentees with face-to-face instructional learning (S. Dhawan, [9]. Mentees may also meet in the classroom face-to-face with the Mentor as well as other Mentees. On the other hand, Online learning is where online classes are taken, but Mentors and Mentees chat or connect online (S. Goyal, [11]. In a video chat room, virtual learning class, emails, interactive telecommunications, this may occur. When a Mentee in the typical classroom fails a class, he or she will be able to ask the Mentor or another Mentee face to face about missing notes or assignments. Mentees may also ask the instructor for additional guidance when he or she does not understand a lesson.

Undoubtedly, virtual learning has built its origins in the field of education. Opportunities for multimedia training have emerged with the rising speed of internet connectivity. Also, social media has had a huge influence on and is continuously changing education.

In the 21st century, this role may be participation in an information-rich society, where knowledge is considered to be the primary source of countries and/or nations' socio-cultural and political-economic growth (A. H. Shahzad and A. Khan, [23]. Based on this premise, we examine the feasibility of virtual learning in the higher education system during the COVID pandemic, explore the different variables that positively and skeptically affects students in virtual learning, and inspect the impact of virtual learning on student's contentment. The study is based on the educational institutions in the rural and urban regions of Karnataka state of India where classes were held on campus and were forced to switch to a virtual model of learning due to the unprecedented lockdown following the pandemic. Hence the objective of the study is to explore the favorable and skeptical aspects related to online learning from the point of view of those learners who got adapted to online learning due to circumstances and not a choice.

## Literature Review

The challenges faced by the children of rural Karnataka are described in the article (G. Naik and K. N. N. Rao 2020). While educational institutions in urban and semi-urban locations went on with online classes, children in rural areas were deprived of the same which gave way to uneven opportunities among students. Even the teaching fraternity faced the difficulties of developing *e*-content. In many cases, the situation was grim that the students couldn't be informed that Online teaching content is being made available and they are supposed to prepare for exams.

According to KPMG India and Google, the major drivers for online/blended education in India include (a) phenomenal growth in Internet and smartphone penetration; (b) low cost of online education; (c) digital-friendly government policies; and (d) escalating demand by working professionals and job-seekers for continuing education (Bansal, 2017).

G. Singh, [24] states well the difficulties faced by teachers in *e*-learning scenarios. When the learning is provided to the tech-savvy learners in their way, learning would become an interesting, engaging, and fun-filled experience for them. By the implementation of ICT-enabled teaching, the teacher can reduce the problems of individual differences, but technology plays a major role in this aspect. P. V. Jena, [13] suggests both trainers and students have to undergo training. It also suggests the introduction of policies government and educational institutions that will enable the availability of free internet and gadgets that will improve the learning experience. The need for new approaches to assessment is also emphasized.

On a global frame, Social networking has been investigated to have an excessive potential effect on *e*-learning and technology-enhancing learning, often in the sense of contemporary methods of learning (M. Fisher and D. E. Baird, [10]). However, this impact is partially technologically derived. With the idea of web 2.0, the whole truth is that learning is affected both technically and socially. The strong alliance of informal environments, the desire to interact with learning groups outside the classroom environment, is encircled by them.

L. Mishra, T. Gupta and A. Shree, [18] this paper aims to address the

essentials of online teaching-learning in education during the COVID-19 pandemic and how, with the aid of virtual classes and other main online tools, existing resources of educational institutions can effectively turn formal education into online education in this continually changing educational landscape. The paper uses both a quantitative and qualitative approach to research teachers' and students' views of online teaching-learning modes and also highlighted the online teaching-learning model implementation process. This article intends to provide a complete picture of the continuing online teaching-learning process throughout the lockdown period, including the link between the process of change management and the online teaching-learning process in the education system amid the COVID-19 outbreak, to overcome the ongoing academic disturbance and thus ensure that educational activities are resumed.

L. Espino-Díaz, G. Fernandez-Caminero, C. M. Hernandez-Lloret, H. Gonzalez-Gonzalez and J. L. Alvarez-Castillo, [3]. This study analyzed the current education situation in the situation of the COVID-19 pandemic. This study aims to recommend a proposal that improves the effort of educational professionals in the current situation of a pandemic through the usage of Information and Communication Technologies (ICT) in the context of a novel approach to neuroeducational contributions in the field of emotion management and motivational processes, contributing to meaningful student learning. The symbiosis of ICT and neuroeducation will contribute greatly to today's paradigm change.

M. Teräs, J. Suoranta, H. Teräs and M. Curcher, [2] all walks of society have been impacted by the Covid-19 pandemic and the social distancing that resulted, including education. Educational institutions have had to rapidly adjust to the situation to keep education going. This has contributed to an unprecedented movement towards online learning. This paper uses a critical lens to focus on the potential issues emerging from the hasty implementation of commercial digital learning solutions whose architecture may not always be guided by best pedagogical practices, but rather by their business model that leverages profit-making user data. This paper encourages educational leaders to think carefully about the choices they are currently making and whether they are paving the way for education to have a desirable future.

J. Daniel, [4] a big concern for educational systems is the COVID-19

pandemic. Teaching, as well as the usual subjects in the classroom, should involve different activities and work that places COVID-19 in a global and historical context. Designing student evaluation first allows teachers to concentrate while building curricula. Finally, this Viewpoint proposes flexible ways to fix the harm to the learning trajectories of students once the pandemic is over and includes a list of tools.

A. Joshi, M. Vinay and P. Bhaskar, [5]. In India, in all its states and union territories, the COVID-19 outbreak was declared an epidemic. This paper aims to recognize the obstacles faced by teachers in various home environment settings in India during online teaching and evaluation. The results showed four types of obstacles that teachers face during online teaching and evaluations. Significant problems were identified in home environment environments, a lack of basic facilities, external distraction, and family disruption during teaching and performing tests. The study results may be beneficial for regulatory authorities and higher education institution employers who are planning to implement online teaching in the future as a daily operation. The knowledge gained from the results will help them rethink their current policy frameworks by developing new methods and technological mechanisms to help their teachers successfully adopt EdTech to cope with any potential crisis.

H. H. Turhangil Erenler [25] provide strong evidence for the hypotheses that course interaction, teacher attitudes, and the benefits influence the perceived quality of teaching and learning by students and have an effect on the perceived learning/course quality of students. The fulfillment of students through the mediating impact of the perceived quality of learning/course perceived by students. The results indicate that the instructional methods and teaching techniques of teachers must be revised to create a more dynamic learning environment so that learners can connect with their peers, teachers, and learning materials. The Universities can, therefore, help to improve the satisfaction of their online courses and students while implementing e-learning systems.

D. Pande, V. M. Wadhai and V. M. Thakare, [20] in their study reports that in terms of *e*-learning, low-quality procurement practices (in all sectors, but particularly in the public sector) are a barrier to growth and adoption. It is therefore important to carry out a comprehensive review of the choice of *e*-

learning applications for education to increase the awareness of learners, the learning outcomes, the success outcomes, the business, and policy effect, and the benefit of the money invested.

According to Y. Lee and J. Choi, [15], to truly comprehend the student dropout rates of online courses, the interrelationships between dropout variables in different course settings need to be investigated. For example, the comparison between online and face-to-face courses has been carried out in most online dropout studies. The class format, however, has become complex, including a mixed learning hybrid approach to online and offline guidance. The two different types of instructions are an attempt to optimize mutual advantages. Thus, distinct course design can affect the academic performance of the student and the decision to drop.

According to *f* D. Laurillard, [14], *e*-learning study has been regarded as an operational concept of *e*-learning as the use of any of the latest technologies or software in the service of learning or learner support. M. Prensky, [22] find a study on various learning outcomes is best learned by unique forms of learning practices. The research work explores the way of learning (a) habits by constraint, feedback, and practice. (b) creatively through playing (c) facts through association, drill, memory, and questions (d) vocabulary through imitation, practice, and impression (e) logic through puzzles, problems, and examples.

R. B. Marks, S. D. Sibley and J. B. Arbaugh, [16] reveals the interaction between teacher and student is most noteworthy, twice that of interaction between student and student; that some interaction between student-content is considerably related to perceived learning; that context variables are not weighty; and that flexibility of distance education, while significant, are less important than other interactions.

## Objectives

To collate the efficiency of the learning aspects in virtual and offline mode.

To explore the different variable that positively and skeptically affects students in virtual learning

To inspect the impact of virtual learning on students contentment.

## Methodology

The present study is based on primary data collected from 605 students who were regular students of various programs attending offline classes in their respective institutions. These students were forced to take up virtual learning methodology due to the lockdown following the pandemic that spread worldwide. Hence the mode of learning was not their choice, rather it happened to be the only option available. Random sampling techniques have been adopted by the researchers to identify the respondents. A pilot test was implemented to confirm the validity of the tool used. The survey used a 5-point Likert scale. The content and conceptual validities of the survey were also checked. Forty-seven participants were available for the pilot test. The clarity, conciseness, and reliability of the items to the subject matter were evaluated according to the answers of the participants who took online classes during the pandemic.

Data analysis was performed using paired *t*-test, exploratory factor analysis, and logistic regression. To probe if the students were happy about online learning, a comparative analysis is carried out using paired t-test. EFA helps to find the latent dimensions of a concept. To find the influence of these factors on student satisfaction, logistic regression is carried out; the predictor variable is dichotomous, Satisfied or not with the current scenario of virtual classes. The SPSS 23.0 application packages were used for this analysis.

## Results and Discussion

The present study intends to explore the aspects related to virtual learning by students at higher education institutions. Data was collected from 605 students who were regular students of various programs attending offline classes in their respective institutions. Many of the students hail from rural areas of Karnataka and the remaining from urban Karnataka. These students were forced to take up virtual learning methodology due to the lockdown following the pandemic that spread worldwide. Hence the mode of learning was not their choice, rather it happened to be the only option available.

Most of the students were a part of virtual learning for the first time; hence impressing them with the best learning experience was challenging.

Most of the instructors too had a first-time experience delivering the content through online mode. However, training was provided to the instructors to optimize the use of various options available in online teaching. Since the students were involved in higher education, viz., graduation and post-graduation, it is imperative that the class sessions are extremely impressive and informative for them that they continue to attend the classes. Unlike schoolchildren, learning cannot be forced into students of higher education; they may not opt for time-consuming sessions unless the sessions are worth the time and effort spend.

A switch from offline classes to online or virtual mode was sudden. Hence accessing the internet to attend online classes from one's residence posed challenges since many of them had not set up such facilities before lockdown (M. Irfan, B. Kusumaningrum, Y. Yulia, et al. [12]. The internet access made available at the institution was sufficient as long as they were able to visit the institutions physically for classes. Moreover, not all students reside in urban areas. In rural areas in India, access to the internet is interrupted by different reasons; no signal towers available in the neighboring areas, intermittent rainfall leading to long hours of unavailability of power supply are a few to mention. Yet another challenge is the possession of a proper device by the student; Laptops, PCs, Tablets, and Mobile phones were the devices commonly used for attending classes and study sessions. The instructors used various methods for content delivery: Online interaction platforms like Zoom, Webex, etc. were commonly used by the study group.

A complete semester of 6 months of classes and exams were held online; after the initial apprehensions, students began to get accustomed to the new learning environment. Languages, quantitative courses, practical sessions using demonstrative apps for Physics and Electronics all were providing a new experience altogether for the course instructor as well. It is under this circumstance, the present research is held to analyze the impact of the virtual classes. The need for the analysis is to follow the problems faced by the students so that they can be overcome in the future sessions and to analyze the positive and impressive aspects that have made virtual learning effective.

The study group consists of 605 students pursuing college studies; 31.2% are pursuing Postgraduate studies and the remaining pursuing graduate studies. 51.5% of the respondents follow Commerce and Management

discipline, 38.8% Science and remaining Arts disciplines. A questionnaire was provided to the students; the items were on a 5 point Likert scale. To probe if the students were happy about online learning, a comparative analysis is carried out using paired $t$-test. Five distinct variables were analyzed to know the response of the students; they are-Quality of education provided, Building Maintaining Social Relationships, Involvement in Extra-Curricular Activities, Time Management Flexibility, and Expenses Incurred. The results are presented in Table 1.

**Table 1.** Results of paired $t$-test.

| | Mean | Std. Deviation | Std. Error Mean | $t$- a statistic | Significance |
|---|---|---|---|---|---|
| Quality of Education- Virtual Classes | 1.026 | .042 | 3.03 | – 16.82 | 0.000** |
| Quality of Education_ Physical Classes | 1.134 | .046 | 3.80 | | |
| Building Maintaining Social Relationship- Virtual Classes | 1.143 | .046 | 2.42 | – 18.298 | 0.000** |
| Building Maintaining Social Relationship_ Physical Classes | 1.378 | .056 | 3.61 | | |
| Involvement in Extra Curricular Activities- Virtual Classes | 1.095 | .045 | 2.10 | – 21.85 | 0.000** |
| Involvement in Extra-Curricular Activities_ Physical Classes | 1.409 | .057 | 3.54 | | |
| Time Management Flexibility- Virtual Classes | 1.161 | .047 | 2.95 | – 6.649 | 0.000** |
| Time Management Flexibility _ Physical Classes | 1.155 | .047 | 3.35 | | |
| Expenses Incurred_Virtual Classes | 1.217 | .050 | 2.93 | – 5.038 | 0.000** |
| Expenses Incurred_Physical Classes | 1.180 | .048 | 3.24 | | |

Of the five variables were considered for analyzing the opinion of students, Quality of Education was given a better average score in offline classes. This indicates the feeling students have that the physical class sessions are of more quality and more effective. Similarly, the opportunity to build and maintain the social relationship and also a scope of Involvement in extra-curricular activities were observed to have a higher rating during physical classes. The comparison between scores of online and offline sessions for these attributes is significantly different at the 5% level since the

significance value < 0.05. Flexibility in time management and Expenses incurred in studies were aspects to obtain a better score during the virtual mode of learning. This can be attributed to the time gain by students as they do not have to prepare themselves and travel to attend classes. The expense incurred in this mode is also higher compared to the virtual learning scenario. These two variables also significantly differ between online and virtual sessions. This analysis indicates affinity of students lies in offline classes. The only appealing factor seems to be time flexibility and expenses. The major expectations of a college education which include, quality education social interaction, and enhancing co-curricular skills don't seem to be well achieved.

The idea of virtual learning is gaining worldwide popularity, molding the teaching-learning framework that is feasible for the online format is important. As the world advances to the online mode of education, each academic institute must get equipped with an effective online learning system. Hence the present study analysis progresses to explore the latent dimensions that influence online classes positively or adversely. To find the various dimensions the favor and disapprove of virtual learning, Exploratory Factor Analysis (EFA) is employed.

To comprehend the various latent dimensions of advantages and limitations of the virtual classes. Responses were collected on a set of 34 items on a 5 point Likert scale. The tests of Adequacy favored the conduct of EFA (KMO = 0.923, Bartlett's test of sphericity, Chi-square =7985.726 with significance value < 0.01). The communalities extracted by all the 34 items were more than 0.4; hence all the items contribute well to the total variability of the data. Seven factors were identified with an Eigenvalue greater than one. Hence these seven factors are utilized for further analysis. The EFA findings are presented in Table 2.

**Table 2.** Rotated Component Matrix.

| Factors | | Factor loading |
|---|---|---|
| More effective classes | I learn better due to online classes | 0.814 |
| | I am happy to attend online classes as I don't have to travel | 0.745 |
| | My grades/marks are improved due to online classes | 0.704 |
| | I can understand better in online classes | 0.700 |
| | I can concentrate better since no one is sitting next to me | 0.696 |
| | Learning is more interactive in online classes | 0.688 |
| | I have more productive time since it is online classes | 0.687 |
| | Question-answer sessions are more effective | 0.581 |
| | I can communicate with my friend easily in virtual mode | 0.531 |
| | Expenses are very low in online classes | 0.525 |
| Socializing | I miss my friends due to online classes | 0.770 |
| | I miss the break-time fun with my friends in college | 0.745 |
| | I feel lonely as I miss the time with friends | 0.741 |
| | I feel depressed since I don't get time with my friends | 0.678 |
| | I miss all co-curricular activities due to online classes | 0.552 |
| Glitches | I am unable to access complete classes due to internet access issues | 0.731 |
| | Since I don't have an appropriate device, I'm unable to attend the session effectively | 0.682 |
| | I am spending more money on internet access | 0.647 |
| | I am worried about internet security due to online classes | 0.579 |
| | Classes are adversely affected due to technical glitches | 0.566 |
| | Excess use of gadgets for classes are affecting my vision | 0.446 |
| Distractions and Lack of personal touch by teacher | I utilize the option of playing games/ watch videos between classes | 0.729 |
| | I get distracted easily since no one to monitor | 0.673 |
| | I am distracted due to the messages received on my device between the classes | 0.669 |
| | Online classes lack motivation | 0.483 |
| | I fear keeping video turned on due to security reasons | 0.432 |
| | Teachers are unable to give personal attention to students | 0.425 |

| | | |
|---|---|---|
| Difficulty in Quants and Practical's and Exams | Practical and Lab sessions are ineffective due to online classes | 0.758 |
| | Quantitative concepts are difficult in online classes | 0.503 |
| | Attending exams are difficult in online | 0.422 |
| Advanced technologies implemented for content delivery | Teachers are using many tools in online classes for content delivery | 0.771 |
| | The various techniques and devices used by teachers online have made comprehension better | 0.475 |
| Internet security | I don't fear security breaching as I use my official id | 0.791 |
| | My personal data are secure | 0.648 |

The above table presents the important aspects that influence the learners positively or adversely. If these factors can be provided enough attention, would possibly provide a better learning experience to the students. The factors can be concisely presented as in table 3

**Table 3.** Latent dimensions approving and disapproving virtual classes.

| | | |
|---|---|---|
| Features Favoring Virtual classes | i. | Better concentration and effectiveness in teaching-learning |
| | ii. | More advanced teaching methodologies |
| | iii. | No worries about internet security on various learning platforms |
| Features disapproving Virtual classes | i. | Unable to socialize with friends, participate in extra-curricular activities |
| | ii. | Unstable Internet, other technical glitches like power failure, no proper device, and hazards to the eye due to continuous screen usage |
| | iii. | Distractions on the screen like games and videos readily available and Lack of personal touch by teacher |
| | iv. | Difficulty in attending Quantitative courses, Practical sessions, and Exams |

To find the influence of these factors on student satisfaction, logistic regression is carried out; the predictor variable is dichotomous, Satisfied $(Y = 1)$ or not $(Y = 0)$ with the current scenario of virtual classes. The hypothesis model is $Y = \log\left\{\frac{p(y=1)}{1-p(y=1)}\right\} = \beta_0 + \beta_1$ More Focus + $\beta_2$ Socialise + $\beta_3$ Lack of Motivation + $\beta_4$ Glitches + + $\beta_5$ Quants/Exams+ + $\beta_6$

Advanced methods+ + $\beta_7$ Security.

The estimates of the regression coefficients are presented in the table.

**Table 4.** Estimate of Logistic regression model.

| | *B* | S.E. | Wald | Sig. | Odds Ratio |
|---|---|---|---|---|---|
| More Focus | 2.232 | 0.194 | 132.833 | .000 | 9.319 |
| Socialize | -0.859 | 0.134 | 41.222 | .000 | .423 |
| Technical hazard | -0.654 | 0.130 | 25.291 | .000 | .520 |
| Distraction/No motivation | -0.965 | 0.135 | 51.023 | .000 | .381 |
| Quants/Lab/Exam | -0.688 | 0.127 | 29.553 | .000 | .502 |
| More advanced teaching methods | 0.314 | 0.124 | 6.369 | .012 | 1.368 |
| No fear Security Issues | 0.378 | 0.127 | 8.845 | .003 | 1.460 |
| Constant | -0.537 | 0.122 | 19.342 | .000 | .585 |

The model can be written as the odds: $\log\left\{\frac{p(y=1)}{1-\overline{p}(y=1)}\right\}$ $= -0.537 + 2.323 *$ MoreFocus 0.859* Socialise –0.654* Lack of Motivation – 0.965* Glitches – 0.688* Quants/Exams +0.314* Advanced methods +0.378* Security.

Unlike linear regression models, we cannot assess the relationship between explanatory variables. The sign of the estimated coefficients of logistic regression, reveals if odds (+) are greater or smaller (–) in relation to the reference level. Here factors that adversely affect the impactful virtual learning are more in number. The negative sign of these coefficients indicates that it is highly essential to improve the experience on the four disapproving factors.

Yet another promising fact is that the odds ratio corresponding to the Factor- More focus, has a very high value, 9.319 when compared to others. This indicated there is a 9.319 fold increase in the possibility that the student is satisfied with virtual classes. Similarly, more advanced teaching methods and No fear Security Issues have 1.368 and 1.460 as their odds ratio. The remaining four disapproving factors Socialize, Technical hazard, Distraction/No motivation, and Quants/Lab/Exam have comparatively low values in odds ratio. This is an indication that the disapproving aspects are comparatively weaker than the approving factors.

Compared to the positive factors, the negative factors have a lesser

impact. The impact of the seven factors can be compared by their estimates of the regression coefficients. All the included in the Logistic regression model are significant (Walds test, significance value < 0.05).

The model has 83.6% prediction accuracy. The pseudo $R$ square value by Nagelkerk is 0.61 and the Hosmer Lemshow test (Chi-square = 60.167 with significance value < 0.05) also suggests the model with all seven factors as significant.

The study provides a highly promising result that virtual learning can be made more acceptable and effective by taking care of a few aspects.

## Conclusion

In India, though virtual school became so prevalent in the recent future, which owes a lot to the pandemic, we are witnessing a new trend gaining popularity in the blended learning model. This model helps to continue learning outside the four walls of the classroom, enables the choice and versatility of students to learn at their speed, creates more opportunities for collaborative activities, as well as offers opportunities to reconsider the mode of evaluation and input.

The present study showed that students are more satisfied with physical classes due to the quality of education, engagement and maintenance of social relationships, and participation in co-curricular activities. The above elements of apprehensions on virtual education framework need a revamp, which would lead to an improvement in the level of satisfaction of students with virtual learning. Formulation of an effective approach, engaging sensory experience, improves digital proficiency of educators, implementation of virtual reality and, the result-oriented assessment can enhance students' satisfaction enhance with the virtual learning experience. Equally necessary is introducing more assignments or programs which will enhance teamwork; thereby learners would get to interact more with their peer group. Writing exams under the surveillance of a camera also a cause of worry or anxiety for learners.

However virtual learning has its advantage and as the study revealed that students are more satisfied with advanced and innovative ICT tools adopted by the teachers, timing, and flexibility, and also students are not afraid about their security concerns in the virtual model of learning. The

environment provides a better ambiance which improved their focus and attention as they are not distracted by any interactions as it was in physical classrooms. Thus virtual learning provides a better learning experience.

In the career and technical education space, virtual learning can play an important role by increasing access to trained instructors and expanding the knowledge base of all educators. Exposure to hands-on, lab-based learning environments can strengthen the capacity of students to critically think. With the aid of virtual learning, we can anticipate drastic and fruitful improvements in the field of education and we must be able to embrace and continue with the possibilities for education.

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