

Students' Perceptions towards the Quality of Online Learning during the COVID-19 Lockdown: A Quantitative Study

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Abstract

The pandemic has disrupted educational systems around the world, impacting the most vulnerable students. Many institutions and colleges stopped offering in-person instruction in the middle of the academic year. Google Suite (computer software) -based e-learning was introduced as an alternative teaching and assessment method. The purpose of this study was to find out the students' perceptions towards the quality of online learning during the lockdown due to COVID-19. A sample of 364 students was selected through a simple random sampling technique. The results showed that, moderate numbers of students were satisfied in terms of teachers' methods of online learning, students' convenience in online learning, and motivation to learn online. A little over 60% of students chose in-person instruction, whereas just about 20.35% preferred online instruction. Considering this, one effective teaching method that can increase student motivation, success, and academic performance is blended learning. The COVID-19 pandemic has given us great opportunity in the field of education to explore the best model to encounter the next uncertainties.

Keywords: Online teaching, E-Learning, Perception, Motivation, COVID-19

1. Introduction

Bhutan started closing schools, institutions, and other entertainment centres in the second week of March 2020, and the complete nationwide lockdown was implemented from 1st August 2020 amid fears of the Coronavirus disease

(COVID-19) outbreak. The closure of schools has affected 16, 8324 students in Bhutan from classes pre-primary to grade twelve. The face-to-face teaching was temporarily put halt in many schools and colleges at the mid of the academic year. The alternative teaching and assessment models such as e-learning through Google Suite (computer software) were explored by the Ministry of Education, Bhutan, to engage students (Rinzin, 2020). Google Suite for Education and Microsoft Teams are both widely adopted by schools and colleges (Darius, Gundabattini, & Solomon, 2021). The COVID-19 pandemic has provided education systems worldwide with an opportunity to pave the way for introducing digital learning (Dhawan, 2020; Pokhrel & Chhetri, 2021).

The e-learning was an opportunity for teachers to explore digital know-how. The COVID-19 pandemic has provided teachers and students with an opportunity to explore digital learning but it came with a huge cost for the students. Many questioned the e-learning without proper internet connectivity. It was felt that they were forced to adopt this new strategy within a short span of time. Students were made to buy smart phones for e-learning. The parents were concerned about the process of monitoring the students' e-learning since many felt that the lack of proper monitoring led to excess usage of gadgets. According to Murgatroid (2020), some of the e-learning challenges are accessibility, affordability, flexibility, learning pedagogy, life-long learning, and educational policy.

The hard economic condition due to COVID-19 made students' learning difficult since they have to buy devices such as laptop and smart phones to learn and review the learning materials (Budur, 2020). The affordability of good internet connection for the smooth online learning was a challenge for many students. The limited technology resources in a young and underdeveloped country finds very difficult to cater the need of the people (Sintema, 2020). The parents with one cell phone were forced to focus only

on those children who have high stake examinations during COVID-19 lockdown in Bhutan (Parks, 2020).

Teachers have to come up with innovative online teaching platform to address the need of students. It was the first time that teachers had looked into different internet platforms for instructing students. The different online teaching models such as Google Classroom, Zoom, virtual learning environment and social media group forums like Telegram, Messenger, WhatsApp and WeChat were explored for teaching and learning (Pokhrel & Chhetri, 2021). The Royal Government of Bhutan particularly Ministry of Education took lots of initiative in collaborating with teachers to develop various online teaching models such as 25 minute lesson telecast as TV Lessons for the Bhutan e-Learning program.

This paper provides student's perceptions of the quality of online learning during the COVID-19 lockdown period from August 2019 to January 2020. It aimed to measure the experience of the students from mostly affected towns and cities of Bhutan. This study is vital to the Ministry of Education to assess the preparedness of education system during such similar mishaps like COVID-19 lockdown. The findings of the study could be used by educationists in other contexts to prepare for combatting effects of the epidemic on the education systems. The study is also significant to educational research as it contributes valid and important literature which can be used by the researchers' related to online learning.

1.1 Research Objectives

The main objectives of this study are as follows:

1. To determine the students' perception on quality of online learning during the COVID-19 pandemic lockdown.
2. To find out the significant gender differences in the perception of online teaching.

1.2 Research Questions

This study aims to answer the following research questions:

1. How do students perceive the quality of online education from their experiences?
2. Is there a significant difference in the perception of online teaching in terms of students' gender?

2. Literature Review

2.1 The Concept of Online Learning or e-Learning

Online learning is defined as “learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access” (Dhawan, 2020). It is a teaching–learning model based on student-centred, innovative, collaboration, connectivity, student-centeredness, unboundedness, community, exploration, shared knowledge, multisensory experience, and authenticity and flexibility (Dhawan, 2020; Kearsley, 2000; Singh & Thurman, 2019). According to Paulsen (2002), online education is characterized by:

- the separation of teachers and learners which distinguishes it from face-to-face education,
- the influence of an educational organization which distinguishes it from self-study and private tutoring,
- the use of a computer network to present or distribute some educational content,
- the provision of two-way communication via a computer network so that students may benefit from communication with each other, teachers, and staff. (p.1)

2.2 Perceptions on the Opportunities for Online Learning

Academic institutions can now seize this opportunity by having teachers teach and let students learn through online methodologies. People are always self-satisfied and have never tried new learning methods (Tarkar, 2020). This crisis is a new phase of online learning, where people can see the fruitful aspects of e-learning technology. During this time, there is plenty of room for amazing innovation and digital development (Dhawan, 2020)

Yang and Cornelius (2004) conducted a qualitative study to investigate the perceptions of students from different universities (University of Southern Mississippi, and Mississippi State University) and one community college (East Mississippi Community College) in Mississippi regarding the quality of online education based on their own online learning experiences. Interviews and observations were used to conduct the study. It was concluded that the flexibility, cost-effectiveness, electronic research availability, ease of connection to the Internet, and well-designed class interface were students' positive experiences during online learning.

Petrides (2002) conducted a qualitative study to determine learners' perspectives on web-based learning. The study was conducted in a blended online class in the university. The one semester online class with web-based technology was scheduled as a supplement session. While conducting the research, some participants showed that compared to verbal response they felt better and thought deeply about the subject matters when response is provided in writing. When discussions are displayed on the web permanently, they get enough time to reflect upon each other. Some participants repeated this opinion, indicating that the online technology allowed more reflection than in face-to-face classroom discussion.

However, the online teaching and learning environment is isolated and dynamic with evolving information and communication technologies, asynchronous communications, and real-time information (Keengwe & Kidd, 2010). Online learning environments include a variety of educational practices

and often feature student-centric active learning techniques (Keengwe & Kidd, 2010).

2.3 Perceptions on the Challenges in Online Learning

Nelson and Thompson (2005) used e-learning strategy to teach distance education courses to identified barrier factors toward distance education for agricultural education teacher preparation programs across the United States during the 1999-2000 school years. The study identified that faculty time, rewards, workload, lack of administrative support, cost, course quality, student contact, and equipment concern as barriers to online teaching practices. Similarly, inadequate hardware and software, slow internet connectivity, learner hesitation, lack of teacher technical know-how, inadequate learner orientation, and clearance for teachers to develop and design online courses and lack of time to develop and deliver the online courses were problems associated with modern technologies (Dhawan, 2020; Nkonge & Gueldenzoph, 2006). According to Murgatroid (2020) the accessibility, affordability, flexibility, learning pedagogy, life-long learning and educational policy are challenges for the e-learning and teaching. Lack of parental guidance, disadvantaged background, risk of exposure to increased screen time and physical workspaces are few issues (Pokhrel & Chhetri, 2021).

Engaging students in the process of education and learning is a challenge for educational institutions. It is difficult for teachers to switch from offline mode to online mode, change teaching methods and manage time. Developing content that not only covers the curriculum but also attracts students is a challenge (Liguori & Winkler, 2020). The quality of e-learning programs is a real challenge. There is no clear government guidance in the education policy regarding e-learning programs. There is a lack of standards for quality, quality control, electronic resource development, and electronic content delivery (Dhawan, 2020).

3. Method

This study used quantitative design using online survey approach. The schools were closed and resorted to online teaching during the COVID 19 pandemic lockdown. The study was conducted to determine the students' perception of online learning during the COVID-19 pandemic and to find out the differences in perception about the effectiveness of online learning between genders.

3.1 Sampling Procedure

A sample of 364 students participated in the study. There is no simple solution for the sample size because the ideal sample size depends on the study's objectives, the characteristics of the population being studied, the level of precision needed, the expected response rate, the number of variables used in the study, and whether it is qualitative or quantitative (Cohen, Manion, & Morrison, 2015). Larger samples are preferable in quantitative research because they provide better dependability and allow for the use of more complex statistical methods (Cohen et al., 2015). The simple random sampling approach was used as the sampling methodology for the study.

3.2 Data Collection

The study was conducted after obtaining ethical clearance from Ministry of Education. Data were collected from 9 secondary schools in southern part of Bhutan from 20th June to 27th June 2022. The study used Google Form to collect data from the respondents. The form was developed by the researchers before the beginning of the academic session. After educating the respondents about the purpose of the study and how the data would be used, the approved letter and the commitment letter of the ethical research was dispatched to the principal seeking support for the collection of data. The online survey questionnaire was sent to the focal teacher of the school with whom the researcher has a close contact. The survey link shared to focal

teacher of the school was then shared to student participants via school provided email address.

3.3 Instrumentation

The online survey questionnaire was divided into two parts. The first part of the questionnaire was used to obtain the background information of the participants (age, gender, and grade).

The second part of questionnaire consisted of four indicators namely; 1) Teachers' methods of online learning; 2) Students' convenience in online learning; 3) Motivation to learn online; 4) The effectiveness of online learning. All items are adopted from *Students' perception of online learning amidst the COVID-19 pandemic: A study of junior, senior high school and college students in a remote area* by Harefa and Sihombing (2021) with little modification to suit to the Bhutanese context. The survey included 20 items on a five-point Likert scale, from 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree).

4 Data Analysis

Data were collected and compiled in Google sheet for further analysis. After cleaning and checking the data, it was exported to SPSS Version 25 IBM (SPSS Statistics) for data analysis. Descriptive statistics (frequency, percentage, mean and standard deviation) were used to describe variables. T-test was used to determine if there was significant difference in the perception of online teaching in terms of gender.

Demographic Characteristics of the Sample

Table 2: *Frequency and Percentage of Demographic Characteristics of the Sample*

(n=365)

| Variables | Frequency | Percentage |
|-----------|-----------|------------|
| Gender | | |
| Male | 155 | 42.47 |
| Female | 210 | 57.53 |
| Total | 365 | 100.00 |
| Age | | |
| 10-15 | 50 | 13.70 |
| 15-20 | 312 | 85.48 |
| 20-25 | 3 | 0.82 |
| Total | 365 | 100.00 |
| Class | | |
| IX | 154 | 42.20 |
| X | 124 | 34.00 |
| XI | 69 | 18.90 |
| XII | 18 | 4.90 |
| Total | 365 | 100.00 |

The general attributes of the sample are displayed in Table 2. A little more than half of the participants were female (57.53%). According to the data, 85% of the pupils are between the ages of 15 and 20.

4.1 Teacher teaching methods in online learning

Table 3: Teacher's Methods in Online Learning

| No | Statements | Strongly Disagree No (%) | Disagree No (%) | Neutral No (%) | Agree No (%) | Strongly Agree No (%) |
|----|------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------|-----------------|-----------------|-----------------------|
| 1 | I can find out the teaching materials/learning materials delivered by the teacher when studying online. | 32 (8.77%) | 76 (20.82%) | 65 (17.81%) | 145 (39.73%) | 45 (12.33%) |
| 2 | I understand the material presented by the teacher when studying online | 37 (10.14%) | 109 (29.86%) | 67 (18.36%) | 122 (33.42%) | 29 (7.95%) |
| 3 | I can e-describe the material that has been online by the teacher on time | 32 (8.77%) | 80 (21.92%) | 106 (29.04%) | 115 (31.51%) | 30 (8.22%) |
| 4 | I can respond to questions that appear in discussion forums of subject matter provided by the teacher during online learning | 27 (7.40%) | 77 (21.10%) | 75 (20.55%) | 143 (39.18%) | 42 (11.51%) |
| 5 | I can apply the subject matter delivered by the teacher in everyday life | 22 (6.03%) | 74 (20.27%) | 86 (23.56%) | 157 (43.01%) | 26 (7.12%) |

As shown in Table 3 about 50% of the respondents (*Strongly Agree* = 12.33%, *Agree* = 39.73%) in the study agreed that materials provided by their teachers can be easily traced. About 41.37% (*Strongly Agree* = 7.95%, *Agree* = 33.42%) of the respondents understood the materials presented by the teachers while studying online. But 40% of the respondents (*Strongly Disagree*=10.14%, *Disagree*=29.86%) did not agree with the statement. Little less than 40% (*Strongly Agree*=8.22%, *Agree*=31.51%) of respondents were positive on downloading online material that has been shared by the teacher on time. But 29.04% remain neutral and 21.92% disagree with the points. The result also shows that 50.69% of the participants (*Strongly Agree*=11.51%, *Agree*=39.18%) responded to the questions that appeared in the discussion forums of subject matter provided by the teacher during online learning. At the same time 28.5% of the respondents failed to respond to questions and 20.55% preferred to remain neutral. It is also revealed that 50.13% of the students can apply the subject matter delivered by the teacher in everyday life, although 26.30% of the students disagreed.

4.2 Students' Convenience in Online Learning

Table 4: *Students' Convenience in Online Learning*

| No | Statements | Strongly Disagree No (%) | Disagree No (%) | Neutral No (%) | Agree No (%) | Strongly Agree No (%) |
|----|------------------------------------------------------------------------------|--------------------------|-----------------|----------------|--------------|-----------------------|
| 6 | I can communicate smoothly with the teacher during online learning | 30 (8.22%) | 88 (24.11%) | 68 (18.63%) | 140 (38.36%) | 38 (10.41%) |
| 7 | I can ask directly to the teacher when I don't understand the subject matter | 36 (9.86%) | 71 (19.45%) | 65 (17.81%) | 132 (36.16%) | 59 (16.16%) |

| | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|----------------|-----------------|----------------|
| | during online learning | | | | | |
| 8 | I always get a good response from the teacher during online learning | 24 (6.58%) | 60 (16.44%) | 81 (22.19%) | 123 (33.70%) | 76 20.82% |
| 9 | I enjoy doing assignments given by the teacher on online learning | 46 (12.60%) | 75 (20.55%) | 66 (18.08%) | 126 (34.52%) | 51 (13.97%) |
| 10 | I feel comfortable because the teacher always understands the obstacles experienced when learning online (for example network barriers and data packets) | 34 (9.32%) | 61 (16.71%) | 68 (18.63%) | 126 34.52% | 71 (19.45%) |
| 11 | I follow class discussion forums created by the teacher actively during online learning | 30 (8.22%) | 40 (10.96%) | 58 (15.89%) | 152 (41.64%) | 83 (22.74%) |

Table 4 shows students' convenience in online learning. The table showed that about 46.78% (*Strongly Agree*=10.41%, *Agree*=36.36%) of participants agree with the statement that they communicate smoothly with the teacher during online learning. However about 32.33% (*Strongly Disagree*=8.22%, *Disagree*=24.11%) of the participants couldn't communicate smoothly with the teachers. But 18.63% remain neutral.

Majority of the respondents 52.76% (*Strongly Agree*=16.6%, *Agree*=36.16%) asked directly to the teacher when they didn't understand the subject matter. Yet table shows 29.31% (*Strongly Disagree*=9.86%, *Disagree*=19.45%) participants didn't not ask questions directly to the teachers, even though 17.81% respondents preferred to remain neutral. The table also show that 53.52% (*Strongly Agree*=20.82%, *Agree*=32.70%) participants got good response from the teacher and 23.02% (*Strongly Disagree*=6.58%, *Disagree*=16.44%) disagree with this statement. Little less than 50% of the students agreed that they enjoyed doing assignments given by the teacher on online whereas 33.15% of the students didn't enjoy the online assignments. More than 50% of the students felt comfortable learning online while 26.03% of students disagreed.

4.3 Learning Motivation in Online Learning

Table 5: *Learning Motivation in Online Learning*

| No | Statements | Strongly Disagree No (%) | Disagree No (%) | Neutral (%) | Agree No (%) | Strongly Agree No (%) |
|----|------------------------------------------------------------------------------------|--------------------------|-----------------|-------------|--------------|-----------------------|
| 12 | I always turn my camera on during online learning | 61 (16.71%) | 120 (32.88%) | 66 (18.08%) | 81 (22.19%) | 36 (9.86%) |
| 13 | I pay attention when teacher provides learning explanations during online learning | 21(5.75%) | 49 (13.42%) | 47 (12.88%) | 172 (47.12%) | 74 (20.27%) |

| | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------|---------------|----------------|----------------|-----------------|-----------------|
| 14 | I participate in discussion group study assignments formed by the teacher | 22 (6.03%) | 35 (9.59%) | 56 (15.34%) | 175 (47.95%) | 75 (20.55%) |
| 15 | I submit assignments given by the teacher/lecturer on time | 22 (6.03%) | 36 (9.86%) | 45(12.33%) | 158 (43.29%) | 103 (28.22%) |
| 16 | I learn about learning online from the internet | 20 (5.48%) | 53 (14.52%) | 86 (23.56%) | 154 (42.19%) | 50 (13.70%) |
| 17 | I sit calmly during online learning in front of the laptop/cell phone until the time set by the school/teacher elapses | 25 (6.85%) | 58 (15.89%) | 52 (14.25%) | 156 (42.74%) | 72 (19.73%) |

Table 5 shows that about 49.59% (*Strongly Disagree*=16.71%, *Disagree*=32.88%) of the participants shared that they did not switch on camera during online learning. Over 30% of the students open the camera during online learning. The result also revealed that more than 60% of the respondents paid attention when teacher provides learning explanations and participated in group study assignments formed by the teacher. Little less than 20% of the students did not pay attention and participated in group

assignment formed by the teacher. The result also shows that 71.51% (*Strongly Agree*=28.22%, *Agree*=43.29%) of the students submitted assignment on time. Less than 20% of students did not submit the assignment on time. However, about 55.59% (*Strongly Agree*= 13.70%, *Agree* =42.19%) of the participants revealed that they learnt guidelines about learning online from the internet, although 23.56% chose to remain neutral in this question. The table also shows that about 39.46% (*Strongly Agree*= 19.73%, *Agree* =19.73%) agreed that they can sit calmly in front of the laptop/cellphone till the end of the session. But 22.74% (*Strongly Disagree*=6.85%, *Disagree*=15.89%) of the students found difficult to stay online till the end of the class.

4.4 Effective Online Learning

Table 6: *Effective Online Learning*

| No | Statements | Strongly Disagree No (%) | Disagree No (%) | Neutral No (%) | Agree No (%) | Strongly Agree No (%) |
|----|---------------------------------------------------------------------------------------------------------------|--------------------------|-----------------|----------------|--------------|-----------------------|
| 18 | I likes online learning rather than face-to-face learning | 117 (32.05%) | 109 (29.86%) | 65 (17.81%) | 48 (13.15%) | 25 (6.85%) |
| 19 | The interaction of online teaching and learning is better than face-to-face learning | 127 (34.79%) | 91 (24.93%) | 67 (18.36%) | 54 (14.79%) | 25 (6.85%) |
| 20 | Online learning facilities always support, both in terms of equipment (for example mobile/laptop) or network. | 54 (14.79%) | 74 (20.27%) | 98 (26.85%) | 110 (30.14%) | 28 (7.67%) |

Table 6 shows that more than 60% (*Strongly Disagree*=32.02%, *Disagree*=29.86%) of the participants preferred face-to-face learning than online learning. However little more than 20% of the respondents (*Strongly Agree*=6.85%, *Agree*= 3.15%) preferred online learning. About 37.84% (*Strongly Agree* = 7.67%, *Agree* = 30.14%) of the respondents agreed that online learning facilities supported both in terms of equipment (mobile/laptop) or network. But 36.96% (*Strongly Disagree*=14.79%, *Disagree*=20.27%) disagreed with the perception that they were not fully supported with equipment or network. However, 26.85% responds preferred to stay neutral. The percentage of students who chose to disagree in question 18, 19 and 20 were quite high as compared to agree perception. The students felt that face-to-face learning is better than online learning and inadequate online learning equipment and slow-speed internet was a problem usually encountered during online learning.

4.5 Difference in Perception of Online learning between Male and Female

Table 7 Difference in Perception of Online learning between Male and Female

| Variables | Male | | Female | | <i>t</i> (365) | <i>p</i> | Cohen's <i>d</i> |
|-------------------------------------|-------|-------------------|--------|-------------------|----------------|----------|------------------|
| | M | Strongly Disagree | M | Strongly Disagree | | | |
| Perception on online learning | 64.23 | 16.26 | 64.69 | 15.37 | - 0.274 | 0.784 | 0.03 |

An independent-samples t-test was conducted to compare the perception of online learning between male and female. There were no significant differences $t(362) = .274$, $p = .784$ in the scores with mean score for male ($M = 64.23$, *Strongly Disagree* = 16.26) as compared to female ($M = 64.69$, *Strongly Disagree* = 15.37). The value of Cohen's *d* was (< 0.03) which indicated micro effect size.

5 Discussion

5.1 Teacher teaching methods in online learning

A little more than 50% of students have a moderately favourable opinion on teachers teaching methods in online learning. This study also revealed that 40% of the students found less difficulty in finding out the teaching materials/learning materials delivered by the teacher while studying online. They also felt that the material presented by the teacher was clear and understandable. It was also clear that students interacted with the teachers very well. Participating in discussion forum, applying acquired knowledge practically and retrieving information from the online provided by the teachers are found to be moderate. This could be because students were provided free data packages by Ministry of Education and good internet accessibility. At the same time, these findings also support Pasaribu (2020) study which revealed that the good technology provides pupils to study and complete their assignments. However, certain section of students enjoyed less on teachers teaching methods. Students found difficult in retrieving the e-learning materials that has been online provided by the teacher on time. The study concluded that about 50.13% of the students could apply the subject matter delivered by the teacher in everyday life. Therefore, learning's main goal is to impart knowledge to students and depends on the teaching strategy used. It is inextricably linked to the instructor's knowledge (Harefa & Sihombing, 2021). It is envisaged that learning would be more optimal and meaningful with the introduction of a variety of learning activities.

5.2 Students' Convenience in Online Learning

The results of this study stated that students are comfortable with online learning. The majority of students could communicate smoothly; there was no difficulty in asking direct question to teachers. Teachers were found to be caring and supportive. However, 36.96% of the students disagreed with the perception that they were not fully supported with equipment or unstable

networks and frequently made it difficult to communicate with teachers. The findings were very similar to Harefa and Sihombing (2021) which stated that insufficient technological proficiency and unstable network causes student's inconveniences in online learning. Another unpleasant fact is that the majority of teachers were unaware of the obstacles that hinder online learning from beginning or that interferes with it while it is taking place. The effectiveness of online learning could be impacted by this. The findings of this study revealed that about 40% of the students still preferred online learning. It was felt that the blended learning in the future, which blends traditional classroom instruction with online learning can be an appropriate strategy for teaching learning model. The positive effects of blended learning have been supported by numerous additional academic studies and can improve academic success (Alipour, 2020). Blended learning can be used to solve the issue of discomfort in online learning, ensuring that education is still successful despite COVID 19 (Harefa & Sihombing, 2021).

5.3 Learning Motivation in Online Learning

The study found that students' attitudes on learning motivation on an e-learning platform are favourable. Any discussion in a classroom was found to be entertaining and interactive. Online homework is a favourite pastime for students. Most students were able to turn in their assignments on time. The survey did, however, show that most students were not fond of video conferencing lesson. There are two sorts of motivation for learning. Extrinsic motivation is the first type, and it relates to all external elements that help people achieve their learning objectives (Ryan & Deci, 2000). Additionally, students' own interests, pleasures, and desires might serve as intrinsic motivators (Ryan & Deci, 2000). But the problems with modern technologies include insufficient hardware and software, slow internet connectivity, learner reluctance, a lack of teacher technical expertise, inadequate learner orientation, clearance for teachers to develop and design online courses, and a lack of time to create and deliver the online courses affect the learning

motivation (Dhawan, 2020). During COVID-19 pandemic all schools in Bhutan were closed. The face-to-face teaching was discontinued in many schools and colleges at the mid of academic year. Different online teaching methods were activated for teaching and learning, including Google Classroom, Zoom, virtual learning environments, and social media group forums like Telegram, Messenger, WhatsApp, and WeChat (Pokhrel & Chhetri, 2021).

5.4 Effective online learning

The study revealed that the majority of the students 60.82% agreed that face-to-face learning is better than online learning. This finding is in line with the study by Dibner (2020) where it was said that students found face to face instruction effective compared to online. Face-to-face instruction often makes learning more enjoyable for students. Face-to-face instruction allows students to directly ask questions regarding the content being studied. E-functionality, learning's dependability, usability, data quality, flexibility, portability, and integration have a favourable effect on student satisfaction (Chiu, Chiu, & Chang, 2007). The results of this research indicated that online learning materials were effective as a learning resource, but it was equally challenging for the students to retrieve the materials. About 36.96% of the students revealed that poor internet connectivity, learning equipment and lack of learners' orientation affected online learning. To improve the online learning Bhutanese students were provided free data package by the Ministry of Education (MoE) during COVID-19 pandemic lockdown. With content restrictions, Bhutan Telecom (BT) and TashiCell, the two internet service providers, helped students who study online. As a result, the decrease in data charges will only be applicable to specific services, such as Google Classrooms (Subba, 2020). Since learning must now be done remotely to avoid crowds and break the pandemic's chain, students and teachers are now

compelled to use technology in the classroom. Whether you choose to use it or not, online learning must be used.

The study's conclusions inform us that online learning motivation, student comfort, and teacher teaching approaches were all moderately to strongly moderate. But the results also show that there are difficulties with online instruction. Based on the study's findings, researchers believe that more needs to be done to boost student engagement, motivation, performance, and expected achievement. The results of this study can be utilized as a guide to enhance the online learning environment.

An independent t-test result indicated that there was no significant difference on respondents' perception of e-learning between male and female students during COVID-19 pandemic lockdown. The present findings validated the findings of a previous study by Tasir, Al-Dheleai, Harun, and Shukor (2011), which found a substantial difference between male and female students' perceptions of online learning.

6 Conclusion

The COVID-19 epidemic has created an unprecedented circumstance that has an impact on how learning is implemented in schools. Online interactions are replacing face-to-face teaching and learning. The recent COVID-19 disease outbreak and subsequent nationwide lockdown should be a wakeup call for the educationist to prepare a robust teaching-learning model to teach our students for any type of unforeseen challenges and obstacles, even though the majority of students prefer face-face teaching.

Teachers should devise models and other tactics to promote variety in learning to overcome this issue and increase students' interest and motivation to learn online. The study revealed that little more than 60% of students opted face-face teaching and about 20.35% of the students preferred online teaching which indicated that the blended learning can be

one preferred teaching model for better teaching strategy for boosting motivation, success, and academic performance.

And blended learning is an effective teaching model amid pandemics to improve motivation, achievement, and learning performance. However, this is also a call for the government to improve internet networks and infrastructure in remote areas, in order to facilitate online education. The results of this research provide additional insight to all those involved in the implementation of education. However, further research is needed to obtain a more complete explanation.

7 Recommendations

To overcome the digital education challenges in Bhutan, affordable and accessible internet services for e-learning can be explored. The study revealed that 35.06% of the students were not fully supported with equipment or network. This could be because of very low internet bandwidth without adequate accessibility points. The other reason could be data packages are expensive, especially for the low-income group, so accessibility and affordability for e-learning was a challenge. Therefore, the Ministry of Education has the authority to investigate and intervene in matters concerning internet service accessibility and affordability.

The study also concluded that little more than 40% of the students did not understand the materials presented by the teachers and 29.59% of the students could not retrieve teaching-learning materials. Hence, online teaching models such as effective e-learning pedagogies and effective diagnostic and formative assessment tools need to be explored and intervened by Ministry of Education, Dzongkhag/Thromde education sector and schools. Teacher professional development can be reviewed, and essential training provided to teachers through customized online training programs, blended learning in schools, and the advancement of initiatives in the digital learning space can be explored further.

The study shows that 22.74% of the students could not concentrate and found difficult to stay online till the end of the class. Therefore, to face the upcoming challenges due to so many uncertainties, making online teaching creative, innovative, and interactive through user-friendly tools can be given the highest priority.

The COVID-19 pandemic has given us enough opportunity in the field of education to explore the best model to encounter the future uncertainties. Ministry of Education, Dzongkhag/Thromde Education sector should encourage our teachers and students to explore more and learn about e-learning teaching to continue the trend even after returning to traditional face-to-face classes.

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