
Assessing student experience of online learning during COVID-19 crisis and identifying the factors for effective online learning environment

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Abstract: To enhance good experience of students it becomes important to understand the student's perception of online teaching and learning. The outbreak of COVID-19 was unexpected and it forced universities to launch live online programs. MOOCs and various other platforms have enhanced the student experience which is more involving, flexible, cost and time saving. This study aims to assess the students experience in online learning, and identify the components and activities they expect in an online learning environment. The study identifies critical success factors of effective online environment to find their priorities for success in online learning. Data from 500 students were collected from different courses taught online during COVID-19 crisis of various universities of higher education in India. The study is descriptive in nature. The results of the study would improve the online learning environment, help the higher education institutions develop quality online learning content and provide effective delivery which is more engaging. This also benefits society at large even after the COVID-19 pandemic.

Keywords: online learning; COVID-19; MOOCs; technology, effective and ineffective delivery of learning resources.

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1 Introduction

The Corona Virus also known as COVID-19 has affected all countries of the world spreading fear and panic. The world economy has fears of facing challenges, recession as continuous lockdowns, social distancing, isolation and home quarantines have severely affected the business routine. Negativity is floating all around and economic burden of the world has increased with a fear that if continued it may open doors to unemployment, poverty, inflation. Tunio et al. (2021a) helped to understand the economic shocks caused by the COVID-19 and its impact on the important sectors and actors. According to Tunio

et al. (2021b) referring to the existing situation, CSR leads to the broad concept of sustainability. It is a wide field focus on academia as well as industry alike. It was observed that scholars and managers are involved in the debate about the responsibilities of trade towards society. The effects of the economic crisis on firms are profound, however they are uneven between firms (Kuhfeld et al., 2020). As the COVID-19 pandemic upended the 2019–2020 school year, education systems scrambled to meet the needs of students and families with little available data on how school closures may impact learning.

Liyanage et al. (2013) gave importance of developing online learning directly in the workplace, of using a constructivist approach and of fully integrating social interaction and assessments (Dhawan, 2020). This tragedy has also shaken up the education sector, and this fear is likely to resonate across the education sector globally. The COVID-19 pandemic outbreak forced many schools and colleges to remain closed temporarily. As per the assessment of the researchers, it is uncertain to get back to normal teaching anytime soon. Educational units are struggling to find options to deal with this challenging situation. Open educational resources (OERs) are available for anyone to access, while alternative educational resources are not open (Sheridan and Kelly, 2010). The acceleration of digital transformation brought about in the recent moments by COVID-19 means that many academics are having to think thoughts literally like ‘how do I move my modules and courses online’ for a safe socially distanced higher education in the autumn of 2020, what does that mean and to get back to content and digital transformation, the digital transformation higher education offers enormous opportunities for wider access, widening participation greater inclusion and building a common good. So videos that are shared on YouTube, podcasts, to get a little self-referential in this moment, that are shared on open platforms without cost other than download, massive open online courses MOOCs are all ways in which the digital transformation of higher education can bring enormous social good. In Katernyak et al. (2018), Information and communication technologies have transformed higher education providing e-mechanisms to support the delivery of content, communication and interaction. One example is the widespread adoption of virtual learning environments (VLEs) by higher education institutions to provide a key interface among learners, the content and tutors. Ahmad (2019) preferred future scenarios entailing collaborative styles such as human-machine cooperation, smart virtual active learning campuses and living knowledge learning environments may produce more desirable benefits for education stakeholders, the more likely plausible scenario is one based on continued disruptive technologies. Automation, artificial intelligence and the advent of 5G network technologies will drive customisation and personalisation in higher education delivery and revolutionise the work landscape in the immediate future. Universities will need to embrace and respond to these changes. There is an urgent need to protect and save our students, faculty, academic staff, communities, societies, and the nation as a whole. In an online teaching/learning environment, where teacher’s knowledge, skills, abilities are important, but at the very same time, student’s characteristics/ backgrounds, digital literacy and design features are a significant prediction for student learning outcomes. The objectives of the study are to understand the students experience in online learning and the components and activities they expect in an online learning environment.

2 *Literature review*

Digital mode of teaching and learning has come in a big way, particularly in higher education (Alexander, 2006). Major reason behind this trend is the increasing cost of attending higher education institutions and developments in digital technology (Mardini, 2013). According to Bennett and Lockyer (2004), major reasons of increase in cost of education are inefficiency in governing day-to-day university activities, desire to 'buy the best' and supply side problem and mismatching. However, academic institutions and staff are still not fully exploiting the possibilities of new media technologies through adapting their approaches to learning. Rosendale (2017) illustrates implications of MOOCs' future development and implementation both in higher education and in the labour-force. Convenience has a strong mutual interrelationship with the online environment as comfortable and adjustable website procedures and good navigation capabilities of the user heavily impact each other (Sharma et al., 2016). MOOCs represent neither a panacea to the issues facing higher education and the American labour-force nor an alarming threat to stakeholders appreciative of the status quo (Creanor and Littlejohn, 2000). Dialogue is the vital ingredient which underpins the successful learning experience, and staff in HE are facing a challenge in developing the necessary skills to make effective use of the emerging communication tools. These skills can only be acquired through practice, understanding of the pedagogy and awareness of the various options available. According to Katernyak et al. (2018) learning strategies aimed at constructing knowledge in competitive learning environment, applying new knowledge in practice in experiential learning environment and supporting affective and social learners' behaviour. However, there are certain barriers to adoption of digital model of learning which includes online instruction will diminish faculty statuses, financial pressure of program implementation and majority of faculties are unfamiliar to this kind of teaching (Bennett and Lockyer, 2004). Barr and Miller (2013) emphasised on some degree of standardisation with little customisation for making sustainable online learning platform. The digital technology has the potential to change not only the way society learns and evaluates knowledge but also to transform and restructure traditional models of higher education (Tapscott, 2009). The online program must be embraced, not only by the learner, but the instructor as well. A model proposed by Goodyear et al. (2001), is based on the notion of competencies and offers a broader view by considering the various roles online teaching might encompass. The model is based on eight roles – process facilitator, advisor-counsellor, assessor, researcher, content facilitator, technologist, designer and manager-administrator. The authors put forward a list of preliminary competencies that are indicative of their vision of online teaching activities and responsibilities and acknowledge the need for further work to establish whether these apply across all kinds of online teaching. While instructor presence appears to be an important aspect of online learning, more research is needed to fully understand this construct (Richardson et al., 2016; Sheridan and Kelly, 2010; Vesely et al., 2007). This is especially true with an increasing number of non-designer instructors teaching online who may have less input into course design decisions that traditionally impact social and teaching presence. The instructors in this study felt that instructor presence is an important aspect of online teaching and learning and shared a variety of communication strategies to promote this presence, indicating that learning more about this construct is worthwhile. More research is necessary to determine which actions, behaviours, and tools are most influential on the success of students in online

courses in terms of participation and actual and perceived learning (Russo and Benson, 2005; Wise et al., 2004).

To meet the needs of this technologically dynamic population, instruction should be catered to facilitate student experiential learning with interactive elements, engaging varied learning styles, facilitating critical thinking, and encouraging collaborative learning experiences (Tapscott, 2009). Mohsen and Laadjal (2015) examined the strategic management in SMEs, and found that leaders of majority of companies do not use strategic planning, but their strategy is in their heads. Mohsen and Sonia (2013) tried to analyse the new data of the world environment and the development of the competition in the world economic scene, while putting particularly the share on the effect of the globalisation conjugated to this last world financial crisis and its impacts on the world economic situation generally. Therefore, more research is required to identify the activities and components needed to deliver effectively and efficiently on an online platform. According to Sharma et.al. (2020), if the activities and components essential for online environment are provided and the online instructors possess the essential knowledge, skills and abilities required for online teaching would surely lead to good experiences of students and the student participation, engagement and performance would increase which would contribute excellence in online teaching benefiting the society at large. According to Sabates et al. (2021) tried to provide evidence on the learning loss experienced by disadvantaged children, who benefited from one year of accelerated complementary education and then from one year of education in government schools. During the transition, these children spent around three months not in formal education. We estimate that the learning loss suffered over a three-month period ranged from just over half to more than 100% of the gains attained during the prior year. According to Sabates et al. (2021) there is a need to pay attention to the psychosocial wellbeing of students during and following the COVID-19 crisis so they do not disengage and give up on learning. According to Kuhfeld et al. (2020), missing school for a prolonged period will likely have major impacts on student achievement. Furthermore, students likely are returning this fall with greater variability in their academic skills. Our learning loss projections imply that educators and policymakers will need to prepare for many students who are substantially behind academically as a result of extended school closures, particularly if many schools remain disrupted throughout periods of the 2020–2021 school year.

There is a need to identify the components and activities which would make online learning more effective. Centred to learner-centred approaches. Although there are many studies that have focused on basic characteristics and skills, which are necessary for a faculty to effectively, teach online. One important study by Mardini (2013) recognises five features that e-moderators need to develop which are understanding of the online environment; technical skills in using the features of the software; online communication skills to engage learners, content expertise to support learners' knowledge construction; and personal characteristics, such as adaptability, positivity and confidence. Another study has defined eight roles of an effective online teacher that are process facilitator, advisor-counsellor, assessor, researcher, content facilitator, technologist, designer and manager-administrator (Dixon, 2010). Platforms are now becoming available to allow for incorporating interactive elements into OERs, but little has been published about their use and effectiveness.

To fill the gap of making online learning more effective, the following question need to be answered and addition to that the dimensionality and interaction of constructs identified from literature review need to be assessed from student's point of view.

3 Research questions

RQ What components and activities are needed in an online learning environment? To answer the above question, the study was conducted with the objectives below.

Research hypothesis

H0 Good experiences of students leads to effective online learning.

H1 Good experiences of students does not lead to effective online learning.

4 The objectives of the study

The objectives of the study are

- 1 to assess the students experience in online learning during COVID-19
- 2 to identify the components and activities needed in an effective online learning environment.

To achieve the above stated objectives, higher education institutions who practiced online mode of teaching during COVID were chosen. A well-structured questionnaire, was administered amongst the students undergoing various undergraduate and postgraduate programs among universities of India.

5 Methodology

To assess the student experience primary data of 500 respondents selected by simple random sampling from Indian universities who implemented online learning platform during COVID-19 has been taken. The quantitative data used to extract the dimensionality of student satisfaction were collected by means of a structured questionnaire. The items were tested for reliability and validated. The data collected from different schools spanned 3 weeks. Before the actual experiments, a pilot study of 50 respondents was carried out to check the reliability and validity and data was found reliable for further part of research. The purpose of this phase was to uncover the perceptions of students towards online learning.

6 Data analysis

Inference: Reliability test of the various constructs developed to test student experience was carried out using SPSS 18 software and found to be 0.943 which is sufficient to derive inference of data consistency and further moving ahead for other statistical test

(factor analysis). Validity test was carried out to ascertain the construct validity of the scale with the help of professionals, colleagues and academicians. After ascertaining the reliability and validity, there was no requirement for changing the scale or modifying it and hence full scale survey was carried out and data analysis is processed and presented.

Table 1 Cronbach's alpha test

| <i>Case processing summary</i> | | | |
|--------------------------------|-----------------------|------------|----------|
| | | <i>N</i> | <i>%</i> |
| Cases | Valid | 50 | 100.0 |
| | Excluded ^a | 0 | 0.0 |
| | Total | 50 | 100.0 |
| <i>Reliability statistics</i> | | | |
| Cronbach's alpha | | N of items | |
| 0.943 | | 50 | |

Note: ^a Listwise deletion based on all variables in the procedure.

To meet the objectives, the experience of students was recorded and analysed which are shown in Table 2.

From Table 2, it is observed that out of 500 responses, the mean value of items, regular reminders by instructors and lectures are recorded are the highest (2.25) which is towards agreeable side inferring that they are most important among the respondent's experiences, followed by items like resources downloadable and internet issues which have a mean value of 2.24. Unstable internet connection is a cause of concern in experiencing an online course, Students are satisfied with informative webinars, quality of media (audio/video) having a mean value 2.23. Regular reminders from instructors, availability of recorded lectures, resources downloadable have scored highest in standard deviation (0.77) which indicates respondent view on this issue is inconsistent.

Table 2 Descriptive analysis

| <i>Descriptive statistics</i> | | | | | |
|--|----------|----------------|----------------|-------------|-----------------------|
| | <i>N</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Mean</i> | <i>Std. deviation</i> |
| Interactive environment | 500 | 1 | 3 | 2.1 | 0.733 |
| Access to assignments, videos, cases and discussion forums | 500 | 1 | 3 | 2.17 | 0.73 |
| Syllabus complete and precise | 500 | 1 | 3 | 2.17 | 0.741 |
| Creative online content | 500 | 1 | 3 | 2.21 | 0.734 |
| Additional study links | 500 | 1 | 3 | 2.19 | 0.754 |
| Examinations online | 500 | 1 | 3 | 2.14 | 0.759 |
| Sharing of additional study material | 500 | 1 | 3 | 2.12 | 0.747 |
| Easy to navigate | 500 | 1 | 3 | 2.2 | 0.75 |
| Resources downloadable | 500 | 1 | 3 | 2.24 | 0.77 |
| Appealing platform and creative lecture delivery content | 500 | 1 | 3 | 2.1 | 0.743 |

Table 2 Descriptive analysis (continued)

| <i>Descriptive statistics</i> | | | | | |
|---|----------|----------------|----------------|-------------|-----------------------|
| | <i>N</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Mean</i> | <i>Std. deviation</i> |
| Increased student engagement | 500 | 1 | 3 | 2.2 | 0.765 |
| Regular reminders by instructors | 500 | 1 | 3 | 2.25 | 0.762 |
| Lectures recorded | 500 | 1 | 3 | 2.25 | 0.77 |
| Feedback prompt | 500 | 1 | 3 | 2.2 | 0.758 |
| Informative webinars | 500 | 1 | 3 | 2.23 | 0.747 |
| Access on mobile phone | 500 | 1 | 3 | 2.22 | 0.766 |
| Assignment copied have negative effect | 500 | 1 | 3 | 2.1 | 0.744 |
| Instructor weekend discussions | 500 | 1 | 3 | 2.05 | 0.755 |
| Instructor creates learning environment | 500 | 1 | 3 | 2.21 | 0.749 |
| Students interaction | 500 | 1 | 3 | 2.15 | 0.735 |
| Video conferencing with instructor | 500 | 1 | 3 | 2.05 | 0.757 |
| Internet issues | 500 | 1 | 3 | 2.24 | 0.773 |
| Quality media | 500 | 1 | 3 | 2.23 | 0.742 |
| Marks visible to students | 500 | 1 | 3 | 2.2 | 0.754 |
| Copying in exams is easy | 500 | 1 | 3 | 2.01 | 0.743 |
| Student can be assessed in many ways | 500 | 1 | 3 | 2.17 | 0.745 |
| Valid N (listwise) | 500 | | | | |

Inferential analysis

The factors derived to represent the different elements of student experiences, which form the underlying factors from the original 17 scale response items given. Referring to the Table 3, Factor 1 having variance 32.8295% represents the elements of the ease of availability of questions, tests, syllabus provided in online/blended learning and is therefore labelled as 'easy assessment'. Factor 2 with a variance of 5.24475% has all the statements related to the sharing of online material and resources that have been termed as 'learning material and resources'. The statements that load into factor 3, having variance 4.60481% all were concerned with the delivery of online courses and thus was abbreviated as 'quality delivery content'. Factor 4 having variance 4.30061% consisted of the aesthetics of online/blended learning and has been named as 'aesthetics'. Factor 5 having variance equal to 3.96543% was a summation of the elements that are related to the Instructor's skills and ability to teach in online/blended mode and was termed 'instructors skills and abilities'.

This Table 4 shows the factor loading values for components having eigenvalues more than 1. All the loading values for component 1 are positive indicating as the variables score increase, so does the component score. For component 2 loading values are negative for online course provides a complete and precise syllabus, regular online tests and quizzes help in learning, innovative and creative environment created by instructor creates interest and makes learning more effective indicating as variable score increase component score decreases.

Table 3 Factor analysis

| <i>Results of factor analysis of 17 items of student satisfaction and its five dimensions</i> | | | | |
|---|--------------------|------------------------|----------------------|---------------------|
| <i>Factors and items</i> | <i>Eigen value</i> | <i>Factor loadings</i> | <i>% of variance</i> | <i>Cumulative %</i> |
| <i>Easy assessment</i> | 16.4148 | | 32.8295 | 32.8295 |
| Online course provides access to assignments, videos, cases and discussion forums | | 0.682 | | |
| Online course provides a complete and precise syllabus | | 0.573 | | |
| Learning material and resources makes learning more effective | | 0.546 | | |
| Regular online tests and quizzes help in learning | | 0.461 | | |
| <i>Learning material and resources</i> | 2.62237 | | 12.2447 | 45.0742 |
| Online sharing of additional learning material among other students enrolled in the course is helpful in effective learning | | 0.592 | | |
| Ease of navigation supports in effective online learning | | 0.629 | | |
| The learning resources provided should be downloadable | | 0.512 | | |
| <i>Quality delivery content</i> | 2.30241 | | 8.60481 | 53.67901 |
| Recorded lectures help a lot in the learning and revision | | 0.625 | | |
| Quick feedback of assignments and tests is a must for effective online learning | | 0.595 | | |
| Regular informative webinars makes learning more effective | | 0.483 | | |
| The online learning platforms should be assessable on mobile phones for reachability | | 0.611 | | |
| <i>Aesthetics</i> | 2.15031 | | 5.30061 | 58.97962 |
| Aesthetics (colour/ design/ creativity) of the online platform results in quick and effective learning | | 0.557 | | |
| The delivery content should be innovative and creative | | 0.576 | | |
| Regular reminders by instructors about the deadlines is effective in an online course | | 0.546 | | |

Table 3 Factor analysis (continued)

| <i>Results of factor analysis of 17 items of student satisfaction and its five dimensions</i> | | | | |
|--|--------------------|------------------------|----------------------|---------------------|
| <i>Factors and items</i> | <i>Eigen value</i> | <i>Factor loadings</i> | <i>% of variance</i> | <i>Cumulative %</i> |
| <i>Instructors skills and abilities</i> | 1.98271 | | 4.96543 | 63.94505 |
| Regular discussions with the instructor and webinars in the weekend supports effective | | 0.569 | | |
| Innovative and creative environment created by instructor creates interest and makes learning more effective | | 0.621 | | |
| Customised online interaction with students of the class supports effective learning | | 0.602 | | |
| Video conferencing with the instructor creates interest and effectiveness | | 0.498 | | |

Table 4 Principal component matrix

| <i>Statements</i> | <i>Comp 1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|---|---------------|----------|----------|----------|----------|
| Online course provides access to assignments, videos, cases and discussion forums | 0.59 | -0.07 | 0.03 | -0.2 | 0.2 |
| Online course provides a complete and precise syllabus | 0.6 | 0.02 | -0.2 | -0.2 | 0.2 |
| Learning material and resources makes learning more effective | 0.54 | -0.21 | 0.01 | -0.3 | 0.3 |
| Regular online tests and quizzes help in learning | 0.68 | 0.1 | -0.1 | 0.1 | -0.1 |
| Online sharing of additional learning material among other students enrolled in the course is helpful in effective learning | 0.57 | 0.04 | 0 | -0.4 | 0 |
| Ease of navigation supports in effective online learning | 0.51 | 0.5 | 0.03 | -0.2 | -0.1 |
| The learning resources provided should be downloadable | 0.6 | 0.03 | -0.1 | -0.2 | 0.4 |
| Recorded lectures help a lot in the learning and revision | 0.54 | 0.4 | -0.2 | -0.2 | 0.2 |
| Quick feedback of assignments and tests is a must for effective online learning | 0.43 | 0.48 | 0.03 | -0.3 | 0.2 |
| Regular informative webinars makes learning more effective | 0.6 | 0.14 | 0.08 | -0.4 | 0.3 |
| The online learning platforms should be assessable on mobile phones for reachability | 0.62 | 0.38 | -0.1 | -0.1 | -0.2 |
| Aesthetics (colour/design/creativity) of the online platform results in quick and effective learning | 0.6 | 0.17 | -0.2 | -0.1 | -0.4 |
| The delivery content should be innovative and creative | 0.24 | 0.16 | 0 | -0.1 | -0.1 |

Table 4 Principal component matrix (continued)

| <i>Statements</i> | <i>Comp 1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--|---------------|----------|----------|----------|----------|
| Regular reminders by instructors about the deadlines is effective in an online course | 0.61 | 0.08 | -0.2 | -0.2 | -0.1 |
| Regular discussions with the instructor and webinars in the weekend supports effective | 0.64 | 0.07 | -0.3 | -0.1 | -0.1 |
| Innovative and creative environment created by instructor creates interest and makes learning more effective | 0.57 | 0.04 | 0 | -0.4 | 0 |
| Customised online interaction with students of the class supports effective learning | 0.56 | -0.13 | 0.25 | -0.4 | -0.2 |
| Video conferencing with the instructor creates interest and effectiveness | 0.58 | 0.17 | 0.24 | -0.1 | -0.2 |

Table 5 Rotated component matrix

| | <i>Comp 1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|---|---------------|----------|----------|----------|----------|
| <i>Easy assessment</i> | | | | | |
| Online course provides access to assignments, videos, cases and discussion forums | 0.682 | | | | |
| Online course provides a complete and precise syllabus | 0.573 | | | | |
| Learning material and resources makes learning more effective | 0.546 | | | | |
| Regular online tests and quizzes help in learning | 0.461 | | | | |
| <i>Learning material and resources</i> | | | | | |
| Online sharing of additional learning material among other students enrolled in the course is helpful in effective learning | | 0.592 | | | |
| Ease of navigation supports in effective online learning | | 0.629 | | | |
| The learning resources provided should be downloadable | | 0.512 | | | |
| <i>Quality delivery content</i> | | | | | |
| Recorded lectures help a lot in the learning and revision | | | 0.625 | | |
| Quick feedback of assignments and tests is a must for effective online learning | | | 0.595 | | |
| Regular informative webinars makes learning more effective | | | 0.483 | | |
| The online learning platforms should be assessable on mobile phones for reachability | | | 0.611 | | |

Table 5 Rotated component matrix (continued)

| | <i>Comp 1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--|---------------|----------|----------|----------|----------|
| <i>Aesthetics</i> | | | | | |
| Aesthetics (colour/ design/ creativity) of the online platform results in quick and effective learning | | | | 0.557 | |
| The delivery content should be innovative and creative | | | | 0.576 | |
| Regular reminders by instructors about the deadlines is effective in an online course | | | | 0.546 | |
| <i>Instructors skills and abilities</i> | | | | | |
| Regular discussions with the instructor and webinars in the weekend supports effective | | | | | 0.569 |
| Innovative and creative environment created by instructor creates interest and makes learning more effective | | | | | 0.621 |
| Customised online interaction with students of the class supports effective learning | | | | | 0.602 |
| Video conferencing with the instructor creates interest and effectiveness | | | | | 0.498 |

7 Result and discussion

The COVID-19 pandemic has sparked fear and negativity in the world, be it health, unemployment, disturbances in routine business, education or falling economy. People are worried about its long-term impact especially the young and middle aged people. To cope up with this environment learning needs to be continued, the schools and colleges have become online but it becomes crucial to understand the student's experiences, the losses they suffered and their willingness to accept this sudden change.

The purpose of this paper was to assess the students experience in online learning during COVID-19 and to find the components and activities needed in an effective online learning environment. The descriptive analysis interprets that regular reminders by instructors and lectures are recorded can be referred for learning having mean value 2.25 are most important among the respondent's experiences, followed by items like resources are downloadable and internet issues which have a mean value of 2.24. Students are concerned for unstable internet connection as a bad experience in online learning, students are happy with regular informative webinars by industry experts and quality of media(audio/video) having a mean value 2.23.

This also accepts the null hypothesis that good experiences of students lead to effective online learning.

In item generation and selection phase, items were identified from extent literature review. The steps adopted to generate and select the items were content analysis and categorisation, domain definitions, generation of initial pool of items and assessment of content and face validity through expert's panel judgments. Next pilot-testing of the items was done on a small sample of 50 respondents. The steps followed in the pilot testing were item analysis, EFA assessment of internal consistency and reliability of the items. A psychometric and systematic scale was developed for measuring the perception of students regarding online teaching and learning in different schools from different Universities. The scale shows its internal consistency across different samples and surpasses all validity and reliability tests. Five critical success factors have been identified from the study for an effective online teaching and learning as quality delivery content, instructor's skills and abilities, aesthetics, learning material and resources and easy assessment.

8 Conclusions and implications

The young generation are comfortable with electronic gadgets and spend most of the time online makes it important for all the educational institutes to impart education through both online as well as offline mode effectively. This paper makes an important contribution in this arena as it analyses the student's experience in online learning during COVID-19 crisis and the components and activities they expect in an online learning environment. It also provides rich insights into critical success factors of effective online teaching and set their priorities for positive accomplishment in online teaching and learning in higher education in the coming years. This paper serves as a useful instrument to those institutes and universities using e-learning platform to teach their students. The implications of this study for teachers using e-learning medium to address their students and ways to improve teaching effectiveness when using this platform. As the future is online and digital learning, the outcomes of the study can be used for identifying needs for relevant training programs to the prospective and aspiring online teachers and thus contributing to excellence in online teaching in higher education. This, in turn, would help relationship building between students and teachers in online teaching and learning platform and thus support the online teachers to identify the major factors that determine the satisfaction of online learners in the coming future ahead.

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