

An Analysis of Students Perception on Online Teaching-Learning Process Using Inferential Statistics: An Empirical Study with Special Reference to Indian Students

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Abstract

The outbreak of COVID- 19 facilitates a new arena in the field of education. Though online learning has been at practice in every institution, the lockdown due to COVID-19 has led to an extensive use of the capabilities of Blackboard, Moodle's, Lecture Capture system, and other software that facilitate online learning. The purpose of the present study is to assess the e-learning perceptions of the students. A survey based research was carried out through a self-administered questionnaire, based on students perception with regard to the online teaching-learning process carried out by educational institutions during Covid-19 lockdown period and the data was collected between March 2020 - May 2020 with an objective of assessing the perception of e- learning process among the students, identifying the barriers in the process of e-learning, to measure the satisfaction of the students on e-Learning process and to identify the strength and weakness of the e-learning system from students perspective. The present study was done based on two important factors, perception on e-learning and barriers to e-learning and the data was collected from a total of 1089 students inclusive of both UG and PG programmes through google forms. The survey inferred that there is difference in the perception on e-learning processes with respect to gender of the students. The study also shows that the internet infrastructure is an important factor to enable the students learns virtually. Students perceive that internet connectivity, Internet usage limits and the occurrence of online technical issues to have association with the successful e learning

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process.

Thus, the present study enables to understand the opinion of students on the widespread practice of the online-teaching which happens in almost all institutions in today's scenario.

Keywords: e-Learning, Online Learning, Students Perception, Satisfaction.

1. INTRODUCTION

The COVID-19 pandemic has brought in revolutionary changes in the teaching - learning process. Though online learning and certification/ degree courses has been in practice for a sometime in the European countries and the developed nations of the world, it is relatively new to Indian learning system and environment. The regulatory body like the UGC and the AICTE has for the recent few years has been encouraging online learning among the students and the teachers. Given the size of population of India, coupled with the demographic profile and a huge number of the student population lacking internet facility and the modern gadgets, promotion of online learning can be explored.

Since the lock down enforced by the government of India some institutions adopted the e-learning process where various capabilities like the of Blackboard , Moodles , Lecture Capture system, and other software have also increased dramatically, along with faculty members' understanding and using the functionalities available through these systems. Social interactions will help the students to study in small groups and discuss the topics. Earlier studies reveal that the student with socio economic status and computer skills possess a positive attitude towards e learning.

2. REVIEW OF LITERATURE

Clarke, (2007) e- learning is multifaceted tool with a variety of learning methods / approaches. E learning is suitable in places where traditional learning cannot take place due to reasons like Pandemic situations, social distancing need to be maintained, students are geographically spread, culturally diverse etc. There exists a myth that e learning is meant for adults and this is being changed and the young students are also tuning to e- learning because of the pandemic COVID-19. Solomon (2000) observes that a new pedagogical system is becoming a part of the education. The educational institutions implementing the e learning systems are on the increase and the teachers and the students are adapting to the know-how's of e- learning. Fostering of skills, structuring of knowledge and intellectual inclinations would be difficult on e-learning and these require active learners and instructors supported by effective guidance and pedagogical leadership.

Interactions in online courses are categorized into three as interactions pertaining to learning material (Moore, 1996; Berge, 1995;Henri, 1991, Gilbert and Moore 1998), interaction between the learners, learner and the instructor(Berge, 1995;Henri, 1991, Gilbert and Moore

1998) and interactions unrelated to learning material(Henri, 1991; Hillman et.al 1994). Moore, 1993 opines that a student preferring e learning should have certain personalities like independent learners, has emotional stability, self-motivation, and cope up with learning difficulties. Harriman (2004) has found age and prior experience in computer affect the satisfaction of the virtual course. Hara et.al (2000), e learning provides opportunity to participate actively for the students in learning and knowledge formation.

The colleges and the universities are accountable for ensuring the quality of teaching, the relevance of the courses etc (Kirshtein & Wellman, 2014; Betts, Hartman&Oxholm,2010; Denna, Dodds, Fleagle&Patterson, 2015;). It is important to analyze the challenges in online learning specific to the research setting and creating opportunities in core values of education and motivate learner centered practices in education (EDUCAUSE, 2015; Vaughan, 2007). A significant growth is observed in the enrollment in online courses compared to traditional offerings (Allen & Seaman, 2015; Anderson & McGreal, 2012; DeSiltes, 2013; King&Sen,2013).Technology is providing opportunities to new learning approaches to deliver knowledge and increasingly educational institutions are committed to this. Online learning is continuing to grow and has become an acceptable, viable and legitimate way in completing the online degree (Valenti, 2015; Kirshtein & Wellman, 2014).Understanding the perception of the students' on the learning environments would enable to design student focused learning environment. The instructors' role in the online leaning is more challenging than in the traditional mode of learning (Cook-Wallace, 2012; Bradley, 2010).

Studies have revealed that younger generations prefer blended or online learning due to the time flexibility, convenience and freedom (Comey, 2009; Hogarth, 2010; Torrisi- Steele & Drew, 2013). There are numerous opportunities for the instructors to communicate to the students (Comey, 2009; Folley, 2010) like the e mails, online discussion forums etc. It is also observed that students can express through digital content like online media, podcasts, video casts etc (Burch & Nagy, 2007; Bersin, 2004; Hansen, Manninen & Tiirmaa-Oras, 2006). Research on online learning environments have revealed that students have adequate time to reflect and refer relevant materials in online learning compared to classroom learning (Hargadon, 2008; Ho, Lu & Thurmaier, 2006; Hogarth, 2010). Though a increasing interest towards online learning is notices, the question as to the quality of online learning and its effectiveness remains unanswered (Allen & Seaman, 2015; Keohane, 2013; Fried, 2013; Stephens, 2012; King & Sen, 2013; Wildavsky, 2012; Wang, 2012). Some form of interaction is expected between the student and the instructor in all forms of learning like the traditional face to face, blended or online learning (Lear, Isernhagen, LaCost, & King, 2013)and teaching presence becomes a vital element for success of online learning (Cao, Griffin and Baj, 2009).

The role of the instructor in the online learning is varied and includes course manager, social leader, technical expert etc. In the online learning the instructor is expected to act as a resource of knowledge and facilitate learning, guide and support learning (Burnett, Bonnici, Miksa & Kim, 2007). Teachers should adapt to the learning environment changes and their roles in the changing learning environment (Pollard, Blevins, Connor & McGovern, 2013).Challenges in online learning are identified as technology, student expectations, motivation and time

management (Rothrauff, 2011; Torrisi-Steele & Drew, 2013; Sorden & Munene, 2013; Simonson, Smaldino, Albright & Zvacek, 2003,). An instructor lacking adequate technology skills will experience difficulty in designing an effective learning course (Belair, 2012; Alexander & Levine, 2008) and inadequate technology skill, the students face a challenging environment to continue and cope up with the course (Kose, 2010; Vaughan, 2007). Bennett et.al (2012) and Torrisi- Steele & draw (2013) observed that motivation and expectations as the challenges in online learning. Though flexibility is an advantage of online learning, the lack of motivation would be a difficulty (Holenko & Hoic-Bozic, 2008). Lack of time management skills would lead to lagging in the coursework. Further the students felt that less class meetings mean that they need not devote time to accomplish coursework (Valenti, 2015).

3. RESEARCH METHODS

The present study is based on students perception on the online teaching-learning process carried out during Covid-19 lockdown period. (March 2020 - May 2020). The purpose of the study is to assess the e-learning perceptions of the students with respect to the following objectives;

- Assess the perception of e- learning process among the students.
- Identify the barriers in the process of e-learning.
- To measure the satisfaction level of the students on e-Learning process.
- To identify the strength and weakness of the e-learning system from students perspective.

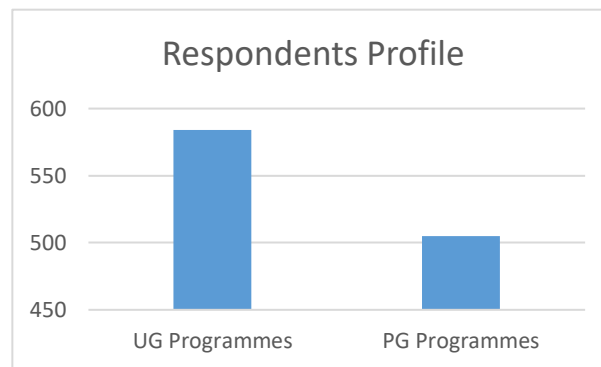
The current students perusing under graduate and post graduate programmes participated in the survey. The study uses a descriptive study, cross-sectional in nature. The data was collected through a structured questionnaire through convenience and snowball sampling method. The study used Descriptive Statistics, ANOVA and Regression to analyze the dataset obtained through the study. Totally 1089 students responded the study and used for deriving the research outcomes.

4. DATA ANALYSIS AND FINDINGS

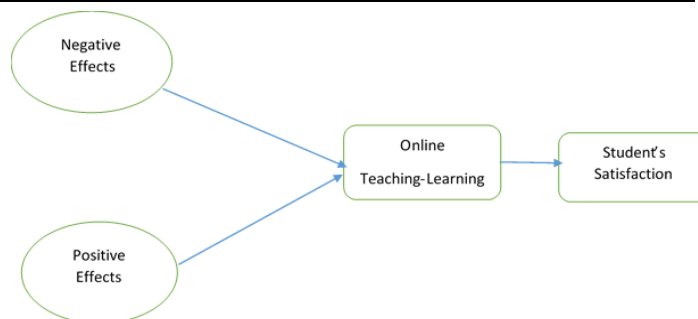
4.1 RESPONDENTS PROFILE

The Study assessed the student's perception on two important factors perception on e-learning and barriers to e-learning. A total of 1089 students responded to the online survey conducted through google forms. The students belonging to the various undergraduate and post graduate programmes participated in the survey.

Table No:1 Respondent's Profile



Department	Number of students responded
UG Programmes	584
PG Programmes	505
Total	1089



The attempt has been made to ensure that a reasonable number of disciplines has been represented by the respondents.

4.2 RELIABILITY ANALYSIS

The data collected for the present study was subjected to Cronbach alpha reliability test and it was found to be 0.89. This shows that the research outcome based on the study is reliable and can be used for further decision making processes.

4.3 OPINION ANALYSIS

The simple percentage analysis of the data reveals the following;

4.3.1 Perception on e-learning process

Learning and evaluation

Analysing the students' perception on e learning it was found that. 93.5% agree that that

Multimedia (PPT, Videos, etc.) support e-learning system and enhances interest in learning 90.2% has agreed that the e learning provides flexibility in time and place and to be advantageous. 82.6 % have expressed to have acquired the same content and skills as in traditional class. . 87.1 % of the students feel that the coverage of the syllabus is on par with the regular classes.93.5 % of the students also perceive that frequent evaluation methods (quiz/tests/case/assignments) helps in bridging the gap in learning process. 86% agree that grades from online learning accurately reflect their true performance.

Online courses

93.6%perceive that they can engage in supplementary courses like the NPTEL, Coursera, Edx, etc. 91.2 % perceive that e-learning platform provides access to more learning materials and 91.8% of the students have expressed that they are willing to take up more online courses in the future, if given the option

Learning Management Systems

91.1% of the students have felt that Learning Management systems (Blackboard, Moodles etc.) have helped to learn on par with traditional classroom environment. And 91.7% of the students

agree that they spend more time to do assignments than traditional class.

Skill Enhancement

90.9% feel that online learning process increases creativity and thought process and their parents' supports e-learning process. 88.6% feel that they have more time to learn in online learning and 88.7 % have felt that online discussion forums help me to discuss without hesitation and 83.9% view E-learning is value for money.

4.3.2 Barriers on online Learning Process

Examining the barriers to the online learning process It is found that:

- **Learning difficulties and learning environment**

95.0 % of the students perceive that online learning requires more effort to keep up with progress of the class. 92.3% have opined difficulty in studying quantitative courses. 90.9% agree lack of interest in a particular course affects their progress in the respective course. 91.6% of the students feel that the online environment is very challenging for e-learning process.94.9 % has said that allocating time to all the courses is a challenging task in online learning system.

- **Difficulty in interaction with instructors and peers**

93.4% express that they miss face-to-face communication with instructor and classmates and 92.3% view peer learning and group activity to be highly challenging in e-learning platform. 91.4% have agreed that e-learning demands rigorous efforts to clarify all doubts. 90.0 % feel that they are not aware of their performance in comparison to their classmates in

e-learning platform.

- **Other difficulties**

91.2 % perceive that sufficient technical knowledge is required for online learning. 91.9% feel e-Learning takes time to prove its trustworthiness 78.0% feel online learning platform is disinteresting and boredom.

4.3.3 Student's satisfaction on e-learning process

91.8% of the students feel e-learning is stimulating and 91.0% feel that E learning is worth their time 89.0% have agreed that e- learning is exciting and 87.9% enjoy studying online. 88.7% of the students are satisfied with the e learning system. 87.1% look forward to learn through online mode and 85.7% prefer e learning system of education.

4.4. ANALYSIS SUMMARY

4.4.1 One-way ANOVA (Students Demographic Profile and Students Perception on e-learning process)

Table No : 2 One way ANOVA

Demographic profile of students	Perception on e-learning		Perception on barriers		Satisfaction level	
	F	Sig.	F	Sig.	F	Sig.
gender	1.362	.032*	1.320	.095	1.427	.070
region	1.115	.252	1.227	.164	.943	.551
education	1.137	.218	1.526	.023*	.762	.809
course	1.036	.401	1.009	.456	.861	.674
year of studying	1.262	.082	1.468	.035*	.972	.508
internet usage	1.784	.000*	1.702	.005*	2.429	.000*
CGPA	.929	.638	1.191	.200	1.039	.409
Time spent online	1.433	.015*	1.276	.124	1.131	.291

Internet connecti on	2.40 4	.00 0*	1.33 6	.085	2.48 3	.000*
Frequenc y of technical usage online	2.71 8	.00 0*	1.87 5	.001 *	2.10 6	.001*

*significant at 5 percent

The survey inferred that there is difference in the perception on e-learning processes with regard to the gender of the students. This shows that girls are comparatively serious in e-learning than boys. The internet infrastructure is an important factor enabling the students to learn virtually. Students perceive that internet connectivity, internet usage limits and the occurrence of online technical issues is associated with the successful e learning process. So the success or failure of the e-learning is dependent on the student's internet connectivity and the amount of internet usage they have individually. It was found that, student's perception on e-learning is dependent on the amount of time spent online.

The table shows that the factors like frequency of technical issues and internet usage limits are significant barriers for their e-learning process. Also. Internet usage, internet connection and frequency of the technical issues are significantly associated with the satisfaction level on the e-learning process.

4.4.1 Regression analysis (Effect of Perception and Barriers on Students Satisfaction on e-learning process)

Table No: 3 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.701 ^a	.491	.490	.54260	1.949

Table No. 4 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	311.126	2	155.563	528.384	.000 ^a
Residual	322.087	1094	.294		
Total	633.213	1096			

It was very clear that student's perception on e-learning positively affects their satisfaction while the barriers affects in the opposite direction. It found that approximately, 50% of the overall satisfaction is explained by the student's perception and barriers for the online teaching. The rest may be due to their shared internet usage at home and their work sharing culture during Covid also may have an impact on the e learning during the difficult times.

Additionally, the nature of the course may also affect the overall satisfaction of the students on e-learning process. The present study found that student's perception and barriers significantly affects the student's satisfaction on the e-learning process.

5. FINDINGS AND DISCUSSIONS

5.1 PERCEPTION ON E-LEARNING PROCESS AND OUTCOME

Students are attracted towards the multimedia content in learning, willing to take up learning courses, regular valuation helps them in their learning process, supports them to do additional courses, get more access to learning materials,. The students also agree that they get a reasonable amount of flexibility in time and helps in creativity and the LMS (Blackboard, Moodles etc) to be useful. It is also observed that students have an acceptance to spending more time on assignments, coverage of syllabus to be on par with traditional classes and feel free to discuss on discussion forums. They also agree that the online learning grades reflect their true performance, and they have more time to learn. The students perception on acquiring same content and skill as in traditional classes and their perception on e learning is value for money is low compared to other factors. The parents support on online learning and belief on e-class rooms are found to be positive. The study shows that the students and parents have a positive perception towards e- learning.

5.2 BARRIERS ON ONLINE LEARNING PROCESS

The study shows that online learning requires more effort and time on the part of the student for studying all the courses. Moreover they feel that some amount of technical knowledge is required for online learning. The online learning environment (internet connectivity, data availability and consumption etc) pose a challenge to e-learning and the students feel that they miss peer learning and face difficulty in group activities.

In case of getting the doubts clarified the students feel that it requires a rigorous effort and they are not able to evaluate where they stand in terms of their performance when compared to their classmates. Relatively some percentage of students feel that they face difficulty in studying quantitative courses online and lack of interest in one course affect the learning of other courses. The students state that they are missing face to face communication with the instructors and classmates. They have also express that they are facing boredom and online classes to be disinteresting.

The study shows that the prominent barriers to online learning are more efforts and time required technical knowledge and online environment, learning quantitative courses, understanding their performance in comparison to their classmates and some extent disinteresting and boredom.

5.3 STUDENT'S SATISFACTION

Reasonably good numbers of students are attracted towards online learning and feel it to be of worth. Relatively less percentage of the students feel online learning to be exiting and prefer e-learning system of education.

5.4 ASSOCIATION BETWEEN THE DEMOGRAPHIC FACTORS AND STUDENTS PERCEPTION ON ONLINE LEARNING AND ITS BARRIERS

The analysis inferred that there is difference in the perception on e-learning processes with respect to gender of the students. The female students are found to be more serious in e-learning compared to the male. The infrastructural facility like the internet connectivity, the usage limits and the technical issues are found to be prominent barriers in the e learning process. This also decides the time that the students can spent online leaning and to affect the students perception on online learning. The finding of the study reveals that frequency of technical issues and internet are significantly associated with the satisfaction level on the e-learning process.

5.5 IMPACT OF STUDENTS' PERCEPTION ON ONLINE LEARNING AND ITS BARRIERS ON SATISFACTION

The study shows that the student's perception on e-learning positively affects their satisfaction while the barriers affect the satisfaction negatively. It was understood that approximately, fifty percent of the overall satisfaction is explained by the student's perception and barriers for the online teaching. The rest may be due to their shared internet usage at home and their work sharing culture during Covid lockdown also may have an impact on the e learning during the difficult times. Moreover, the nature of the course may also affect the overall satisfaction of the students on e-learning process. The present study concludes that student's perception and barriers significantly affects the student's satisfaction on the e-learning process.

6. MANAGERIAL IMPLICATIONS

In general, the students are satisfied with the e-learning in terms of teaching-learning process. On the other hand, they miss the face to face interaction, the chance to co-work with their peers, etc., which form a part of the psychological factors enhancing teaching-learning process. The students exhibit a positive sign of willingness to take up e-learning in the future and also feel that e-learning enhances their independent thinking and creativity, by facilitating learning at one's own pace. The e-learning process is very successful only when the faculty members are at reach and there is sufficient learning management system support like Blackboard, Moodles, Lecture Capturing System, etc. The success of e-learning process is also dependent on parents' consent and support at home.

Further to this, care has to take to make the e-learning process successful on few important

facts like , Internet connectivity issues, Diversion at home (TV/Family Members/Kids/Siblings etc at home), consistent efforts from the learner, volunteered participation and scheduled allocation of time to all the courses under learning.

7. CONCLUSION

The current research has empirically proved that, e-learning is accepted on par with the traditional learning practices. But the availability of IT infrastructure, students' personal interest, efforts of the instructors, will make the teaching-learning online a successful process. This has to be equally supported by the parents and other family members for a successful reach. Learning Management System (LCS/BB/Proquest/Prowess/online library support) can support the e-learning process. Additionally, the opportunity to learn from professors of Premier Institutions from India and abroad is made simply possible through this e-learning process. Hence, it can be concluded that, e-learning process is a positive development to the society both in terms of teaching and learning.

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