PERCEPTIONS OF TEACHERS AND STUDENTS REGARDING ONLINE TEACHING-LEARNING DURING COVID-19 AT PUBLIC UNIVERSITIES OF PAKISTAN

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Abstract

To prevent the spread of COVID-19, lockdown was imposed not only in Pakistan but all over the world. Due to COVID-19 pandemic, sudden transition of traditional to online education has forcefully implemented to continue the wheel of education. This study investigate the various forms of online teaching-learning modes adopted during online education, perceptions of teachers and students about online teaching-learning and technical and non-technical challenges faced by teachers and students. To achieve these objectives, online questionnaire survey was conducted in two public universities of Nawabshah, Pakistan. The findings of the study highlighted that the mostly used and recommended tool was MS Teams and Google Classroom during COVID-19 for online classes. It has been observed that the online teaching-learning process for full time degree programs in higher education institutions is not proved to be effective to get desired results. Major technical challenges during online education are electricity breakdown, high cost internet packages and low and unreliable internet. Non-technical challenges which influence the pace of online education are lack of face-to-face interaction between the teachers and students, lack of motivation towards online education and absence of classroom environment observed. Further, T-test was applied using SPSS software on collected data to analyze the significant difference between teachers and student's perceptions and challenges. The results indicated that online education can be an alternative means of traditional education but cannot be considered as convenient and comfortable to be participated in normal situation.

Keywords: *Online teaching-learning modes, Perception, technical challenges, non-technical challenges, COVID-19 Pandemic, Online education*

1. Introduction

The COVID-19 is highly infectious diseases caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV-2), originated in Wuhan City of China. It spread very fast due to close contact among people now resulting millions of deaths. Covid-19 referred as pandemic due to the greatest global health crisis since after centuries in human civilization. [1] People are advised to remain at their home and every domain of life was shifted towards distance. The Government of all countries-imposed lockdown to prevent the spread of Corona Virus diseases among people. Due to the lockdown, each sector including socio-economics, politics and education has bearded a loss. More than one and half year, the lockdown was continuously extended. Everything was shifted to distance communication, office meetings held on skype, classes conducted online, food and shopping of grocery and other needs were ordered online. It seems, the information technology plays a vital role to continue their work and education using SOPs of distance communication. Every sector affected by this pandemic situation but education has bearded greatest loss. Pakistan is the developing country in the world where education for all is already a challenge. Education was already a problem in Pakistan, about 22.8 million of Pakistan's over 70 million children are out of school. However, in this situation about 300,000 educational institutes were closed due to this breakout. The Ministry of Federal Education and Professional Training of Pakistan, directed the Higher Education Institutions (HEIs) to replace face-to-face classes by distance learning (EAD) or remote activities (classes to alive) from March 16, 2020. [2] Educational institutions and teachers accepted the recommendations of the government and even with all modernization in the service of education. The COVID-19 pandemic scenario caused a quick and emergency change, with the suspension of in-person classes, due to the high risk of virus contamination, allowing online classes to be adopted as a strategy of immediate teaching, thus avoiding the delay of graduation completions. [3] With classroom classes suspended throughout the world, it generated the optionality of teachers and students migrate to the online reality, transferring and transposing methodologies and pedagogical practices of physical

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learning territories, which has been called emergency remote teaching. [4] This sudden change in teaching methodologies enabled teachers to explore alternative ways, such as: video platforms like YouTube, video conferencing like Skype, Google Hangout, Google Meet and learning platforms like Google Classroom. [5] In addition to the difficulty on the part of teachers to technological resources without a specific preparation, even for lack of time, other challenges found in this strategy is the maintenance of the link to continuous access to content and difficulty in keeping students attentive and focused, since digital platforms mentioned for continuity of classes, are used as social networks, for conversations in this sense, many students are not serious about attending online forms. [6] In higher education, the doubts are similar to education basic, but at a micro-institutional level, given the autonomy that each University has in relation to academic responses to the Pandemic. [7] Pakistan is the country where infra-structure of Information technology is not properly implemented. In this situation, the students and teachers face technical and non-technical issues during the online teaching-learning and exam assessment. This study investigates the various online tools used in online teaching-learning and also examines the perception and technical and non-technical challenges of teachers and students of two public universities, Quaid-Awam University of Engineering, Science and Technology and Shaheed Benazir Bhutto University, of Sindh, Pakistan. The study was performed using a questionnaire to be filled by teachers and students who had taken the online classes more than one semester. This study presents and analyses the investigation results. On the basis of survey results, some recommendations are provided to address the problems in universities for any future crisis.

This paper is organized as follows. Section 2 presents the literature review. Section 3 defines the aim of the investigation study and respondent's information. Section 4 discusses the methodology and analysis results. Section 5 presents recommendations and section 6 draws some conclusions.

2. Literature Review

Mishra described the big image of online teaching-learning methods used in Mizoram University for teaching-learning process and succeeding semester examination and also looks forward to check the future academic decision making during any difficulty. The requirements of online-teaching in education during COVID-19 pandemic and how the already implemented sources and online tools helped to transform the traditional classes into online classes were also observed. It contains both quantitative and qualitative approach of study to get desired results [8]. Christian performed a survey with 228 participants to identify the teaching performance of Lecturers in Jakarta, Indonesia through a questionnaire. The results explained how the techno-complexity factor influenced the online teaching performance of lecturers during COVID-19 pandemic [9]. Mohiuddin & Iqbal performed a study with 300 participants from University of Karachi and Urdu Federal University. The results of this research explained that recorded lectures were more preferred than online lectures. However, electricity breakdown is the major technical issue and it is recommended that traditional system is preferred more in usual days [10]. Abbasi performed cross sectional study to determine the online learning at Liaquat College of Medical and Dentistry. A self-directed questionnaire was developed and emailed to the participants for data collection. T-test was used to determine the perception of students towards E-learning. Results of this study concluded that students did not like online teaching over face-to-face teaching [11]. Chung & Mathew performed a survey at Universiti Teknologi MARA, Malaysia by applying random sampling to check online learning perception of students in higher education institutions. The finding of the study suggested that most of the students were not testified by the online learning methods. However, few of the difficulties which students faced during online teaching and learning process was like poor network connection, time spending on digital device, expensive and weak lecture concertation [12]. Mishra b explained the challenges and technical issues that were faced by the students specially for those who belong to rural areas and the role of teachers and the access to internet for online education. This research involves the study of different publications, articles and newsletter by a qualitative methodology [13]. Mukhtar described the advantages, limitations and recommendation about Online education in Pakistan's institutions during COVID-19 pandemic. The qualitative case study was conducted from 12 faculty members and 12 students of University College of Medicine and University College of Dentistry, Lahore. Results analyzed the advantages; such as remote learning, comfort and accessibility and limitations like inefficiency and difficulty maintaining academic integrity. It is recommended to train faculty members on using online modes and developing modes [14]. Baticulon observed the barriers faced by medical students during online education in developing countries like Philippines. Electronic survey was conducted from the medical students to analyze the barriers using Likert scale and Open-ended questions. [15]. Mbunge illustrated the critical role of emerging technologies in Zimbabwe for teaching and learning. To obtain the results literature search was done on reports of Ministry of Higher Education, COVID-19 reports and guidelines and articles from different sources. The results recommended that colleges and universities should enhance internet bandwidth, increase Wi-Fi access points, create hybrid learning modes, and training of staff and students once institutes reopen [16]. Huang discussed the use of open educational resources (OER) and open educational practices (OEP) as an operative educational solution to overcome the challenges of online education. Two national seminars were also conducted to observe the challenges suggested by experts and a set of guidelines to

use OER and OEP for both teaching and learning. The study of this paper finds OER and OEP can help researchers and educators for better experiences and outcomes during COVID-19 outbreak [17]. Qazi performed a study to analyze the students of Pakistan and Brunei in order to know the extent these students are satisfied with online learning during lockdown. They also assesed and compared the access and use of online learning between Pakistanis and Bruneians. The finding of this research revealed that Bruneians are more satisfied as compared to Pakistanis with use of online learning during lockdown [18]. Tabassum explored the challenges faced by educators during COVID-19 in higher education institutions at Pakistan. The online survey technique was used to collect the data from 129 educators of 5 private universities and 2 public universities delivering online lectures. Finding of this paper shows that challenges faced by educators are lack of training and expertise, failure of electricity, cheating in quizzes, and increase internet expenditures. This study recommended, training for tools, wise-planning and create interesting activities to hold the attention of the students [19]. Rehman highlighted the complications during online education in Pakistan and presented systematic solution to deal with changes in the future in the event of a new crises [20]. Elsalem identified the perception of medical students for E-exam. For this, the questionnaire of 29 questions were filled through Google forms to know the factors contributing to stress in E-exams during COVID-19. The results of study stated that the students had more stress in remote E-exams due to the exam duration and exam mode. Other factors also included exam environment and dishonesty of students [21]. Radu conducted survey to check the quality of online platforms in the days of COVID-19. The results of the survey revealed that the most of the students were satisfied towards teaching-learning and assessment process. However, some negative impacts were also identified by students like the lack of communication between students and teachers, less satisfactory infrastructure for some students, possibility of cheating and inability to perform practical applications [22].

3. The Investigation Study

This study investigates the various forms of online teaching-learning modes adopted by teachers and students, perceptions about online teaching-learning, technical and non-technical challenges faced by teachers and students in online teaching-learning process during covid-19 pandemic. Table 1 represents the demographic information of student's respondents and Table 2 represents the data of teachers' respondents with their gender, institutions and designations.

Undergraduate Students				
Gender			**Male**	**Female**
No. of Students			100	54
Year of Study	**First Year**	**Second Year**	**Third Year**	**Final Year**
	15	69	11	59
Institutions		QUEST	70	36
		SBBU	30	18
Departments		BS(IT)	37	22
		BS(CS)	55	22
		BS(ENGLISH)	8	10

Table 1 Student's demographic data

Institutions	**QUEST**				**SBBU**	
Gender	Male	Female			Male	Female
No. of Faculty Members	5	9			5	1
Designation	**Lecturer**		**Assistant Professor**		**Associate Professor**	
Gender	Male	Female	Male	Female	Male	Female
No. of Faculty Members	6	4	3	4	1	2

Table 2 Teacher's demographic data

4. Methodology

The researchers used quantitative methodology to find out the various online tools used, and to study the perceptions, technical and non- technical challenges of teachers and students based on the online teaching-learning process in HEIs during the lockdown period. This study is delimited to QUEST and SBBU, two Public Universities of Sindh, Pakistan.

4.1 Population and sample

Teachers and students of two public universities of Sindh, Pakistan were population of this study. There were 20 teachers (3 associate professor, 7 assistant professor and 10 lectures) and one hundred fifty-four students (pursing undergraduate degree) participated as a sample in a descriptive survey to assess their perception and challenges towards online teaching learning. Teachers' gender, institutions and designation are given in Table 2. And students' gender, departments and institutions are given in table 1. All the respondent teachers are permanent faculty members and all the student respondents are enrolled in regular mode of instruction.

4.2 Procedure of data collection

The researchers developed two questionnaires for quantitative analysis to find the various online modes adopted and to study the perception, technical and non-technical challenges of teachers and students separately on online teaching-learning process during COVID-19. Their experiences, perceptions and challenges regarding the online teaching-learning process were consolidated for qualitative analysis. The teachers and students received questionnaire link through email and social groups to collect the valuable feedback of online teaching-learning. All the respondents extended their full co-operation by responding to the questionnaire. Data obtained were analysed using SPSS software.

4.3 Results

4.3.1 Various Forms of Online Teaching-Learning Modes

In order to know the various forms of teaching-learning modes, percentage analyses have been done. Table 3 portrays the details of the various forms of online teaching learning modes used by the teachers and students during COVID-19. Three online tools were used in online education like Microsoft Teams, Google Classroom and Zoom. 45% of the teachers used MS Teams, 25% Google Classroom and 30% Zoom. But from recipients' students 70% used MS Teams, 27% used Google classroom and 25% of the students used Zoom. Table 4 depicts the views of teachers and students regarding online tools adopted during online teaching-learning process. It is found that one of the most used and recommended online tool among teachers and students is MS Teams. Also teachers and students viewed MS Teams as a better tool than others. However, teachers experienced MS Teams has friendly user interface but students experienced it is difficult to use. Interestingly, despite having a variety of digital social platforms to communicate, almost all the teachers and students both used WhatsApp and Email for educational interactions, submission of assignments, clarification of doubts and announcements. According to the demographic data given in table 1 and table 2, it can be pointed out that maximum number of participants were

Online teaching-learning modes	% of teachers using online teaching modes	% of students using online learning modes
Microsoft Teams	45	65
Google Classroom	25	22
Zoom	30	13

Table 3 different online tools

from QUEST. So, it can be said that MS Teams is mostly used and recommended tool by the participants of QUEST while Google Classroom is mostly used and recommended by the participants of SBBU.

Table 4 views of teachers and students regarding online tools

Category	Tools	% of teachers views on online tools	% of students views on online tools
Mostly used tool	MS Teams	45	65
	Google Classroom	25	22
	Zoom	30	13
Better tool than others	MS Teams	50	54
	Google Classroom	30	23
	Zoom	20	23
Friendly UI / Difficult to use	MS Teams	45	39
	Google Classroom	35	31
	Zoom	20	29
Recommended Tool	MS Teams	40	66
	Google Classroom	35	20
	Zoom	25	14
Media used for communication and announcements	WhatsApp	80	89
	Email	10	8
	Facebook	10	3
Preference of Recorded lectures over online class	Agree	25	48
	Disagree	35	15

4.3.2 Perceptions of Teachers and Students on Online Teaching-Learning Process

This part of questionnaire studied the perceptions of teachers and students on online teaching-learning during COVID-19 pandemic.

Figure 1 shows the perceptions of teachers about online teaching during COVID-19 pandemic. It can be seen from the figure that majority of the teachers found it difficult to engage students, and they show lack of interest and involvement during online classes. Moreover, most of the teachers' participants responded against the point that online classes are more effective and convenient than physical classroom. About 55% of the participants responded that technical issues disrupts the flow and pace of online classes. It is also pointed out that 65% of the participants feel that there is a lack of interaction between teachers and students

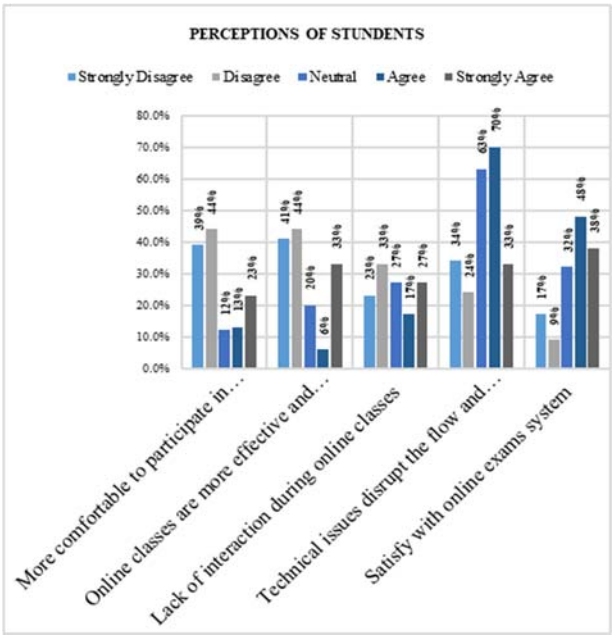

Figure 1 Perception of Teachers

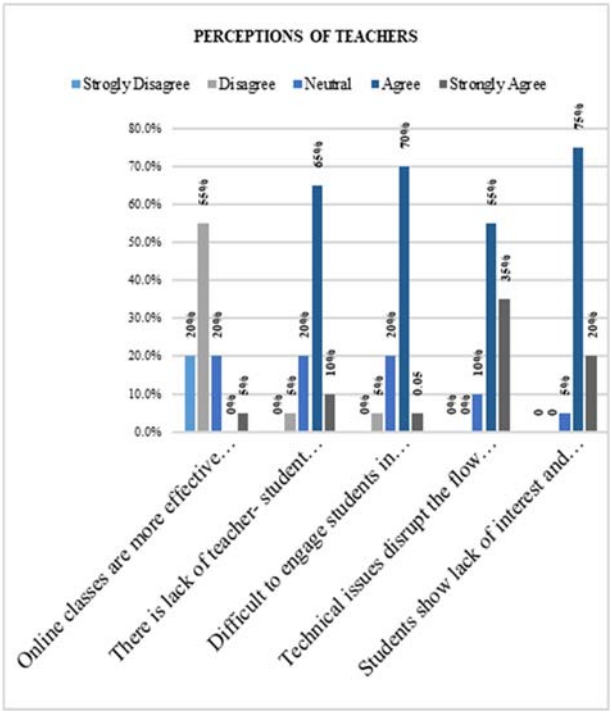

Figure 2 Perception of Students

Figure 2 shows the perception of students on online learning during COVID-19 pandemic. From the figure, it can be seen that the maximum number of students' participants disagreed on the points that online classes are more comfortable to participate as compared to physical classroom as well as online classes are more convenient and effective than physical classroom. Most of the participants experienced technical issues which disrupt the flow and pace of online classes and found lack of interaction between teachers and students.

From the results in figure 1, it can be observed that online classes are not considered more effective and convenient for the teachers. From figure 2, it can be observed that students are not comfortable with online classes but they are satisfied with online exam system.

4.3.3 Technical and Non-Technical Challenges Faced by The Teachers and Students in Adapting to the Online Teaching-Learning Process

The technical and Non-Technical Challenges faced by the Teachers and Students in adapting the Online Teaching-Learning Process during Covid-19 Pandemic are presented in this section.

Technical challenges faced by teachers and students

Figure 3 depicts the technical challenges faced by teachers in online teaching during COVID-19 pandemic. From the figure, it can be seen that the most of technical challenges faced are high cost internet packages, electricity breakdown and low and unreliable internet. About 25% of the teachers' participants experienced difficulty to understand the user interface of the online tools. Some of the participants experienced lack of computer skills whenever most of the participated teachers belongs to Computer related fields.

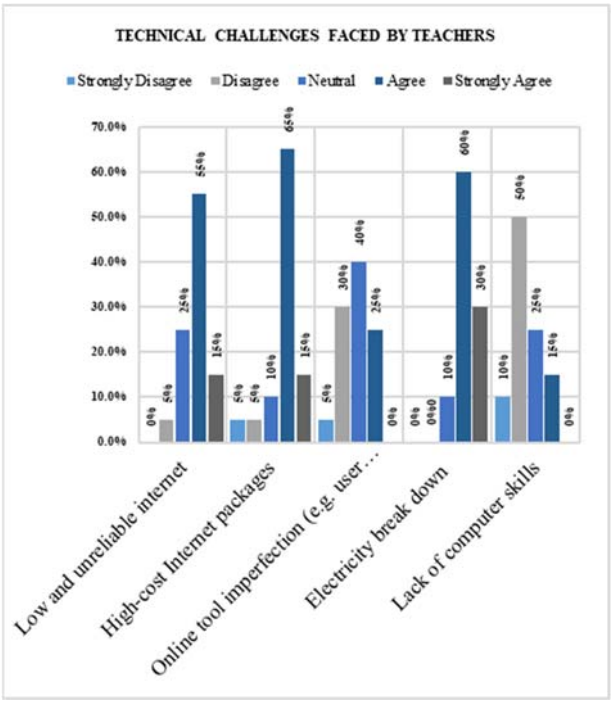

Figure 3 Technical challenges faced by teachers

Figure 4 shows the results of the technical challenges faced by students in online learning during COVID-19 pandemic. In graph, it can be seen that most of the technical challenges faced are high cost internet packages, electricity breakdown and low and unreliable internet. About 55% of the participated students responded that

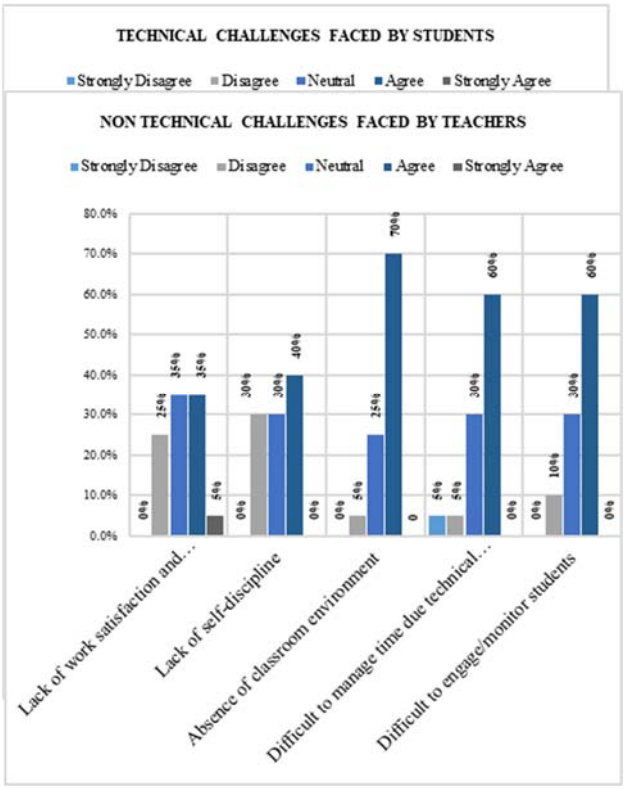

Figure 4 Technical challenges faced by teachers

they feel difficulty to understand the online tool's user interface.

Non-Technical challenges faced by teachers and students

Figure 5 shows the non-technical challenges faced by teachers in online teaching during COVID-19 pandemic. From the figure, it can be observed that the most of non-technical challenges faced are absence of classroom environment, time management, monitoring or engaging of students, lack of work satisfaction and motivation and lack of self-discipline.

Figure 6 shows the non-technical challenges faced by students in online learning during COVID-19 pandemic. From the figure, it can be seen that the most of non-technical challenges faced during online education are absence of classroom environment, time management and lack of motivation. More than 50% of the participants responded that there is a lack of self-discipline and lack of interaction between students and teachers.

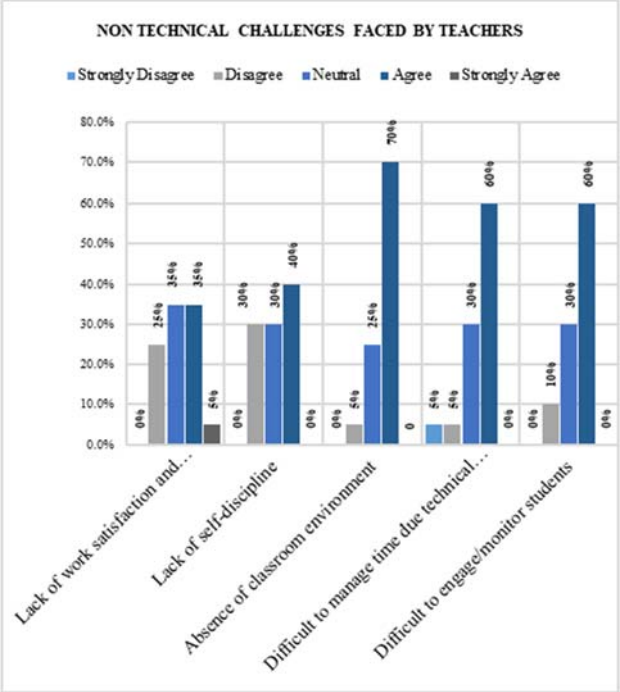

Figure 5 Non -Technical challenges faced by teachers

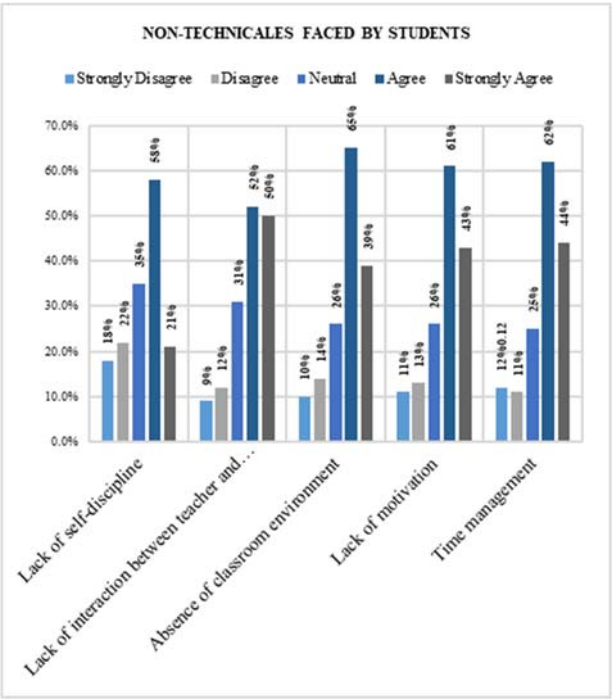

Figure 6 Non -Technical challenges faced by students

Analysis of Results

Statistical analysis has been performed on the collected data to know the significant difference between the teachers and students' perceptions and challenges, the independent t-test is applied using SPSS software. The results of t-test analysis are shown in table 5 and 6. In table 5, results show that the mean between the teachers and students questionnaires were 3.4819 and 3.4050, respectively. The standard deviation (SD) between teachers and students' questionnaires were 0.62167 and 0. 32359. In table 6, t-value is 0.363 and the p value was 0.22. The p value was more than 0.05 at a significance level of 0.05, so there is no significance between the students and teachers'

Table 5 Statistics of both teachers and students' questionnaire

Teacher/ Students	N	Mean	Std. Deviation	Std. Error Mean
Student	154	3.4819	. 62167	. 05010
Teacher	20	3.4050	. 32359	. 07236

Table 6 Independent sample t-test between teachers and students' questionnaire

Grouping Variable	Testing Variable	t-value	Probability
Perception/Challenges	Survey Results	t(174)= 0.363	P=0.22

5. Recommendations

In the view of survey, results have been divided into four major categories, such as views on various online tools used, perceptions of teachers and students, technical and non-technical challenges faced by teachers and students in online teaching-learning process during Covid-19 pandemic. On the basis of the issues, few recommendations are given in table 7.

Table 7 Recommendations to the identified issues on the basis of survey results

Problems	Recommendations
Views on Various Online Tools adopted during online education	
- Difficult to use tool	- It is noted by the teachers and students that conducting online classes during lockdown period proved difficult because this practice never adopted before. - Systematic demonstration of the teaching-learning process should be provided in the presence of the students. [23]
Perceptions of Teacher and Students	
- Lack of comfortability in online classes - Lack of effectiveness in online classes - Difficult to engage students - Lack of interest and involvement - Lack of interaction between teachers and students	- Proper counselling services should be provided by the University in order to maintain the mental health of students in this pandemic. [24] - Teachers should get regular feedback about their classes from students and should regularly ask about their difficulties on online teaching and should continue to improve until the satisfaction of the students. This can increase effectiveness of online classes. - Extended leniency should be offered (give reasonable extra time to complete task) to students who bear additional responsibilities or limited space for studying at home. - Opportunities should be created for meaningful interaction between teachers and students. They may include sessions to answer students queries on difficult topics, feedback on assessments and mentoring sessions. [25]
Technical Challenges	
- High cost internet package - Electricity breakdown - Low and unreliable internet - Lack of computer skills - Tool imperfection	- Efforts should be made to provide free access on online educational resources (e.g. Internet Packages) to students so that they could utilize their time in the best effective manner during the lockdown period. [26] - Electricity breakdown and slow internet issues should be resolved by the Government. Recorded lectures should be made available along with online lectures so that in case of power breakdown or slow internet at the time of lecture, student can access the lecture later on. - Trainings about online education and related tools should be conducted to avoid compatibility issues with regard to two-way interaction.
Non-Technical Challenges	
- Lack of Motivation - Absence of class room environment - Lack of Self-discipline - Time management	- During physical education, teachers and students should also be provided awareness about online education so that the pandemic situation like COVID-19 don't break their motivation towards teaching-learning process. - Awareness about disciplinary policy should be acknowledged in educational institutes.

6. Discussions & Conclusions

This paper intended to reveal the various forms of online teaching-learning modes, perceptions of teachers and students on online teaching-learning and the technical and non-technical challenges faced by the teachers and students in sudden transition of physical classes to the online classes during COVID-19 pandemic and recommendations to enhance educational and management policies for future decisions on the basis of results. The initiatives of online teaching-learning process over traditional method commenced through the instructions received from The Ministry of Federal Education and Professional Training of Pakistan. Same practice is followed all over the world to fight against the corona virus diseases.

It is found that three online LMS tools were used by teachers during COVID-19 pandemic. It is observed that Google Classroom and MS Teams are mostly used and recommended tool by teachers and students during COVID-19 situation. The point to be noted that MS Teams is mostly used and recommended to the students of QUEST while Google Classroom is mostly used and recommended by the participants of SBBU. Perceptions of teachers about online teaching during COVID-19 pandemic is; majority of the teachers experienced that it is difficult to engage students, and they show lack of interest and involvement during online classes. From the results, it can be observed that online classes are not considered more effective and convenient for the teachers. Also the perception of students on online learning during COVID-19 pandemic is that the maximum number of participants' student are disagreed on points that online classes are more comfortable to participate as compared to physical classroom as well as online classes are more convenient and effective than physical classroom. The most of technical challenges faced by teachers and students are high cost internet packages, electricity breakdown and slow and unreliable internet. Also Non-technical challenges faced by teachers and students in online teaching-learning during COVID-19 pandemic are absence of classroom environment, lack of interaction between teachers and students, lack of work satisfaction and motivation and lack of self-discipline. According to the results, online classes cannot be considered as effective teaching-learning mode for full time degree programs in developing country Pakistan due to the weak information technology infrastructure and the issues identified in this study. But it can be enhanced by working on given recommendations.

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