Online Learning Experience in India & Covid-19: An Empirical Analysis

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Abstract
The Covid-19 pandemic has brought a complete halt to offline classroom learning in India since March 2020. With the teaching-learning process in higher educational institutions being turned to virtual platforms for the past one academic year, this paper attempts to assess the satisfaction levels of learners over a range of twelve parameters. Using a Likert Scale and an Importance-Satisfaction Grid, the paper reports the results from a primary survey conducted with students from different universities across a few states in India. Findings from the study reveal that availability of recorded lectures and pre-read material along periodic monitoring are the key factors that should be considered to improve online learning. The results are aligned with the elements of modern pedagogy and facilitate the need for a periodic assessment of factors that are considered important by the learners but give less satisfaction in the current state of affairs.
Keywords: Covid -19, Online Learning, Student Satisfaction

I. Introduction

India has one of the largest higher education systems in the world. This system is governed by the University Grants Commission and its statutory bodies or councils. Over the years, the development of technology has paved the way for the introduction of online learning in the country. There are a large number of students and professionals who have joined e-learning platforms to improve their skills. According to a report by KPMG in India and Google (2017), the market for online education in India is anticipated to surge eight-fold from USD 247 million in 2016 to USD 1.96 billion in 2021. With the Covid-19 pandemic having engulfed the nation and the world over, this number is expected to be humongous at the end of 2021. With effect from March 2020, the Ministry of Education announced a complete halt of offline teaching in schools, colleges and universities across the country, bringing the entire teaching-learning process to virtual platforms. While online teaching in the past has been supplementary to core teaching, the situation is very different from the past one year. With the pandemic refusing to cease, India can expect this pattern to continue for a major part of the current academic year as well.

This paper attempts to study how online education has been successful in India in terms of student satisfaction post the lockdown announcement made in March 2020. With the focus on higher education, this study assesses student satisfaction on a number of parameters, considered at varied importance levels by the learners. The paper is divided into six sections. Section I gives an overview of the online education system in India post March 2020. Section II discusses the literary work pertaining to assessing student satisfaction in online systems in India during the given time period. Section III highlights the aims and objectives of the paper. Section IV lays down the data and methodology used to achieve the objectives as stated. Section V explains the main findings of the research and Section VI concludes the research by summarising its finding and providing policy implications.

I Overview of Online Education in India Post March 2020

As one of the major measures to arrest the Covid-19 outbreak in the country, the Union government on March 16, 2020, announced a pan-India classroom shut-down for universities, colleges and schools. This was followed by a nation-wide lockdown from March 24, 2020. While there have been many unlock phases since then and various sectors of the economy have witnessed a phased reopening, the only sector that still remains to be completely functional in its original pre-pandemic offline format is the education sector. While e-learning platforms have been a part of the higher learning curriculum in many universities, it has never been online in its entirety. With the academic calendars revamped and learning shifted from classrooms to virtual platforms, HEIs (Higher Education Institutes) have resorted to new ways of experimenting in order to complete the prescribed syllabus in a given time frame (Muthuprasad et. al, 2020). While this has brought a lot of inconvenience to the

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learners, faculty and administration at large, it has also triggered the digitalisation of teaching. Most universities and colleges have shifted to virtual platforms like Microsoft Teams, Zoom, Google Meet, Google Classrooms and the like. Through software aids like Jamboards, PowerPoint Presentations and the like, lectures all over the country are being delivered online.

Not only has teaching been covered online, students assessment and evaluation has also gone completely virtual. Formative assessment during a semester has taken the form of assignments submitted through emails or platforms like google classroom, and quizzes through google forms. Summative assessment popular varsities are being conducted as open book online examinations.

II. Review of Literature

E-learning is Internet-enabled learning. initiatives. It is training that resides on a server or host computer that is connected to the World Wide Web. There are a few key aspects to online learning. Firstly, there is a live instructor who remains in his own/one location and provides instructions to many students in other locations. There is pre-recorded content or e-textbooks and learning material, which is provided to the learners. Besides, there is student to student and student to teacher interaction through virtual discussion forums. And lastly, there is digitalised formative and summative assessment and evaluation (Bhadauria, 2016). In a nutshell, e-learning is Internet-enabled learning which includes, content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts (Gunasekaran et. al., 2002).

In this backdrop, there exists vast literature about assessing the student satisfaction levels on different aspects of online education. There are multiple approaches used to define and assess student satisfaction. Interaction is the key to effective teaching, be it online or offline (Kuo et al., 2013). There are many studies that have established a high correlation between student satisfaction and the quality of student interactions. Instructor-learner interaction is considered as a vital factor in student satisfaction and student learning outcomes (Moore, 2002). Going a step further, Marcia D. Dixson (2010) established that clear and effective learner-learner and instructor-learner communication resulted in higher student engagement. Taking the viewpoint further, Kuo et al. (2013) determined that learner-instructor interaction and learner-content interaction coupled with effective technology were reasonable indicators of students' positive perceptions.

Rubin, Fernandes & Avgerinou (2013) define social, intrapersonal, and teaching presence as the prerequisite to student learning experience, which in turn determines student satisfaction. A study by Eom et al. (2006) remarked Instructor knowledge and facilitation impacted student satisfaction, but wasn't important in determining the learning outcome. Course structure was another significant element which impacted learner's perceived satisfaction. Course structure includes the design of the course, curriculum, instructional methodologies, course schedule, and overall planning of a course before, during, and after a course is taught (Garrison, Anderson, & Archer, 2000). Hasnan Baber (2020) viewed instructor knowledge, interaction, course structure, student motivation as critical variables that positively influence student satisfaction and their perceived learning outcome related to online courses. On similar lines, Dziuban, Moskal, Brophy-Ellison and Shea (2007) found six key fundamentals that contribute to student satisfaction. These include a developed learning environment, clearly-defined rules of engagement, dedication of the instructor, less ambiguity, an engaging environment, and reduced uncertainty about the course outcome and value.

With a momentous and imperative shift from conventional classroom mode to online mode of study since March 2020 in India, analysing student satisfaction on the grounds mentioned above, has become all the more important. This period from April 2020 to March 2021, which accounts for one full academic year is particularly significant in the education sphere, because it is unprecedented in history. During the initial phase of the lockdown in the country, there have been many studies conducted to assess the online learning experience. Khan et al. (2020) conducted a primary survey on 184 students during the period June to August 2020 in three major Universities of the NCT of Delhi. He reported that students found it convenient to attend online classes and access e- resources from any geographical location at the comfort of space and time. This was reiterated by Muthuprasad et al. (2020) in his study on 307 agricultural graduates from different universities of the National Agricultural Research System (NARS). He remarked that students, in the wake of covid-19, showed a positive attitude towards online classes. However, there he also noted that delay in feedback, lack of assignments and quizzes, incompetence of the instructor to handle ICT effectively, technological constraints were some of the variables that impacted efficacy of online classes. There have been many such similar research works that highlight the challenges faced by learners during the said transition. Mishra et al. (2020) study on learners of Mizoram University highlights that students viewed online teaching-learning as a good alternative to continue their lessons and avoid disruption in completion of syllabus, but there were setbacks as well. He found that students suffered from lack of interest in ensuring personal attention to the classes. Besides, they were not accustomed to learning on devices like smartphones. Accordingly they felt the need to develop soft skills, particularly online listening skills as early as possible. Classroom mode of learning was perceived to be more

effective than online classes in terms of satisfaction, social presence, interaction and overall quality (Deepika Nambiar, 2020). Unstable network connections in rural areas, lack of resources to join online etc. were perceived to be pushing the issue of digital divide even further (Mishra et al.,2020).

The above-mentioned studies, more or less, have been conducted during the initial phase of lockdown when learners were just settling down to the new normal. They have also been targeted either to a particular category of learners or to learners in a specific part of the country. This paper aims to capture the students' experience with online learning across a few states in India after one full academic year since the transition happened. Besides, this study reflects upon the importance and current satisfaction level of various factors pertaining to students' online learning experience, which to the best of our knowledge has not been conducted in India.

III. Objectives

In light of the above mentioned backdrop highlighting the need to study the online learning experience of students during the last one year in India, the objectives of this study have been broadly classified into three. These are:
1. To determine the relative importance of various factors in Online Learning Experience.
2. To ascertain the current level of satisfaction amongst students pertaining to these factors.
3. To identify the critical areas to improve upon and make Online Learning Experience more effective.

IV. Data and Methodology

To achieve the objectives of the paper, quantitative data were used. However, qualitative data on one aspect was also assessed. Primary data was collected through an online survey, wherein a structured questionnaire was created through Google Forms. The questionnaire was prepared after deliberation with academicians and after extensive review of literature, retaining only those variables which were relevant to the framework of the study. Prior to the main survey, pre-testing was done to assess the feasibility of the parameters and instruments. Accordingly, inputs resulting from the pilot survey were taken into consideration for preparing the final questionnaire. The main survey's link was then distributed to the target population through the Whatsapp platform in the month of January & February 2021. The target population included undergraduate and postgraduate students from various universities who had transitioned to online learning platforms post Covid-19 lockdown. Since snowball sampling can cover a wide population by offering invitations for participation in the survey, the technique was considered appropriate for this study.

The questionnaire was divided into two sections. The first section captured questions relating to the demographics of the students. In the second section, respondents were asked to rate factors on the basis of their importance to their online learning experience and how satisfied they were with those factors. Rating of factors were recorded by using a 7-point itemised rating scale for gauging their importance and satisfaction (1 being least important and 7 being most important, where 1 being least satisfied and 7 being most satisfied respectively). In the end, respondents were asked to rate their overall satisfaction with online learning on a 5-point likert scale and their suggestions for improving online learning. A total of 12 parameters (factors) were identified in order to gauge importance-satisfaction levels of the learners during the process of online learning. These parameters were classified into three broad categories as under:

1. *Pre-lecture Parameters (Foundational, integral, essential)*
 1.1 Availability of a personal device of learner's choice (for example, laptop, tablet, desktop)
1.2 Access to high-speed uninterrupted internet connection
1.3 Conducive environment with limited/no distractions (e.g., personal study room)
1.4 Reading material shared by instructor to prepare for the upcoming online session
1.5 Access to digital library resources (e.g., e-books, databases, journals, etc.)

2. *Parameters during the lecture (Delivery, pedagogy)*
2.1 Interaction with the instructor during the online session
2.2 Interaction with other students related to coursework (via discussion forum, etc.)
2.3 Use of innovative and engaging content delivery mechanism by the instructor
2.4 Feeling included as a member of the online class

3. *Post-lecture Parameters (Assessment & Content Availability)*
3.1 Access to instructor's recorded lectures post session
3.2 Periodic monitoring of progress at the end every course unit/module (e.g., assignments, quizzes, or projects)
3.3 Timely feedback from instructor on assessment (e.g., assignments, quizzes, or projects)

V.   Results and Analysis

A detailed analysis of data received on the parameters led to some important observations.

To begin with, the demographic information of the respondents is illustrated in Table 1. A total of 212 students from different universities participated in the survey. 58.02% of the respondents were female, 40.09% male and 1.89% preferred not to say. 56.13% of the respondents were from Commerce and Social Sciences, around 11.32% were from Arts & Humanities and 32.55% from Sciences/Engineering/Technology. Further, 78.30% were undergraduate students and 21.70% postgraduates. Participation of students from public universities accounted for 66.51% and Private universities was 33.49%. Majority of the responses (58.49%) were recorded from students of NCT of Delhi, followed by UT of Chandigarh (22.64%) and Uttarakhand (10.38%). Students from universities of Punjab, Haryana and UP also participated in the survey.

Table 1: *Demographic Details of the Respondents*

		N = 212	
Demographic Variables		Frequency	Percentage
Gender	Male	85	40.09%
	Female	123	58.02%
	Prefer Not to Say	4	1.89%
Discipline of Study	Commerce/ Social Sciences	119	56.13%
	Arts & Humanities	24	11.32%
	Sciences/ Engineering/ Technology	69	32.55%
Course of Study	Undergraduate	166	78.30%
	Postgraduate	46	21.70%
Type of College/ University	Public	141	66.51%
	Private	71	33.49%
State/UT of College/University	NCT of Delhi	124	58.49%
	UT of Chandigarh	48	22.64%
	Uttarakhand	22	10.38%
	Others	18	8.49%

Table 2 shows the mean values for importance satisfaction ratings. The mean values of the "satisfaction" rating were found in the range of 3.1 - 5.3, and those of the "importance" rating in the range of 4.9 - 6.3.

Table 2: Importance and Satisfaction ratings - Mean Values

| S. No.	Parameter	Parameter Keyword	Satisfaction	Importance
1	Availability of a personal device of my choice (e.g. laptop, tablet, desktop)	Personal Device	5.3	6.0
2	Access to high-speed uninterrupted internet connection	High-speed Internet	4.7	6.3
3	Conducive environment with limited/no distractions (e.g., personal study room)	Learning Environment	4.4	6.0
4	Reading material shared by instructor to prepare for the upcoming session	Pre-read Material	3.8	6.1
5	Being able to access digital library resources readily (e.g., e-books, databases, journals, etc.)	Digital Library	3.4	4.9
6	Being able to interact with the instructor during the online session	Interaction with Instructor	5.1	6.1
7	Being able to interact with other students related to coursework (via discussion forum, etc.)	Interaction with Students	4.1	5.1
8	Use of innovative and engaging content delivery mechanism by the instructor	Content Delivery Mechanism	4.5	5.5
9	Feeling of being included as a member of the online class	Feeling Included	4.1	5.7
10	Access to instructor's recorded lectures post session	Recorded Lectures	3.1	5.7
11	Periodic monitoring of your progress at the end every course unit/module (e.g., assignments, quizzes, or projects)	Periodic Monitoring	4.4	5.7
12	Timely feedback from instructor on assessment (e.g., assignments, quizzes, or projects)	Feedback from Instructor	4.7	5.9

Data collected from the survey was interpreted and analysed using a 2x2 Importance-Satisfaction grid (Palmer & Holt 2009). Importance rating was taken on the Y-axis and satisfaction rating on X-axis (Figure 1). The mean values of importance-satisfaction of various factors (Table 2) were plotted on the grid. The grid was divided into four quadrants by calculating the overall average values for all importance-satisfaction parameters. Overall average value (grand mean) of all importance ratings was calculated to be 5.7 and was taken as the horizontal divider. Overall average value (grand mean) of all satisfaction ratings was calculated to be 4.3 and was taken as the vertical divider.

Table 3 shows the interpretation of the four quadrants.

Table 3: Importance-Satisfaction Grid: Quadrants and their Interpretation

Quadrant	Depiction	Suggestive Measure
A	High Importance and Low satisfaction	Critical area to improve upon
B	High Importance and High Satisfaction	Requires consistent & incremental efforts to keep up with the current performance
C	Low Importance and High Satisfaction	Doesn't require more efforts
D	Low Importance and Low Satisfaction	Low priority area

Figure 1: Importance-Satisfaction Grid
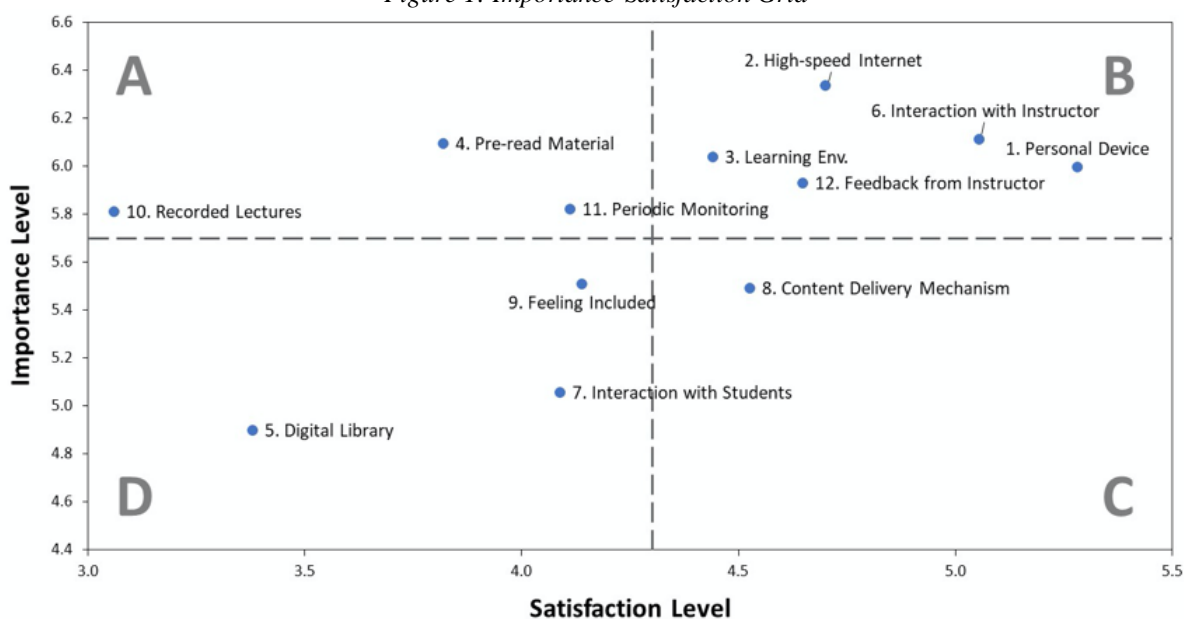
Quadrant D, which represents the area of Low Importance and Low Satisfaction, includes Parameter no. 5, 7 and 9. These parameters depict student's importance-satisfaction levels pertaining to access to digital library resources (e.g., e-books, databases, journals, etc), interaction with other students related to coursework (via discussion forum, etc) and feeling included as a member of the online class respectively. 'Access to digital library resources' has been rated the lowest on importance as well as satisfaction as compared to other factors within the quadrant. This is followed by 'Interaction with other students related to coursework' and 'Feeling included as a member of the online class', which carries the highest importance-satisfaction levels within this quadrant. Since Parameter no. 9 has the highest importance within the quadrant, instructors should try to encourage student's participation during the class to improve satisfaction levels. Acknowledging and recognising student's work/participation could positively affect satisfaction levels as well.

Quadrant C represents the area of Low Importance and High Satisfaction. It includes Parameter no. 8 which depicts the use of innovative and engaging content delivery mechanisms by the instructor. Though this parameter lies in the quadrant of Low Importance and High Satisfaction but it lies on the top left corner of the quadrant, close to the vertical and horizontal dividers (overall average values). This signifies that the importance placed by students on this parameter is not very low and content delivery mechanisms are fairly important to enhance online learning experience. Also, satisfaction levels are not high enough, so there is room for improvement.

Quadrant B, which represents the area of High Importance and High Satisfaction includes Parameter no. 1, 2, 3, 6, 12. These parameters depict student's importance-satisfaction levels pertaining to availability of a personal device of their choice, access to high-speed uninterrupted internet connection, conducive environment with limited/no distractions, interaction with the instructor during the online session, and timely feedback from instructor on assessment respectively. 'Access to high-speed internet' is given the highest importance out of all parameters not only in this quadrant but across the grid. Also, students seem fairly satisfied with their internet connections. The parameter rated highest on satisfaction levels is 'Availability of a personal device of their choice' but the importance for this one is relatively lower than Parameter no. 2, 3 & 6. This implies that student's assign relatively higher importance to 'Interaction with Instructors' and 'Conducive environment for learning' and lower to 'Feedback from Instructor'. Parameter no.3 which states 'Conducive Learning environment with limited/no distractions' is located quite close to the vertical divider, meaning satisfaction levels are not high enough. Students face difficulty in concentrating during online classes as they don't have personal study space leading to distractions. Students seem quite satisfied with their Interaction with Instructors. On the other hand 'Timely Feedback from instructor on assessment' is one the parameters which could be improved upon to attain higher satisfaction levels. Targeted Feedback from instructors accentuates learner's strengths and weaknesses and helps them to focus on specific areas to achieve desired academic results.

Quadrant A, which represents the area of High Importance and Low Satisfaction includes Parameter no. 4, 10 & 11. These parameters depict student's importance-satisfaction levels pertaining to reading material shared by the instructor to prepare for the upcoming session, access to instructor's recorded lectures post session, and periodic monitoring of progress at the end of every course unit/module respectively. This quadrant requires most of the efforts to improve online learning experience. Students are least satisfied with 'Access to instructor's recorded lectures'. This has been reiterated by students in their suggestions that sometimes because of technical glitches, they miss on their classes and their learning suffers. If they are provided with recording of lectures it will help overcome this issue subsequently lessening the digital divide. Also with access to recorded lectures they will be able to revise their concepts as and when required. Another parameter which needs attention is 'Reading material shared by the instructor to prepare for the upcoming session'. Students find this parameter quite important but are not satisfied with the current scenario. This practice of sharing pre-read material with the students, if implemented, will give them the benefit of being better prepared to ask the right questions during the class and hence enhancing their learning curve. Lastly, 'Periodic monitoring of progress' is also important and learners are not much satisfied with it. Students find formative assessment tools (e.g., assignments, quizzes, etc.) quite beneficial as it motivates them to study and highlight the gaps in their understanding of the concepts.

The overall satisfaction levels of students with respect to online learning during the period from March 2020 to February 2021 is shown in Figure 2. On a 5-point Likert Scale, a mere 8% students strongly agreed that they were satisfied with virtual learning and 11% strongly disagreed with the same. Those who agreed and disagreed, though not strongly were 29% and 15% respectively. A little more than one third, held neutral sentiments.

Figure 2: Overall Satisfaction Levels in Online Learning
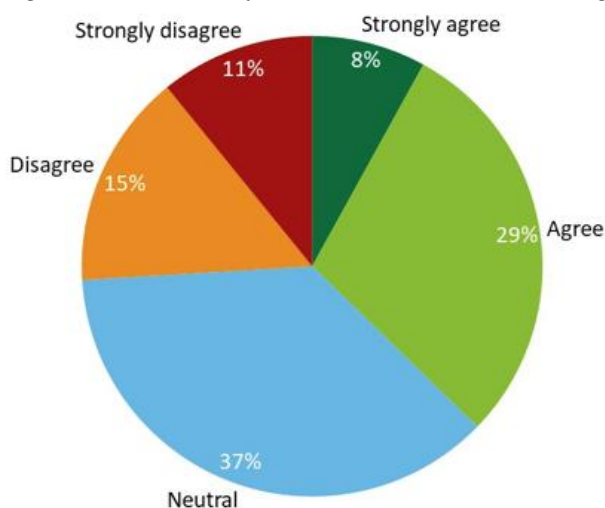
A qualitative analysis of the suggestions given by the students carries the same sentiment as depicted in the mean values of importance-satisfaction ratings. Students heavily weighted the need for recorded lectures, availability of pre-read material, friendly student-learner interaction and use of new delivery mechanisms like application based videos, images, real life examples and the like, which not only would be knowledgeable but also make online learning an enriching and fun experience. Compulsory formative assessment and regular feedback were considered as key factors in assessing learning outcomes. Another interesting feature suggested was the need to have a time lag of 10-15 minutes between classes. Given the pressures of learning through virtual platforms, back-to-back classes were considered to be leading to mental stress, physical fatigue and eyesight issues, which could be resolved to short frequent periods of rest. This would also necessitate the need to have a 40-45 minutes online class, so that attention span and retention capacity are taken care of.

In short, analysis of data through tables and grids helped us evaluate the micro-level issues faced by the students, which if arrested, would make the online experience satisfactory and enriching.

VI. Conclusion: Policy Suggestions and Findings

The paper discussed the student's contentment resulting from online teaching-learning progress. Using a combination of 12 parameters, the paper's major findings boil down three main factors that can increase the benefits from online learning. Sharing of e-content by the instructor before the class and recorded lectures after the class, along with assessment of the learner's knowledge levels at periodic intervals are the main areas, which need to be focussed upon. Among the other factors is the need for instructors to engage and involve students when online because there is a lack of perfect eye-to-eye contact as in offline classroom learning. This can be done with the aid of innovative e-delivery mechanisms. Moreover, an honest and motivating feedback from the instructor after regular intervals adds to the quality of the online class. While these were factors that needed attention from the learner's side, the study also pointed towards the need of having a conducive environment of learning from the student's perspective. A personal quiet and dedicated room for learning was imperative.

Pedagogy in modern times is the weaving together of all elements of six main ways of learning - collaborative, experimental, context-based, enquiry based, research-oriented and personalised. The findings of this paper reinforces the use of these six elements in the teaching-learning process. Given the changes brought about by the pandemic, the move towards modern pedagogy is inevitable. The results from this study are highly useful for understanding the learner's satisfaction levels of online teaching during the last academic year. When applied across time, whether quarterly, biannually or annually, the model as used in the paper, is bound to provide a detailed assessment of satisfaction levels of learners. It will encourage instructors to focus attention on those parameters considered important by the learner but bring low satisfaction to them.

References

[1]. Bhadauria, R, (2016 feb); E-Learning – A Boon for Indian Higher Education System; International journal of Engineering Technology, Management and Applied Science, Vol 04(2). ISSN 2349-4476 122.
[2]. Dixson, Marcia. (2010). Creating effective student engagement in online courses: What do students find engaging?. Communication Faculty Publications. 10.
[3]. Dziuban, C., Moskal, P., Brophy-Ellison, J., & Shea, P. (2007). Student satisfaction with asynchronous learning. Journal of Asynchronous Learning Networks, 11(1), 87-95.
[4]. Eom, S. B., Wen, H. J., & Ashill, N. (2006). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. Decision Sciences Journal of Innovative Education, 4(2), 215-235.
[5]. Garrison, A., Anderson, R. T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2(2-3), 87-105.
[6]. Gunasekaran, A., & McNeil, R, & Shaul, D. (2002). E-learning: Research and applications. Industrial and Commercial Training. 34, pp 44-53. 10.1108/00197850210417528
[7]. Hasnan Baber (2020). Determinants of Students' Perceived Learning Outcome and Satisfaction in Online Learning during the Pandemic of COVID19. Journal of Education and e- Learning Research, 7(3): 285-292.
[8]. Khan, M.A.; Vivek; Nabi, M.K.; Khojah, M.; Tahir, M. Students' Perception towards E-Learning dur- ing COVID-19 Pandemic in India: An Empirical Study. Sustainability 2021, 13, 57. https://dx.doi.org/10.3390/ su13010057
[9]. Kuo, Y. C., Walker, A. E., Belland, B. R., & Schroder, K. E. (2013). A predictive study of student satisfaction in online education programs. The International Review of Research in Open and Distance Learning, 14(1), 16-39.
[10]. Mishra, Lokanath & Gupta, Tushar & Shree, Abha. (2020). Online Teaching-Learning in Higher Education during Lockdown Period of COVID-19 Pandemic. International Journal of Educational Research Open. 1. 100012. 10.1016/j.ijedro.2020.100012. Moore, M. G. (2002). Editorial, what does research say about the learners using computer-mediated communication in distance learning? The American Journal of Distance Education, 16(2), 61-64. Available at: https://doi.org/10.1207/s15389286ajde1602_1.
[11]. Nambiar (2020). The impact of online learning during COVID-19: students' and teachers' perspective. International Journal of Indian Psychology, 8(2), 783-793. DIP:18.01.094/20200802, DOI:10.25215/0802.094
[12]. Online Education in India: 2021. A Report by KPMG in India and Google (2017). May 2017, India
[13]. Palmer, S. R. and Holt, D. M. 2009, Examining student satisfaction with wholly online learning, Journal of computer assisted learning, vol. 25, no. 2, pp. 101-113.
[14]. Rubin, B., Fernandes, R., & Avgerinou, M. D. (2013). The effects of technology on the community of inquiry and satisfaction with online courses. The Internet and Higher Education, 17, 48-57.
[15]. T, Muthuprasad, S., Aiswarya, K S, Aditya & Jha, Girish. (2020). Students' Perception and Preference for Online Education in India During COVID -19 Pandemic. SSRN Electronic Journal. 10.2139/ssrn.3596056.