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The Pedagogical Shift During COVID-19 Pandemic: Emergency Remote Learning Practices in Nursing and its Effectiveness

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Abstract: Covid-19 pandemic has adversely affected the education system worldwide; consequently, education has been shifted to remote learning mode. There is still confusion regarding the effectiveness of remote learning compared to in-person education. Therefore, this study aimed to assess the perceived effectiveness and factors affecting emergency remote learning practices by administering online questionnaires. The study selected 254 participants (200 nursing students and 54 faculty) randomly from the five constituent nursing campuses of Tribhuvan University. A structured online questionnaire was developed in a google doc and an electronic link was shared to each of the participants. A self-generated excel sheet was transferred to SPSS Version 20 for the analysis. The result indicates that 46.2% of students used smartphones and almost all faculty used laptops for classes during COVID 19 pandemic. Students and faculty spent 11.45 ±8.43 and 4.26 ±2.05 hours respectively per week in class and >80% of respondents felt that the sessions were overloaded. PowerPoint slides, document sharing, chat, emails, and video conferences were the tools used for class. Most of them faced internet and electricity problems in between. Almost all respondents preferred live classes over recorded classes; 71% students and 59% of faculty were not interested in online classes. The remote learning method of teaching was less effective than face-to-face learning for 33.5% of students and 59.2% of faculty. To conclude, although there has been increased student-teacher communication, cooperation between students and active learning, the overall effectiveness of remote learning is decreased. Hence, there is a crucial need for a strategy to enhance effectiveness.

Keywords*:* Emergency remote learning, education shift, nursing education, quality of online education, pedagogy.

Highlights

What is already known about this topic:

- Educational institutions geared their education to remote learning, and the established evidence has mixed findings on its effectiveness in comparison to conventional classes. Students' performance remained the same in both education systems.

What this paper contributes:

- Highlights the instructional and assessment methods, available infrastructure and effectiveness of emergency remote learning from the lens of the nursing students and faculty in Nepal. However, these aspects are addressed in general which are also comparable to the perspectives of global audiences in regard to remote learning.

Implications for theory, practice and/or policy:

- This knowledge benefits all educational institutions and faculties involved in planning and/or offering their courses either through online or blended learning methods.

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Introduction

Pedagogy is the interaction between teacher, student and the teaching-learning environment (Bodinet, 2016). Advancement in technology has contributed to the shift of pedagogy from conventional face-to-face classroom teaching to online learning methods (Albăstroiu et al., 2014; Kauppi et al., 2020). It was estimated that in 2018, only about 15% of the market share belonged to online education (Burquel & Busch, 2020) and in the U.S., about 20% of higher education students were taking at least one online course in the year 2006 (Allen & Seaman, 2007). Although online learning culture of higher education is not yet established in developing countries like Nepal (Pangeni, 2016), in 2020, the COVID-19 crisis has significantly accelerated the move toward the online teaching environment (Tartavulea et al., 2020). Schools, colleges and universities have been closed for an indefinite period of time (Thapa, 2020), as face-to-face teaching-learning activities have been considered as vulnerable activities to transmit COVID-19 infections (Murphy, 2020; Weeden & Cornwell, 2020). In this situation, some colleges and universities geared their coursework online and it has been considered as a viable option (Thapa, 2020) to prevent academic year loss and to minimize huge learning deprivation. In this situation, the Government of Nepal also announced online learning as the only method of education (Nepali Sansar, 2020). Tribhuvan University, the pioneering university of Nepal, also switched its class to online to prevent academic loss of students, with the provision of e-platforms such as zoom and Microsoft team since May 2020. This indicates that online learning has become an emergency mode of delivering instructions to substitute face-to-face learning during the pandemic situation until now.

In general, the online course requires an elaborate lesson plan design, teaching materials such as audio and video contents, as well as simultaneous support from technical teams. Due to the sudden emergence of the COVID-19, most faculty members are facing the challenges of minimal online teaching experience, prior preparation, or support for educational technology (Bao, 2020). In the instructional process, effective teaching methods and assessment tools are necessary to ensure the quality of university education. In the context of having a mandatory implementation of an online class with a limited infrastructure support system, it is important to assess the effectiveness and challenges in terms of barriers and facilitators of implementing the emergency remote learning session among students and faculty who have been studying online classes from six months in the nursing campuses of Institute of Medicine (IOM) of TU.

However, most of the literature is focused on students' readiness and perception regarding e-learning (Abbasi et al., 2020; Neupane et al., 2020), it is also an established fact that teachers' unfamiliarity towards e-learning and sub-optimal availability of digital devices are the constraints for remote learning (Ali, 2020). This shows that the emergency remote class needs to be integrated well with appropriate learning resources, teachers' teaching skill, teaching and assessment methods and technological support. However, in the High school of Delhi, India, only 35.2% of students have found online classes as effective as face-to-face classes (Priyadarshini & Bhaumik, 2020) and in a medical college of Nepal, slightly more than this number (53.5% of students) were satisfied with online class (Sharma et al., 2020). It is apparent that the current learning experience will impact the future of education. Therefore, rigorous research deems necessary to understand both the positive and negative consequences of this educational shift (Tartavulea et al., 2020). Although findings on how remote learning impacts the teaching-learning process will contribute to university students and faculty (QS, 2020), the research addressed the effectiveness of emergency remote learning in nursing education. In this study, pedagogy referred to the teaching-learning process and pedagogical shift as the emergency remote learning system adopted by universities and campuses during the COVID-19 pandemic. This study undertook to find out:

- The instructional and formative assessment methods used for remote learning in nursing.
- Factors affecting emergency remote learning in relation to barriers and facilitators.
- Effectiveness of emergency remote learning in nursing colleges of TUIOM.

Literature

The term “Remote learning” is used commonly for distance education, where classes are mostly taken through online mode. For the purpose of this article, remote learning refers to the classes that were taken online using the internet. Remote learning is generally perceived as a student-centered and active learning process where students determine how and when to reach out to the educational resources and the instruction provided (Rapanta et al., 2020). Still, it demands extensive skills, computer programs, strenuous homework and additional technology fee costs. Nevertheless, loss of work time and expenses on travel can be saved (Salcedo, 2010). In remote learning, courses may be delivered through interactive television, student-teacher chat, use of an online whiteboard, e-mail, online quiz, discussion forum, and audio and video conferences (Murphy, 2020).

Although the market size of education by distance learning before the COVID-19, the pandemic was very small (Burquel & Busch, 2020), this public health emergency has forced the educational institutions to switch the face-to-face education system to remote learning mode due to the closure of educational institutions (Bozkurt & Sharma, 2020). Although the education system needs to be reformed for remote learning, this emergency learning shift provided an experiment of online learning (Zimmerman, 2020). The remote learning system can be an alternative to traditional learning in some situations, yet there is a need for training and technological preparedness to maintain education quality (Kutluk & Gulmez, 2012).

However, there are differences of opinion in regard to the usefulness, effectiveness and methods used to deliver class through online mode. A study that aimed to determine the impact of the COVID-19 pandemic on online medical education of Alfaisal University in Riyadh showed that among the teachers and students, 62.5% preferred a combination of online and traditional face-to-face instruction, 25.5% preferred traditional face-to-face instruction and 12.0% preferred only online instruction. Although communication, assessment, use of technology tools, time management and fear of technology use were the perceived challenge of online education, implementation of online education during COVID-19 has brought a positive impact on medical education (Rajab et al., 2020). This means modalities of education in such online or face-to-face education have not affected the performance of students (Paul & Jefferson, 2019). In the study, the authors identified the effectiveness of different teaching methods over a period of 8 years. Although remote learning would be a viable option during emergency conditions such as situations like the COVID-19 pandemic, there may be inequality in the access to education based on the economic status of the population (Haßler, 2020). Therefore, there is a need for a strategy to balance resources among and across the students to address the issue of access (Bozkurt et al., 2020) which further determines the effectiveness of remote learning.

Considering the students' perceptions of distance education, they have mixed feelings and attitudes toward distance education. In a study among Portuguese, Ukraine and UAE undergraduate students, Fidalgo found a greater number of Portuguese students and an even greater proportion of Ukraine students had a very favourable attitude towards distance education than UAE students and a considerable proportion of the UAE students had a very unfavourable attitude toward distance education (Fidalgo et al., 2020). In a study among 318 student teachers of different teacher education programs of India, despite having digital devices available for an online class, the participants had issues of internet connectivity, electricity supply and lack of personal space in the home for an online class (Mohalik & Sahoo, 2020). Teachers also encountered different problems while implementing online education, such as lack of knowledge and skill required to deliver a course, maintaining communication with students, stable internet access, and use of a learning management system (Lapada et al., 2020). Although there is a need for technological preparedness in remote learning (Silwal et al., 2020), it is in increasing trends. There is still a need to explore different dimensions of online learning across different communities that will inform policy for the maintenance of education quality.

Methodology

A descriptive cross-sectional qualitative online survey was conducted to achieve the above objectives. During this COVID-19 pandemic, to avoid physical proximity as a mandatory preventive precautionary measure, the online survey was found the most convenient and feasible method. The five constituent nursing campuses of Tribhuvan University (TU), Institute of Medicine (IOM) were the study settings. Tribhuvan University, established in 1959, is the oldest and the biggest university in Nepal and is the 12th largest university in the world with a diversity of programs. The university has five institutes, including IOM, four faculties with 40 central departments, 62 constituent campuses, including five nursing campuses and 1062 affiliated colleges in different disciplines (Tribhuvan University of Nepal, n.d.). The IOM has 22 campuses including the five constituent nursing campuses located in the province 1, 2, 3, 5 and 7. These campuses run nursing programs of proficiency certificate level, BSc. Nursing, Bachelor in Nursing Science, Masters in Nursing and PhD in Nursing. All the teaching faculty excluding those working in administrative posts and all the students excluding PhD scholars were the study population. There were 101 faculty, among them 54 responded to the questionnaire (53.4% response rate). Similarly, there were 1161 students in those campuses, among them 336 students were selected randomly, out of which, 200 responded to the questionnaire (59.5% response rate).

To collect data, a structured self-administered questionnaire was developed based on prior literature. The questionnaire had four sections: section I measured demographic information, section II measured the interaction and student assessment method used, section III was about barriers and facilitators of an online class and section IV focused on the effectiveness of online classes. Each item of the questionnaire of section II and III was rated on a 5-point Likert scale (Strongly Disagree-1, Disagree-2, Neutral-3, Agree-4, and Strongly Agree-5) and section IV (Effectiveness of online class) was rated in a 3-point scale (increased, decreased and maintained). The questionnaire was developed in Google doc. The data was collected by the distribution of survey questionnaire links of the Google doc. to the participants using a multipronged approach. The campus chiefs of those campuses were contacted via telephone and e-mail. They were given a description of the study and requested to distribute the survey link to their institution's sampled nursing students and the entire faculty. In addition to this approach, based on investigators' knowledge of existing communication structures among students and faculties, additional nursing students and faculty-led distribution were also achieved through social media groups. Data was collected from 24 - 30 December 2020. To ensure the completeness of answers, a series of validation conditions for the questions were defined. A self-generated Excel sheet made with Google Forms was transferred to SPSS Version 20 for analysis. Descriptive statistics were used to check the distribution of data, as we adopted a descriptive study design.

The information obtained was kept confidential and the researcher was not able to link the obtained information with participants. Participants were not forced to participate in this study and detailed information for the participant was sent to the participants along with the questionnaire. Before data collection, ethical approval was obtained from the institutional review committee of the IOM.

Limitations

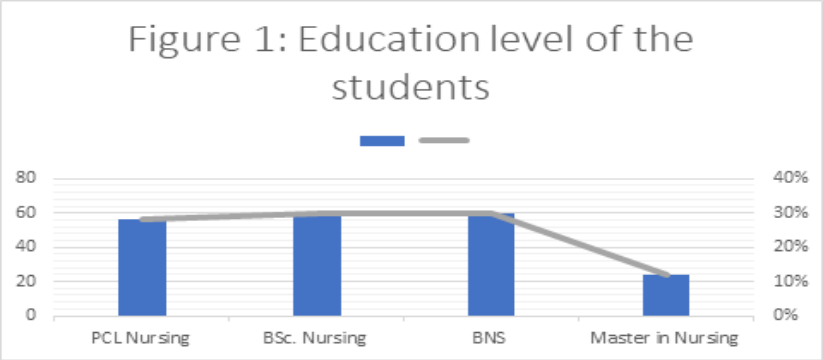
In this study, data was collected online and the response rate of faculty was 53.4% and that of the students 59.5%. So, the finding might under-represent the true status of the population. The analysis of data was limited to descriptive statistics only.

Findings and Discussions

Demography of the participants

Among 200 students and 54 faculties participated, 97.5% students and all the faculty were female and only a few students were male. Students' and faculties' average age were 23.44 ±5.93 SD and 41.39 ±8.21 SD respectively. All faculty and 89.5% of students were living in municipalities. As shown in figure 1, the students participating were from the proficiency Certificate Level, Bachelor in Nursing Science,

BSc. Nursing, and Master of Nursing Programs. At the time of data collection, they took classes for six months.



COVID-19 pandemic has posed a challenge in our education system. Ensuring effective teaching to students in the present Coronavirus pandemic-stricken situation is a challenge for nursing faculty as nursing education equally focuses on both theory and practical classes. In this study, the effectiveness of switching to the remote learning education system was self-reported by the students and faculty. All the faculty and 78.5% students were using Wi-Fi internet facility and 21.5% of students were dependent on internet data packages for lectures. This means that some of the students lack access to the internet, and the use of data packages in itself is expensive for Nepalese students with the poor economy (New World Bank Country Classifications by Income Level, n.d.). Similar findings were found in the studies of Pakistan (Adnan & Anwar, 2020; Sarwar et al., 2020) and Chitwan Medical College, Nepal (Neupane et al., 2020). However, in India, 72.8% of students were using mobile data for class (Rafi et al., 2020). This confirms that access to the internet facility is a common problem of the Southeast Asian region. Also, an affordable and uninterrupted internet facility is necessary for remote teaching-learning processes that is conducted using an online platform. Does this signify that if the emergency remote learning system is grabbed fully? In the present study, only 3.7% of faculty and 46.5% of students used smartphones for an online class and the rest used laptops and multiple devices. Smartphones were the commonly used gadgets by 74.6% of medical students of Gandaki Medical college, Nepal (Tuladhar et al., 2020) and 89% students of Medical college of Kerala, India (Rafi et al., 2020) and a significant proportion of students and teachers of Sub-Saharan African countries (Pete & Soko, 2020). This finding lays a question, why a greater number of students were using smartphones as a primary tool for online classes, although these are not sustainable tools for an online class.

The instructional and formative assessment methods used for online class

Chat as the interaction methods for remote learning class was used from high to very high range by the 35 (64.7%) faculty and 104 (52%) students. The other commonly used instructional methods were PowerPoint slides, sharing documents, emailing and video conferences (Table 1). These findings claim that both the synchronous and asynchronous means of distance learning were used by the participants of our study. The synchronous (chat, audio/video conference, whiteboard etc.) and asynchronous (sending message, e-mail, social media, uploading materials) means are necessary for an effective teaching-learning process (Kearns, 2012). Our finding is congruent with that of Tartavulea et al. (2020) study, which discussed that e-mailing and uploading teaching materials in online platforms were mostly used as instruction methods among students and professors of European countries. Similarly, in Canada, both synchronous and asynchronous means were used for distance education (Murphy et al., 2010). In this point, the argument is that in the sense of pedagogy, the use of interaction methods for distance education is similar around the world, although virtual whiteboard, pre-recorded videos, and audio conferences were not common for the faculty and students in the study. On the other hand, this finding raises another issue, why whiteboard, pre-recorded videos and audio conferences were rarely used in the emergency remote learning practices of nursing education in Nepal? The combined effect of these modes may better address the prerequisites for online learning (Zingaro et al., 2013) as

synchronous means allows teacher and students engagement in the subject at the same time and the asynchronous means enable communication and collaboration over a period of time by allowing their connection at their own convenience and own schedule (Murphy et al., 2010).

Table 1: Use of Interaction Methods

Interaction Methods	Faculty (n=54)					Students (n=200)				
	Number (%)					Number (%)				
	1	2	3	4	5	1	2	3	4	5
Chat	7(13)	3(5.6)	9(16)	24(44.3)	11(20.4)	12(6)	28(14)	56(28)	68(34)	36(18)
Forum	17(31.5)	14(25.9)	10(18.5)	10(18.5)	3(5.6)	62(31)	45(22.5)	63(31.5)	25(12.5)	5(2.5)
Uploading materials	1(1.9)	3(5.6)	12(22.2)	27(50)	11(20.4)	17(8.5)	22(11)	78(39)	60(30)	23(11.5)
Emailing	-	3(5.6)	9(16.7)	28(51.9)	14(25.9)	12(6)	25(12.5)	52(26)	70(35)	41(20.5)
Sharing documents	1(1.9)	3(5.6)	10(18.5)	29(53.7)	11(20.4)	8(4)	18(9)	47(23.5)	90(45)	37(18.5)
Pre-recorded videos	13(24.1)	11(20.4)	15(27.8)	9(16)	6(11.1)	56(28)	46(23)	66(33)	18(9)	14(7)
Virtual Whiteboard	18(33.3)	5(9.3)	19(35.2)	8(14.8)	4(7.4)	94(47)	27(13.5)	39(19.5)	23(11.5)	17(8.5)
Audio conference	14(25.9)	9(16.7)	13(24.1)	14(25.9)	4(7.4)	34(17)	32(16)	61(30.5)	43(21.5)	30(15)
Video conference	8(14.8)	2(3.7)	16(29.6)	18(33.3)	10(18.5)	20(10)	22(11)	46(23)	58(29)	54(27)
PPt slides	-	1(1.9)	10(18.5)	17(31.5)	26(48.1)	5(2.5)	18(9)	35(17)	58(29)	84(42)

Measured in 5-point scale: not at all-1, little extent-2, sometimes-3, high extent-4, very high extent-5

The transition to online education has also changed the examination methods. According to both groups of participants, homework, video conference, audio conference and online discussions were mostly encompassed online formative assessment methods in this study (Table 2). Contrary to the study, Tartavulea and friends found the use of online quizzes for student evaluation during online courses whereas homework and projects work were used as a tool of assessment before the COVID-19 pandemic (Tartavulea et al., 2020). However, in this study, 52% of students and 37% of faculty reported that online quizzes were not used as an assessment method. One possible reason for this difference in the use of formative assessment methods of these studies may be because of a long experience of online education in the study setting. In nursing education, before the COVID-19 pandemic, there was no provision of distance learning, but European countries used to this practice even before. On the other hand, faculty might be underprepared due to the sudden educational shift, as a significant proportion of teachers have minimal ability to use technology (Xiao & He, 2020). The 2007 study in Europe revealed that students and faculty found projects, rubrics, portfolios, self-assessment, peer evaluation, threaded discussions, online chats, and quizzes are effective tools for online assessment (Gaytan & McEwen, 2007). Students' performance in examinations has been affected by the assessment types used to grade them (Salcedo, 2010). The limitation of the study was that descriptive analysis does not address why the established assessment methods were not used in the study, however, this finding provides a strong foundation for further study.

Factors affecting remote learning class in relation to barriers and facilitators

In relation to the factors that influence remote learning class (Table 3), in the study, >95% of participants had some issues with the internet and electricity, and only 38.9% of faculty and 47.5% students were out of the problems during online classes. Congruent to this finding, internet network issues were also reported by Arora and Srinivasa's (2020) in India. As well in Pakistan, 51.6% of students faced poor internet strength that hindered remote learning (Adnan & Anwar, 2020).

Table 2: The Use of Formative Assessment Methods in Remote Learning

Assessment Methods	Faculty (n=54)					Students (n=200)				
	Number (%)					Number (%)				
	1	2	3	4	5	1	2	3	4	5
Online Quiz	20(37.0)	13(24.1)	12(22.2)	7(13)	2(3.7)	104(52)	36(18)	40(20)	16(8)	4(2)
Homework	2(3.7)	11(20.4)	16(29.6)	21(38.9)	4(7.4)	23(11.5)	40(20)	79(39.5)	48(24)	10(5)
Projects	7(13)	8(14.8)	18(33.3)	18(33.3)	3(5.6)	37(18.5)	23(11.5)	82(41)	40(20)	18(9)
Online Discussion	3(5.6)	3(5.6)	11(20.4)	29(53.7)	8(14.8)	14(7)	21(10.5)	54(27)	72(36)	39(19.5)
Audio conference	13(24.1)	7(13)	13(24.1)	15(27.8)	6(11.1)	29(19.5)	25(12.5)	50(25)	49(24.5)	37(18.5)
Video conference	7(13)	1(1.9)	16(29.6)	17(31.5)	13(24.1)	24(12)	24(12)	48(24)	60(30)	44(22)

Measured in 5-point scale: not at all-1, little extent-2, sometimes-3, high extent-4, very high extent-5

As remote learning is based online and relies on the internet, uninterrupted power supply and internet connectivity should be the priority for effective delivery of lectures. In addition, >95% of participants of this study reported that continuous use of screens caused eye problems. In general, the majority of the participants in this study used to take 1-2 hours of class per period and students and faculty had to attend an average of 11.45±8.43 SD and 4.26±2.05 SD classes respectively in a week. On the other hand, >4/5th of the participants felt class overload. This finding suggests that heavy classwork to the students and faculty demands constant use of gadgets for an online class which may be the cause of eye problems. The use of digital devices for longer hours in a day causes digital eye problems that are a subject of concern (Sheppard & Wolffsohn, 2018). Similar to the study finding, dentistry students also have feelings of coursework overload (Hussein et al., 2020) although it is established that the long duration of online lectures is ineffective (Khalil et al., 2020). This may be one of the reasons why 71% of students and 59% of faculty in the study had no interest in online classes of remote learning. Other studies also found that students having no interest in virtual classes (Arora & Srinivasan, 2020), and they have doubts regarding the usefulness of virtual class (Tuladhar et al., 2020). Although the study did not ask the participants about their preferred duration of the class, 89% of medical students in India, desired the classes to be of 30 to 45 minutes duration or even shorter (Rafi et al., 2020). This finding characterizes that there is still a need to find out what would be the optimum duration of each class and how many classes in a week would be effective?

In this study, almost all faculty and 94% of students felt that online teaching was adopted well by their university and a significant number of participants reported that they received support from their institutions for emergency remote learning. On the contrary, some of them reported that the University's online platforms were inadequate. For effective distance education, there is a need for a sufficient educational platform. A former study also reported that students were dissatisfied with the institutional learning management system and the quality of learning resources available (Sarwar et al., 2020). Although extra efforts are necessary for the adjustment of a new teaching system and engagement, which are barriers to online learning (Khalil et al., 2020; Salcedo, 2010), in the study, >90% of participants had to increase their time to prepare for classes of remote learning and invested extra effort

for technological preparedness. Teachers' inability to use online technology hinders class effectiveness (Xiao & He, 2020). On the other hand, ineffective technology itself acts as a major challenge for an online class (Adnan & Anwar, 2020). However, in the study, respondents' opinion was neutral in relation to effectiveness and security feeling in the online system.

Table 3: Factors Influencing Emergency Remote Learning Classes

Influencing Factors	Faculty (n=54)					Students (n=200)				
	Number (%)					Number (%)				
	1	2	3	4	5	1	2	3	4	5
Problem Faced										
Eye problem	2(3.7)	7(13)	26(48.1)	14(25.9)	5(9.3)	5 (2.5)	26(13)	63(31.5)	68(34)	38(19)
Class overload	10(18.5)	10(18.5)	27(50)	6(11.1)	1(1.9)	32(16.5)	37(18.5)	88(44)	29(14.5)	14(7)
No interest in online class	22(40.7)	13(24.1)	14(25.9)	5(9.3)	-	58(29)	52(26)	66(33)	15(7.5)	9(4.5)
Network issue	3(5.6)	11(20.4)	29(53.7)	6(11.1)	5(9.3)	6(3)	25(12.5)	79(39.5)	49(24.5)	41(20.5)
Electricity problem	3(5.6)	17(31.5)	26(48.1)	5(9.3)	3(5.6)	6(3)	31(15.5)	88(44)	37(18.5)	38(19)
No problem	21(38.9)	13(24.1)	14(25.9)	3(5.6)	3(5.6)	95(47.5)	41(20.5)	48(24)	11(5.5)	5(2.5)
Institutional Support										
University adapted well to online teaching	1(1.9)	13(24.1)	12(22.2)	23(42.6)	5(9.3)	12(6)	57(28.5)	57(28.5)	78(39)	9(4.5)
Supported by college	2(3.7)	10(18.5)	16(29.6)	25(46.3)	1(1.9)	19(9.5)	51(25.5)	51(25.5)	72(36)	3(1.5)
Adequate university's online platforms	4(7.4)	11(20.4)	17(31.5)	19(35.2)	3(5.6)	45(22.5)	61(30.5)	61(30.5)	35(17.5)	8(4)
Courses are easily transformable in online format	3(5.6)	12(22.2)	19(35.2)	19(35.2)	1(1.9)	32(16)	55(27.5)	55(27.5)	39(19.5)	5(2.5)
Universities have online platforms	2(3.7)	12(22.2)	16(29.6)	22(40.7)	2(3.7)	17(8.5)	66(33)	66(33)	58(29)	3(1.5)
Students are quick to adapt to online	4(7.4)	8(14.8)	17(31.5)	22(40.7)	3(5.6)	32(16)	57(28.5)	57(28.5)	39(19.5)	11(5.5)
Personal Effort										
Time increased to prepare classes	5(9.3)	13(24.1)	13(24.1)	17(31.5)	6(11.1)	21(10.5)	43(21.5)	43(21.5)	52(26)	11(5.5)
Time invested for technological preparedness	3(5.6)	9(16.7)	14(25.9)	17(31.5)	11(20.4)	9(4.5)	48(24)	48(24)	56(28)	15(7.5)
Trust in the system										
The online system is effective	2(3.7)	13(24.1)	21(38.9)	18(33.3)	-	20(10)	60(30)	60(30)	49(24.5)	6(3)
I feel secure in online technology	3(5.6)	16(29.6)	17(31.5)	17(31.5)	1(1.9)	31(15.5)	67(33.5)	67(33.5)	43(21.5)	12(6)

Measured in 5-point scale: not at all-1, little extent-2, sometimes-3, high extent-4, very high extent-5

Effectiveness of emergency remote learning

Participants' perception toward the effectiveness of remote learning practices over the face-to-face class before the COVID-19 pandemic was assessed in the scale of decreased, maintained, and increased and the finding is presented in Table 4. The effectiveness of the education process is usually looked at as a quality of the educational process (Paul & Blau, 2009). This study found a mixed feeling in regard to the effectiveness of the remote learning classes. Most of the faculty (68.5%) and students (61%) reported maintained overall effectiveness of online classes as the conventional classes before the COVID-19 pandemic. From the perspective of education, there should be an intention to satisfy all students and faculty by the teaching-learning process. Similarly, 33.5% of students and 59.2% of faculty of this study reported that there is decreased effectiveness of interaction methods used in comparison to face-to-face classes before emergency remote learning, while 38.9% of faculty and 58.5% of students perceived that the effectiveness of remote learning is maintained as the class before COVID-19 pandemic. The unfamiliarity of a new teaching system and the use of technology may affect the lecture delivering capacity (Sarwar et al., 2020). Regarding the assessment methods employed during remote learning, in the study, >1/3rd of the respondents found decreased effectiveness of the formative assessment methods and <10% told effectiveness of assessment methods was increased. In a previous study, a greater proportion of the students (77.5%) than the study perceived online class ineffective (Tuladhar et al., 2020). However, a comparative analysis of environmental science students' performance over the 8-year period in face-to-face versus online class found the same performance and grade among both groups of students in Georgia (Paul & Jefferson, 2019). In the study, >3/5th of the respondents perceived that the overall effectiveness of the emergency remote learning was maintained as the classes before the coronavirus pandemic, however, >1/4th of the respondents perceived decreased its effectiveness. On the other hand, 21.5% of students perceived decreased communication and cooperation between students, decreased active learning (43.5%), immediate feedback (42.5%), expectations from students (40%), and respecting the differences between students (26%). This indicates that emergency remote learning failed to maintain various levels of quality in the educational process. Similar to this finding, Tartavulea et al. (2020) found decreased communication between students, decreased immediate feedback, active learning and respecting differences between students in virtual classes. In the study, almost all respondents preferred live classes over online with records. Similar to this finding, 67.5% of students of accounting programs, enrolled in distance learning preferred face to face learning (Kutluk & Gulmez, 2012). On the other hand, 63.84% of students in China were very satisfied with the class that was taken through online (Xiao & He, 2020). In Pakistan, 71.4% of students demanded conventional classroom than distance learning, and 78.6% of students felt the need of face-to-face contact with an instructor even if there is an online class (Adnan & Anwar, 2020). This indicates that regardless of program and country students' psychology regarding the learning process remains the same. Students prefer direct teaching by teachers (Xiao & He, 2020). However, a previous study found a different result, in which 69.2% of students preferred online with recorded classes over live classes if classes are taken virtually (Rafi et al., 2020) as an opportunity for students to utilize the recorded lectures to better understand and master the subject (Khalil et al., 2020) as they can listen to the lectures repeatedly at their convenience. To this point, it can be argued that students' preference of class types varies according to program and country. Interestingly, this technique can be further explored even though the study participants feel more comfortable in the classes with direct contact/communication with teachers. In addition, a considerable proportion of the respondents perceived that their courses are not easily transferable to online mode and students are not that quick to adapt to these remote learning strategies. This finding added value that if class content is not adjustable to online teaching, how effective learning can be achieved.

Table 4: Effectiveness of Remote Learning

Effectiveness	Faculty (n=54)			Student (n=200)		
	Number (%)			Number (%)		
	1	2	3	1	2	3

Overall Impact of Switching to Remote Learning						
Interaction methods are effective	1(1.9)	21(38.9)	32(59.2)	17(8.5)	116(58.5)	67(33.5)
Assessment methods are effective	3(5.6)	30(55.6)	21(38.9)	17(8.5)	110(55)	73 (36.5)
The effectiveness of Remote Learning						
Overall effectiveness	3(5.6)	37(68.5)	14(25.9)	18(9)	122(61)	60(30)
Student-teacher communication	6(11.1)	31(57.4)	17(31.5)	35(17.5)	115(57.5)	50(25)
Communication & cooperation between students	7(13)	37(68.5)	10(18.5)	32(16)	125(62.5)	43(21.5)
Active learning	4(7.4)	27(50)	23(42.6)	20(10)	93(46.5)	87(43.5)
Immediate feedback	12(22.2)	25(46.3)	17(31.5)	26(13)	89(44.5)	85 (42.5)
Time spent preparing for a course	21(31.9)	31(57.4)	2(3.7)	48(24)	101(50.5)	51(25.5)
Expectations from students	15(27.8)	28(51.9)	11(20.3)	23(11.5)	97(48.5)	80(40)
Respecting the differences between student	6(11.1)	33(61.1)	15(27.8)	26(13)	122(61)	52(26)
Measured in 3-point scale: increased-1, maintained-2, decreased-3						

Conclusion and Suggestions

Based on the discussion, it can be concluded that the overall effectiveness of the emergency remote learning system employed during the COVID-19 pandemic is less effective than the face-to-face class that was taking place before the pandemic. In remote learning classes, faculty and students feel work overload, and at the same time, faces the problem of internet connectivity and power outage. Constant use of gadgets for online classes can cause eye problems and they need to put extra effort into the preparation of technological aspects of online learning. This is one of the causes for decreased faculty and students' interest in remote learning. PowerPoint slides, sharing documents, chat and e-mail and videoconferences are the tools commonly used in class and assessment is taken through audio and videoconference, and online discussion. During the classes of remote learning, students' active learning, ability to provide immediate feedback is hampered thereby decrease their expectations. Therefore, if campuses and universities plan for a virtual class, they should train faculty and students in technological aspects. Being conscious about the class duration to avoid overload and to ensure uninterrupted internet are the other aspects that need consideration. In spite of these, there is a need for further study on how to enhance the effectiveness of remote learning. The authorities should find a way to help in the revision of the courses taken through emergency remote mode. In addition, factors affecting online education should be further examined through different methodological approaches to revalidate the utility and effectiveness of remote learning in the university.

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