

Satisfaction level of students of National University of Science and Technology (NUST) regarding online teaching during second wave of COVID-19 pandemic

Qamar Yasmeen, Wajahat Sultan, Nighat Yasmeen

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Author Information

Dr Qamar Yasmeen
Assistant Professor,
Independent Medical College,
Faisalabad, Punjab,
Pakistan

Wajahat Sultan
Lecturer, Military College of
Signals, National University
of Science & Technology,
Rawalpindi, Punjab, Pakistan

Nighat Yasmeen
Lecturer, Govt College
University Faisalabad,
Punjab, Pakistan
(Corresponding Author)
Email:
nighatsaqib786@gmail.com

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ABSTRACT

Introduction: Covid-19 disrupted educational systems on a global scale with Pakistan being no exception. Classes had to be shifted to online mode almost overnight with little time for preparation or training. There is no indication of whether the students were satisfied with this switch over from their traditional modes of learning.

Objective: To determine the satisfaction level of students of National University of Science and Technology regarding online teaching during 2nd wave of covid-19 pandemic.

Material and Methods: A cross sectional study was conducted at the National University of Science & Technology, Rawalpindi, Pakistan from March 2021 to April 2021 on university undergraduate students through an online survey using email and social media. The survey requested demographic and socioeconomic information, as well as information related to online learning and electronic devices; education status during the COVID-19 pandemic; and e-learning knowledge, attitudes, and practices. SPSS 23 was used to analyze calculated data.

Results: A total of 256 students participated in the study. The majority were from the age group 18–20 years (55.5%, n=142). Among them 57% (n= 146) consist of male and 43% (n=110) were female. Majority of participants (27.3%; n=70) were studying in 2nd semester of Software Engineering department. Among electronic device used for online study, laptop was used as major electronic device (34.8%; n=89), followed by mobile phone (25.8%; n=66). Majority of students (57%) were not satisfied with online teaching as compared to conventional classroom teaching and considered not to prefer online teaching; 67.2% students complained about difficulty in understanding topics and questions during online classes. However, online system is not a total failure, as majority of students (71.4%) were satisfied with the fact that teachers were supportive, responsive, and quick enough to solve their queries.

Conclusion: Overall, there was dissatisfaction and negative comments regarding interaction among students, practical learning, focus on study, and technological/infrastructural flaws.

Keywords: COVID-19, online teaching, satisfaction levels, satisfaction index, student

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INTRODUCTION

World has been shocked by fatal results of Covid - 19. From year 2019-2021 this virus has caused morbidity of many lives all across the world. This deadly virus has created problems in the field of education apart from human lives.¹ Continuous mutation, uncertainty of pandemic, and unavailability of vaccine for this virus caused closures of educational institutions. To prevent infection of covid-19 virus, social distancing is necessary to protect human lives especially young children and adults. In this situation, traditional methods of teaching among student and teachers are not possible.^{2,3} Closure of educational institutions, however, has a negative impact on education, especially in a country like Pakistan, where already literacy level is not very high. Therefore, online teaching system has been adopted in order to continue the professional curriculum for undergraduate students of different universities and medical colleges.

Distance learning has been an adopted and optional valuable tool since the last decade.⁴ Due to advances in telecommunication technology, online educational systems have emerged as the new method of teaching via different digital platforms.^{5,6} This also means that in this pandemic situation online/distance learning is a viable choice. Compared to conventional teaching system, online learning has some advantages such as easy accessibility, time efficiency, students' flexibility, and ability to widen the number of students from different remote areas of the country where face to face teaching is not feasible. On the contrary, online system also has disadvantages such as internet speed issues, no physical interaction with faculty, lack of motivation, lack of communication among students, no immediate feedback response from instructor, social distancing, and lack of good classroom environment, which otherwise helps to maintain academic and physical activities of students.⁷

In Covid-19 pandemic when accessibility to college and universities class rooms is not possible, online teaching system is among the few viable options. However, university and medical students' satisfaction level for web-based learning system via different digital and social platforms is questionable.⁸

The literature shows different type of responses from students about online/distance learning.^{9,10} According to data some technical problems faced by students in web-based learning setup are poor internet connection, poor video and audio transmission and electricity issues.¹¹⁻¹³ Apart from technical problems, university and medical students require professional, practical, and clinical learning which is merely possible via distance learning. But due to the severe covid-19 pandemic, fear of virus spreading, and its dangerous effect on health of students, online learning is only best option in current scenario.¹⁴ Regarding this scenario present study is conducted to measure the satisfaction level and analysis of associate problems of undergraduate students during online teaching system.

MATERIALS & METHODS

The present study was a cross-sectional survey conducted on the undergraduate students of NUST (National University of Science and Technology) who were receiving online teaching for their professional course (Software engineering) due to the lockdown imposed in view of the current pandemic of COVID-19 across Pakistan. The study was conducted during the period of March 2021- April 2021 using a semi-structured questionnaire. The questionnaire section 1 contained socio-demographic details and section 2 had the questions about students' satisfaction regarding online classes. There were a total of 23 questions associated with their satisfaction with online classes, each of which was scored 1–5 on a five-point Likert scale (5 =Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree, and 1= Strongly disagree). The questionnaire was administered through online mode by preparing Google questionnaire forms and the link of the questionnaire was shared and distributed through different online platforms such as emails and messaging applications. Online consent was taken from the participants at the beginning of study. Data collection was done on electronic platform. Total 256 students participated in this study. The data were recorded into Microsoft Excel v.365 and analysis was performed using SPSS software (Statistical Package for the Social Sciences version 23, IBM®). The data validity and reliability were evaluated through Cronbach's alpha.

RESULTS

Socio-demographic Profile of NUST Undergraduates' Students

The alpha coefficient of the questionnaire used for this study was 74.8% suggesting that the items in questionnaire have relatively high internal consistency.

According to Table 1, majority of students (55.5%) belong to the age group of 18-20 years with 57% being male and 43% female. All students were studying in undergraduate BS Software Engineering in different semesters. Most of the participants

(27.3%) were studying in 2nd semester. Among the types of electronic devices used for online studies, laptop was used as major electronic device (34.8%) followed by mobile phone (25.8%).

Table 1: Summary of socio-demographic profile of NUST undergraduates students (n=256).

Socio-demographic Characteristics		Number of Students f (%)
Age (years)	18-20	142 (55.5)
	21-23	83 (32.4)
	24-28	31 (12.1)
Gender	Male	146 (57)
	Female	110 (43)
Semester	1 st	60 (23.4)
	2 nd	70 (27.3)
	3 rd	44 (17.2)
	4 th	44 (17.2)
	5 th	21 (8.2)
	6 th	17 (6.7)
Electronic device used for online learning	Mobile Phone	66 (25.8)
	Laptop	89 (34.8)
	Tablet	54 (21.2)
	Mobile Phone & Laptop	47 (18.2)

Perception of Students towards Online Teaching

Overall, there was a mixed response by the students regarding their satisfaction level for online classes (Table 2).

In some aspects of online education system, students were highly satisfied such as teacher/faculty behavior, response, covering of topics, and representation of lectures. But on the other side students believed that face to face or conventional teaching was better in communication with teachers, with other students, and for better management of studies. Discussing their problems with teachers was more convenient in conventional teaching as compared to online teaching. However, the fairly large representation in the Neutral column is an area of concern, in that students are not interested to comment on positive or negative aspects of the questions.

The lowest level of satisfaction was expressed with online learning (item 15), in that only 19.2% felt they were able to ask questions from faculty as compared to classroom teaching. Similarly, in item 14, only 21.8% of students felt that they were able to communicate effectively with their teachers during online classes, with the majority of 62.9% responding in the negative; 15.2% were undecided.

A high number of students (64.1%) felt they were often confused or felt lost during online sessions (item 8). For item 19, where preference for online teaching was rated, only 23.4% students responded positively, with 19.5% remaining neutral, and the majority of 57% responding in the negative. Communication with other students during online classes (item 11) was also rated more in the negative (57.8%) than positive (29.7%) with 12% students remaining neutral.

The highest number of undecided or neutral students (40%) were found in item 23 where overall assessment of online teaching was

rated; in this item, 27.8% of students expressed satisfaction, and 32.1% expressed dissatisfaction.

Table 2: Perception of NUST undergraduates regarding online learning (n=256).

#	Questions	SA	A	N	D	SD
		f (%)	f (%)	f (%)	f (%)	f (%)
1.	Comfort level with teachers/faculty during online classes, as compared to conventional class rooms	28 (10.9)	66 (25.8)	54 (21.1)	32 (12.5)	76 (29.7)
2.	Objectives/ goals regarding topics' completion by faculty during online classes	18 (7.0)	86 (33.6)	60 (23.4)	76 (29.7)	16 (6.3)
3.	Content of class communication	27 (10.5)	87 (34.0)	80 (31.3)	48 (18.8)	14 (5.5)
4.	Time consumption by teachers of faculty	57 (22.3)	114 (44.5)	57 (22.3)	20 (7.8)	8 (3.1)
5.	Response and support of faculty	64 (24.9)	119 (46.5)	47 (18.4)	26 (10.2)	0 (0.0)
6.	Response time of faculty about asked question during online lectures	66 (25.8)	113 (44.1)	60 (23.4)	17 (6.6)	0 (0.0)
7.	Difficulty in understanding topics and question during online classes	75 (29.3)	97 (37.9)	34 (13.3)	42 (16.4)	8 (3.1)
8.	During online teaching, at times I often felt confused or lost	90 (35.2)	74 (28.9)	38 (14.8)	44 (17.2)	10 (3.9)
9.	The teachers made learning an active process by helping to develop thoughts, motivating us and encouraging us in participating in the discussion	21 (8.2)	95 (37.1)	87 (34.0)	34 (13.3)	18 (7.0)
10.	This style of communication enabled me to get engaged with the faculty during class discussions	29 (11.3)	50 (19.5)	73 (28.5)	76 (29.7)	28 (10.9)
11.	The communication and discussion with other students were easier during online classes	28 (10.9)	48 (18.8)	32 (12.5)	94 (36.7)	54 (21.1)
12.	Many of my question about left un answered by teachers of faculty	26 (10.2)	103 (40.2)	73 (28.5)	50 (19.5)	4 (1.6)
13.	I found myself more engaged with studies during online classes	16 (6.3)	41(16.0)	65 (25.4)	68 (26.6)	66 (25.8)
14.	In comparison with conventional teaching, I felt more communication with teachers during online classes	28 (10.9)	28 (10.9)	39 (15.2)	103 (40.2)	58 (22.7)
15.	With online teaching, I felt it is easy to ask questions to the faculty and clear my doubts as compared to conventional classroom teaching	16 (6.3)	33 (12.9)	87 (34.0)	66 (25.8)	54 (21.1)
16.	Management of studies is easier during online classes as compared to conventional teaching	30 (11.7)	56 (21.9)	47 (18.4)	59 (23.0)	64 (25.0)
17.	Teaching quality was same as compared to conventional methods	22 (8.6)	87 (34.0)	67 (26.2)	40 (15.6)	40 (15.6)
18.	An interactive online discussion along with a Power Point presentation is an effective way of learning	30 (11.7)	74 (28.9)	50 (19.5)	68 (26.6)	34 (13.3)
19.	I prefer online teaching and feel online education is worth my time	30 (11.7)	30 (11.7)	50 (19.5)	64 (25.0)	82 (32.0)
20.	The faculties during online classes helped to build discussion and recognize problem areas in my studies	20 (7.8)	56 (21.9)	74 (28.9)	68 (26.6)	38 (14.8)
21.	I got constructive (positive and negative) feedback from the faculties on my assignments	24 (9.4)	91 (35.5)	69 (27.0)	54 (21.1)	18 (7.0)
22.	These online classes have helped me to gain knowledge regarding technology and being technically sound	22 (8.6)	80 (31.3)	68 (26.6)	48 (18.8)	38 (14.8)
23.	Overall, how will you grade your experience with online teaching	25 (9.4)	47 (18.4)	102 (40.0)	54 (21.1)	28 (11.0)

Abbreviations: SA, Strongly Agree; A, Agree; N, Neutral; D, Disagree; SD, Strongly Disagree.

DISCUSSION

The study was conducted to measure the satisfaction level of student of Software Engineering Department of National University of Science and Technology, Islamabad, regarding online classes during Covid-19 pandemic. According to data analyzed, overall students were satisfied with faculty behavior, response, and their teaching strategy with 40.6% of the participants agreeing that faculty completed the objectives of topics during online classes. Regarding time consumption, 66.8% students were satisfied enough time was taken by faculty for online classes. But they were not satisfied that online setup can replace conventional teaching methods; 67.2% of the students

complained about difficulty in understanding topics and question during online classes, and 64.1% students reported feeling lost and confused during online classes. Majority of the students (57%) were not satisfied with online teaching as compared to conventional classroom teaching and considered not to prefer online teaching and felt that online education is not worthy of their time.

According to this study physical classes are a better platform than online setup even if virtual classes were well adopted. But we cannot say online system is a total failure, as students were

satisfied in many aspects, as majority of students were satisfied with the fact that teachers were supportive, responsive, and quick enough to solve their queries; 71.4% of students reported that teachers were very supportive and responsive during online setup of classes. The study results were supported by previous studies.¹⁵⁻¹⁷

Technological aspect was another challenge observed in this study. Poor internet connection, electricity issues during online classes, costly data packages, and electronic devices were important limitations that were potential causes of lower satisfaction rate among students. According to other studies, lack of reliable network remains a major drawback in online teaching setup. E-Learning or virtual implementation in higher education system is a meticulous task especially in low-middle-income countries like Pakistan because setup and technological issues affect the transition to online self-directed learning from lecture-based conventional teaching.^{18,19}

Every student has a unique learning style in conventional class room system, which only a teacher can observe via face-to-face interaction with students. So, we can say online / digital learning system may not be applicable and feasible for every student according to their mental capability and lecture picking ability,

and also it is not possible for faculty to assess and analyze the problems of students. In this regard opinion by students should be taken in order to improve every student's confidence and performance during online setup.²⁰

LIMITATION

Only a single department from a university has been included, so the study findings may not be generalized for the students of other disciplines or other universities.

CONCLUSION

Online setup of teaching and learning can be improved by removing objections and issues faced by students.

RECOMMENDATIONS

There is need of development of faculty training programs regarding this issue.

Development of supplementary E-resources for higher education medical and university students will enable them to focus on their studies. This can also establish the effectiveness of online learning system and classes.

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