Research Article

Perceived effectiveness of online classes and student satisfaction: A study of pandemic impact

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Abstract

In an attempt to cope up with the worldwide lockdown and escalating health crisis initiated by the COVID 19 breakdown, the universities decided to digitize the field and retool their radicals. The education Institutions embraced online learning and introduced the ethos of virtual research led by technical innovation and advancement. Online education is one such platform where the students can communicate 24/7 through online discussion and thus students get the opportunity to share their resources and this enables them to excel in cooperation. The research aims at identifying the influence of the perceived effectiveness of online classes on student satisfaction. The study also aims at finding out the impact of pandemic fear and external factors on student satisfaction towards online classes. The sample of the study comprises of the students enrolled in various undergraduate and postgraduate courses in India as well as abroad. The sampling method used for the study was non probability random sampling method. The data was subjected to regression analysis in SPSS 18. Variables, technical portability and institute accountability were found to have no significant impact on student satisfaction towards online classes whereas independent variables like interactivity and class controllability, ease of use and usefulness, security, pandemic fear and external factors were found to have significant impact on the student satisfaction. The study puts forward suggestions and recommendations for enhancement of student satisfaction towards online classes.

Key words: worldwide lockdown, health crisis, online classes, student satisfaction, enhancement

Introduction

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The present pandemic which has led to the worldwide lockdown and the escalating health crisis has affected the education sector as all the schools, colleges and universities shut down and their studies got marooned. Due to this an insurgency has taken place in the education Industry. Trying to cope up with the condition the universities agreed to digitize the field, retool their radicals and making a deliberate decision to expand even at the grim situation. It is said that necessity is the mother of invention which has been proved with the educational reforms in India during the COVID-19 era. In the course of COVID the education Institutions embraced online learning and introduced the ethos of virtual research led by technical innovation and advancement. The pandemic crisis forced educational Institutions all over the world to offer online lectures and tutorials. It has generated a lot of pressure and a large workload for the academicians and teachers. The fact is that the new reality is rapidly affecting not only our common head spaces but also the manner in which the job is being carried out.

The transition to virtual classes has ensured that students do not abandon their studies and concurrently their development can also be assessed on a regular basis. With this it can be said that it is probably for the first time that India experiments with the teaching and learning system and bring transformation into the online world by amalgamating virtual classes with offline class. It would not be incorrect to say that it is perhaps for the first time that India experiments with the education system and makes a prototype model of moving towards the virtual world, combining classroom with online learning. Alchemizing technology-based education and creating a collective approach to move forward by offering online lectures would also motivate the students to learn creatively. Also, the Universities are offering students to gain knowledge by choice and not just from their offline presence in a classroom, boosting the retention of the syllabus through the use of innovative technologies. The Universities are now encouraging students to learn by preference, improving the retention of the syllabus through the use of creative technology. In addition, numerous courses in conjunction are provided with other tradition learning through which we can imagine a new tomorrow based on educational reforms.

The origin of online education can be traced to late 90's to enhance learning through the internet such as interactive television, audio/ video tape, satellite radio, and other digital tools through which the teaching and understanding has become very expedient for consumers to gain the knowledge of the concepts. The uprising demand for e-learning has made it very clear that the e-learning system should be standardized to improve the efficiency of existing online learning systems. In these conditions the primary goal is not to recreate a strong educational environment but rather to gain immediate access to teaching and support that is easy to integrate and accessible in at the time of crisis. There are several examples of high schools and universities which are responding during the time of emergency by introducing more contextually feasible models such as M Learning, mix types learning or other solutions.

There is an urgent need to make some ingenious arrangement to overcome this predicament. In such a situation out of the box thinking is required to get potential solutions so that the requirements of the learners and society could be met in a desired manner. In practice, it involves thinking about distribution strategies, strategies and available media in order to

address the current needs and challenges. The educational sector has been totally transformed with the introduction of E-learning which allows the students to exchange their knowledge and data promptly. It is observed that it is one of the few sectors in which the investment has not dried up. Though we also have to that how e-learning works post COVID-19. Disseminating of information across the continents, corporations and all the aspects of society is successfully being done with the help of the technology. Now it depends upon us to explore its full potential.

In the current scenario, those engaged in higher education are now accountable for the outcome of the acceptance of online learning amongst the students and to identify its effect on the psychology of the learners and the entire educational sector. McIsaac & Gunawardena (1996) states that the inimitable benefit of online classes is that they present dyadic interaction between the trainer and the learner. In this tough period of pandemic crisis, e- learning, interactive learning etc., has helped younger generation to carry out their studies and work without any harm. Live interaction between teachers and students can be carried out with the help of the virtual learning platform. It is here that the students engage themselves in learning activities by participating in online quizzes etc. and they enjoy this kind of learning activity.

From student's perspective there are many advantages of virtual learning. It offers more versatility. Students' can conveniently set their timetable and schedule as per their online classes. In other words, it provides versatile learning environment. They can easily access their study material, can attend lectures in bedroom, hall or in lawn relaxing themselves. The study material are available 24 hours a day. The best advantage of online learning is that it needs lesser time than conventional learning. Students do not want to waste extra time attending lectures. As all the sessions/lectures are recorded and are available online, so they can listen to the lectures whenever needed for their better understanding. At the same time, they can take their feedback immediate.

In today's situation e-learning has gained a lot of popularity due to its convenience, students are now free from the strenuous journey to their classroom and can study according to the model that suits them the best. In addition to being able to study in the comfortable environment of their home in the comfortable outfit, online learning enables students to function at their own pace while avoiding the risk of losing vital details or inhibiting other students.

Online education is one such platform where the students can communicate 24/7 through online discussion and thus students get the opportunity to share their resources and this enables them to excel in cooperation. At the same time students can make the use of number of devices and can accomplish good results rather than reckoning the outdated tools provided by the colleges and universities. Even in the absence of laptops students can make use of the local library computers, or can study on their cell phones. For the students who are unable to attend their classes due to some or the other problems can learn with their peers on an equal basis.

Research by IBIS World states that the online education market expanded steadily and the changes in the digital technology and internet infrastructure has taken place. The study also

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reveals that, in the last five years the adoption of online learning has increased with other businesses. The study from the IBIS shows 8.2 percent increase over the last five years. Due to the increased rate of unemployment over the past five years many people have attained additional online qualifications which are less expensive and provides job security. These factors coupled with the feasibility of virtual learning have made it the most popular forms of education to date. This transition in academia from offline learning in the classroom to online learning may be one of the biggest experiments in academia (J. Thomas Head, Barbara B. Lockee and Kevin M.Oliver, 2002). All thanks to COVID -19 which has largely affected the learning pattern and made education easy and accessible.

Objective of the Study
1. To identify the parameters of effectiveness of online classes
2. To analyse the impact of effectiveness of online classes on student satisfaction
3. To evaluate the impact of pandemic fear on student satisfaction towards online classes

Theoretical framework
The sudden outbreak of corona virus has brought the world's economy almost to a halt. Expectantly, it will end soon and everything will come back to normal. In the present context the entire world is worried and concerned about the education of the students. Reyna, J. (2020) states that due to the pandemic all schools, colleges, coaching institutes and Universities got closed and people stayed at home as there was no other option, online learning appeared to be growing rampantly. Keeping in mind the public wellbeing and safety concerns experts believe that the virtual learning is the only way to constrict the spread of a contagious virus-like COVID-19 so that the teaching learning tradition may not hamper much and can carried out effectively (Johnson.E, 2019; Fink.J,2019; Samson.P,2020).

Prior to COVID-19, technology has made its way into the educational sector. Students started enrolling themselves for online certifications using the platforms like Coursera, Udemy, Future Learn etc. But the use of web-based education for fulfilling teaching and learning objective has swelled up speedily, after the pandemic which has brought revolution in advanced education. With the evolution and advancement of technology e-learning as an educational tool has been appreciated worldwide which has led to the enhancement and improvement of the lecture delivery via web. This advancement in the educational sector urge faculties to develop virtual edition of their syllabus (Dutton et al., 2002).

Worthen and Sanders (1987) states that prime reason for the penchant of online education is that it offers larger access to education compared to conventional teaching methods as students can take their lessons from anywhere without any time restrictions. Arbaugh (2000a) has mentioned that the online classes are found to be quite interactive, synchronous, useful and simple and also develop a sense of community to design, deliver and manage both formal and informal learning and sharing of knowledge at any time and any place without any restrictions. E-learning is said to be a versatile platform where all the barriers including age, location, ability, customs and values are eliminated. E-learning has provided a new dimensions to enhance the standard of information in today's education system.

Ease of Use

The World Wide Web offers digital tools, by allowing learners to explore, exchange, work with cooperation, which has exceeded the scope of conventional teachings. Kahn observes in Wisher & Olson, 2002), the net allows feasible learning skills that are accessible, scalable and sharable, offering opportunities for absorbing interactive and effective instructions. Further observed by Dills and Romiszowsk in (Wisher & Olson, 2002,) that several academic associations aiming to establish the online learning environment outside the conventional classroom.

H_{01}: Ease of Use doesn't have significant impact on student satisfaction

Interactivity and class controllability

According to Parker & Martin (2010) Online classes provides such an environment that facilitates the student and the teachers to have face to face interaction during the classroom. It also allows the learners and instructors to connect with each other in synchronization through audio, recording, messaging, digital whiteboard, application sharing etc. Such features encourage the teacher and learners to communicate in the way as they communicate face to face. Taking the help of webcam, the learner and the teacher can view each other's emotions and understand things in the better manner.

Tu and McIssac (2002) found that reciprocity, social meaning and online contact are the three magnitudes of social presence in distance learning environments. Interactivity requires contact forms for distance learners and participated in the course activities.

Walther (1992) has mentioned that by developing a sense of identity and intimacy among participants, online interaction can improve social presence. Discussion board is considered to be the best example of Interactive communication. It has been forwarded by the researchers that teachers engaged in virtual classroom work to improve social presence in courses as it helps in increasing social presence which has positive ct on the learning outcomes in online instructions.

H_{02}: Interactivity and Class Controllability doesn't have significant impact on student satisfaction

Institute Accountability

Accountability plays a significant role in E-classes as it need higher enthusiasm and concentration. learner found it complex to focus on a pixelated electronic device when they search the web on PC, text on Mobile phone, watch TV in the background, have one hand in the snacks, or just laying in bed. Surrounding sound of T.V, rustling papers, vegetable vendor sound, ambulances and police vehicles moving, wind—make it impossible to listen to the people's converse, then everybody is requested to mute their microphones. The communication should be enhanced via dyadic communication involving participants, arranging social interaction, group effort and collective task. In an online classroom, the trainer must also cultivate a sense of community and support growth of social presence. It is important that teacher should emphasis more on students and their needs than in technology itself. Thus, collaborative learning is when two or more persons gain knowledge or put effort to learn jointly.

H_{03}: Institute accountability doesn't have significant impact on student satisfaction

Usefulness

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The study made by Flately(2007) and Gilmore & Warren (2007) , mentioned that technology such as the online classes, virtual classrooms or e-learning is gaining popularity in the recent times. Some of its advantages are that classes can be taken anywhere, commuting time could be saved, more time can be given to studies or external commitments and more importantly the physically challenged students are benefitted with this structure of learning. Thus, the online learning should not be considered inferior to conventional mode of learning.

H_{04}: Usefulness doesn't have significant impact on student satisfaction

Technical Portability and Security

Online learning has its own problem. Although the learning continues, but it does not consider the teaching styles that takes place inside the physical classroom and lack face to face interaction. There are technical solutions but the absence of non-verbal communication affects the teaching and learning process and students may find difficult to cope up with the new technology. One of the biggest problems faced in online classes is of the problem arising from the limitation of access of technology.

Harrell & Bynum, (2018) state that in education sector technology can be used in multifarious manner. Topical technological innovations have not only led to people's everyday lives but also to academic organizations that adapt these media to formulate groundbreaking approaches to learning. Moreover, technology plays a big role in students' academic success but we've to think about overcoming barriers when integrating technology. External factors like poor infrastructure, limited network bandwidth and a scarcity of enough devices might affect student's learning. It's important to deal with those barriers as our education system continues to grow with the utilization of technology. The virtual classes require an intensified degree of learning discipline and enthusiasm, particularly because it can be difficult to use new technology while at the same time interacting with new subject content.

Campeau and Higgins (1995), in their study conclude that students' can successfully use technology when they are willing to use it and have faith in their abilities to use technology and overcome all technical issues.

Graf (2002) states that virtual learning may cause several security threats such as thrashing of confidentiality, critical data revelation, and sabotaging of public information services which is said to be the biggest drawback of online learning. Weippl & Ebner (2008) conclude that in modern times there can be no security issues as safeguard mechanisms have been adopted in virtual programs as majority of organizations have set up firewalls and anti-virus software to safeguard their learning resources. They also keep on improving the content and know-how in their virtual education systems to protect online learning. Adams & Blandford (2003) state that safety is important as a means of maintaining the confidence of users in the online learning atmosphere as any menace can radically affect the perception of trustworthiness and dependability of a system by students.

H_{05}: Technical Portability and Security doesn't have significant impact on student satisfaction

Pandemic Fear

In the present time as we all know that everyone is encompassed by the fear of COVID-19 and thinking more about securing their physical health by obtaining the necessities such as food, water,etc. In addition, the present condition can also give rise to negative responses to individuals that may represent a danger to their psychological well–being.

A present study made by Nicomedes & Avila, 2020, has mentioned the psychological consequences of COVID-19 which comprises of numerous depressing thoughts and behaviours like rejection, obsession, trepidation, disbelief and fretfulness

H_{05}: Pandemic fear doesn't have significant impact on student satisfaction

External factors

In online classes the biggest drawback that could be observed is the absence of two-way communication between the participants. In these types of classes, the teacher needs to employ methodologies that foster communication, interaction and collaborative networking which is missing. Dillenbourg (1999) emphasizes that the art to mingle with people is considered essential for mutual learning and knowledge building.

Berge (2002) and Rogers (2000) in their study conclude that there are three factors which act as barriers to e-learning. The first apprehension is its validity, effectiveness and the lack of physical touch in contrast to traditional forms of learning and development. The second factor focuses on the issues such as lack of technical skills which may act as a restraint on the functioning of online learning and thus causes anxiety amongst the students. The third issue in online learning is lack of time and potential disruptions during the classes. Conversion of learning material into e-learning often leads to erroneous assumptions.

Liu (2008) Individual learning can be time-consuming and needs level motivation of high level. The study made by Alexander (2001) showed that online learning needs self-discipline, through planning and time management. These skills are needed to be implanted into the course. Dickey (2004) emphasizes that lectures attended in the traditional classroom, demand accountability from students. It is not possible for every student to have access to a laptop or to a broadband reception and everything cannot be done on mobile.

H_{05}: External factors doesn't have significant impact on student satisfaction

Satisfaction with online learning

Kuo, et al., (2014) states students' satisfaction in e-learning depends on their internet handling capacity, self-operated learning, interaction amongst students, teacher and students' interaction etc. With the increasing demand of online teaching and learning process both the teachers' and students' have curiosity to know about the factors that affects e-learning. This is significant to ascertain the dropout rates of the students from online classes.

Karatas (2005) states that satisfaction of student is based on services. In this way, satisfaction is a dimension that directly associated from the component of the service. During investigation, it is observed that there are many features impacting satisfaction of student. Interaction in online and face-to-face classes, feedback, student and behaviours of teacher, activities, materials, online discussions, instructional and technical support, technological features, students' learning styles, online discussions, self-efficacy, knowledge and skills, and demographic characteristics can be counted among some of these factors. While considering the intensity of satisfaction of the students towards a course or an education activity is supreme for designing of course efficiently

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(Hackman and Walker, 1990). E-learner's online self-efficacy, self-regulated learning, learner-learner interaction, learner-instructor interaction, and learner-content interaction were associated with their satisfaction (Kuo et al., 2014).

Hypotheses

H$_{01}$: Interactivity and Class Controllability doesn't have significant impact on student satisfaction

H$_{02}$: Usefulness doesn't have significant impact on student satisfaction

H$_{03}$: Technical Portability doesn't have significant impact on student satisfaction

H$_{04}$: Security doesn't have significant impact on student satisfaction

H$_{05}$: Pandemic fear doesn't have significant impact on student satisfaction

H$_{06}$: External factors doesn't have significant impact on student satisfaction

H$_{07}$: Institute accountability doesn't have significant impact on student satisfaction.

Research Methodology

The research aims at identifying the influence of the perceived effectiveness of online classes on the student satisfaction. The study also aims at finding out the impact of pandemic fear and external factors on the student satisfaction towards online classes. The sample of the study comprise of the students enrolled in various undergraduate and postgraduate courses in India as well as abroad. The study makes use of primary as well as secondary data. A closed ended structured questionnaire was used for the data collection. The data collection instrument consists of three parts. The part one comprises of questions related to demographic details of the respondents. Part two comprises of questions pertaining to internet usage, type of connection, number of hours spent for attending online classes, type of platform used for online classes, device used. Part three comprises of questions measuring effectiveness of online classes, measuring impact of pandemic fear and external factors on student satisfaction. Total 380 responses were received out of which 365 responses were retained for further analysis.

Results and Discussion

Multiple Linear Regression analysis was used to identify the effect of factors like Ease of Use, Usefulness, Interactivity and Class Controllability, Technical portability, Security, Pandemic fear, External factors, Institute accountability. The multi- linearity indices namely Variance Inflation Factor and Tolerance state that the assumptions for the analysis are met. The independent variables in the study displayed a VIF value below 10, which is an indicator of absence of multicollinearity. The Durbin Watson value indicates the defensibility of the error of independence. It justifies non availability of autocorrelation of error terms. The acceptable value of Durbin Watson is between 0 to 4, value near 2 is considered better. In case of present study, the D-W value is 1.98. This indicates that the independence of errors is reasonably assumed.

Table 1 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
1	0.837[a]	0.701	0.696	0.417	1.98

The results of model summary state that the correlation coefficient is 0.837 and the adjusted R square is 0.701 approximately 69.6 percentage of variance in student satisfaction towards online classes is explained by the seven independent variables namely Interactivity and class controllability, Usefulness, Technical Portability, Security, Pandemic Fear, External factors, Institute Accountability.

The overall significance of the regression model was evaluated by ANOVA test for the model. F-value is 119.790 and the significance value, p value is 0.000, this states that the model is statistically fit for applying regression.

Table 2 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	145.516	7	20.788	119.790	.000[b]
Residual	61.953	357	0.174		
Total	207.468	364			

From table 3, Technical Portability and Institute accountability with a significance value of 0.513 and 0.664, do not have an impact on student satisfaction concerning online classes as the significance values for both are higher than 0.05. The other five predictors have the significance values less than 0.05, indicating that they significantly affect the student satisfaction. This indicates that these variables have a significant impact on the student satisfaction towards online learning. Usefulness, Interactivity and class controllability, External factors with a standardized Beta weight of 0.453, 0.324 and 0.259 have a greater impact on student satisfaction as compared to other variables.

Table 3
Regression Coefficients Predicting Student Satisfaction with Online Teaching

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig	Collinearity Statistics	
	B	Std Error	Beta			Tolerance	VIF
Constant	-.290	.152		-1.906	.057		
Interactivity & Class control	.199	.038	0.324	5.191	.000	.449	2.226
Ease of Use & Usefulness	.402	.036	0.453	11.057	.000	,498	2.007
Technical Portability	.021	.033	.024	0.655	.513	.621	1.610
Security	.131	.037	.146	3.575	.000	.500	2.000
Pandemic fear	.133	.032	.140	4.119	.000	.724	1.381
External factors	.202	.026	.259	7.703	.000	.738	1.354
Institute Accountability	.020	.045	.018	-.435	.664	.464	2.153

Abou El-Seoud et al., (2014) There is lack of one- to – one contact in e-learning, students who are low in confidence and do not have expertise in technical portability may face difficulty in

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participating effectively and thereby succeeding in the process of e-learning. This might also affect the ability of the student to work independently and have a negative impact on the student satisfaction and motivation. For efficient designing of courses and gaining an insight into the efficiency of a learning activity or a course it is necessary to understand the satisfaction level of the students towards it (Hackman and Walker, 1990). Self efficacy for online learning, self regulation, interaction between learners, interaction between the learner and the instructor, interaction between the learner and the content were related with the satisfaction of the student towards online learning (Kuo, Walker, Schroder and Belland, 2014).

High quality community interactions, catering to the learning needs will enhance the student motivation and satisfaction. Developed internet communication self efficacy of the students can be a significant factor, as it will enable the students to efficiently interact with others in the virtual community and thereby contribute to the student satisfaction (Yilmaz, 2017). Students whose course expectation were higher and found it difficult to understand the concepts due to fast pace and absence of clarity had enhanced experience of anxiety, boredom and anger which in turn had a negative impact on satisfaction towards online learning (Ghaderizefreh and Hoover, 2018). Sense of isolation, absence of social support and technical issues have a negative impact in terms of enhancing the anxiety, boredom and anger of the students towards online learning (Strong et al., 2012 and Fraenkel et al., 2012)

Stating the significance of interpersonal communication (Xiao, 2020) suggest that students are suffering from anxiety disorders owing to lack of interpersonal communication. Previous researchers have identified far reaching impact of pandemic outbreaks on the studies and employment opportunities for the students (Cornine et al., 2020 and Wang et al., 2020). Students are facing adverse academic consequences and psychological agony in the present covid-19 breakdown situation (American College Health Association, 2019). Wickens (2011) Academic institutes have further aggravated the issue of stress among the students by shifting towards online learning. Decline in motivation, increased pressure for independent learning, desertion from daily routine, enhancement in distress and unprecedented psychological burden on the students are some of the outcomes of pandemic breakdown.

It can be reasonably projected that students have experienced decline in motivation, enhanced pressure for independent learning, desertion from daily routine, rise in the distress and unprecedented psychological burden on the students (Grubic, Badovinac and Johri, 2020). The outbreak of covid-19 virus has affected the students psychologically. Students are constantly under the fear of infection with this deadly virus. Excessive exposure to social media has resulted in creating confusion and stressful atmosphere for the students. This has affected the level of concentration and the ability to learn. Students are worried due to the uncertainty of their regular examination as well as competitive examination. These types of tensions are disruptive to the sleep which ultimately results in decrease in body immunity, making them more vulnerable to infection.

Implications and future research

The COVID-19 pandemic will likely to keep on challenges for those who cope up the way of everyday virtual education. Even if the vaccination is available for the Corona or else viral spread eliminated totally then to the move back from online classes to traditional learning may

create complexities of its own— and adjusting back to higher norms of accountability and readability, eliminating phone addiction, and giving review, marks and suggestion in notebook rather than the online notes. Optimistically, these phases of troubleshooting can provide educator the opportunity to apply adaptability, persistence, and resilience. This knowledge will act as training for future uncertainty that escort subsequent epidemics, pandemic and other disasters.

Certainly, majority of the educator who are stepping into online education for first time due to pandemic are going to be categorised as kind of premium immersive courses that is rendered by best online learning providers. But much of the far-flung tutoring that many educators are facing in online for the primary time seems to be just video conferenced lectures which includes emailed assignment. Educators can use interactive technique like PowerPoint slides, video, a timeline of events, info graphics, flashcards, quizzes, board games or maybe image sliders. Online educator requires spending of their time, energy and talent which can bring excellent result for their students. This helps them to bring incredible result and help learner to carry on their learning such that this COVID19 doesn't ruin their future plans.

Wiers–Jenssen, et al. (2002) stated that education is not exclusively about getting knowledge and skills but also about personality development through individual expansion and social expansion. Study is required to explore factors that affect learner satisfaction. Kara and DeShields (2004) stated that identifying the perception and requirements of students will improve student satisfaction.
The results of the study confirm the results of previous studies. However, an indepth study is required to understand the perception of students towards the use of online mode of learning. The sample of the study comprised of students of undergraduate courses, study on a larger and diverse sample size could have more general application and would result in producing a distinct result. Further studies can be conducted to investigate the outcome of online mode of teaching in terms of student performance. Study can also be conducted on perception of students towards the content delivered in the lectures, effectiveness of communication, faculty knowledge and tools used for online delivery. The impact of community and social network can also be assessed on the preference for online learning.

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