E-LEARNING IN RURAL SECONDARY SCHOOLS UNDER SARPANGDZONGKHAG: OPPORTUNITIES AND CHALLENGES

Abstract

This study investigated the opportunities and challenges of E-learning associated with its implementation. In this qualitative study, a total of 32 participants were selected through purposive sampling (24 students participated in a focused group with mixed grouping—six from class 9 and six from class 10, and 8 teachers for one-on-one interview – 4 from each school). The study also analysed lesson plans and observed classes for e-tools and resources integrated in teaching and learning. The qualitative data were analysed thematically using Creswell's (2012) six-stage approach.

The findings showed that although both students and teachers are optimistic about the opportunities of E-learning, it was challenging to take advantage of it yet because of the lack of facilities, network coverage, costly devices and data, and lack of training and support.

The study recommends considerable improvement in the infrastructure and internet facilities in schools. The findings also demonstrate the importance of collaboration among teachers, parents, and administrators in successful implementation of E-learning.

Key Words

Attitude, Challenges, COVID-19, E-learning, ICT (Information Communication Technologies), Opportunities

CHAPTER ONE: INTRODUCTION

Background

E-learning is a form of learning that uses technological tools and electronic resources. While education can take place within or beyond the classroom walls, E-learning is primarily based on the use of digital technology and the Internet (Aboagye et al, 2020). E-learning is a fast growing setting that gives users the freedom to work outside of traditional time and space restrictions and therefore educational technologies are increasingly being recognized as valuable instruments for assisting teachers, students, and organizations in their learning (Drinkwater et al., 2004).

Over time, E-learning has gained significance as an educational tool. With the advent of the Internet and the World Wide Web, educational institutions have had to adapt their teaching methods to fit the demands of users in order to provide an optimal learning environment (Xu&Ebojoh, 2007). E-learning is a system in which students use internet-based technology to learn subjects, discuss concerns with peers, clarify doubts with instructors, share information, and track academic progress. Many aspects of the learning environment have been significantly impacted as a result of the rapid growth of internet and communication technologies. Because of the expanse of the World Wide Web and the ease

with which technology can be accessed, there has been a boom in demand for internet teaching and learning (Chaney, 2001).

In Bhutanese education system, it has been seen necessary to revisit educational frameworks to meet the needs and difficulties of a changing social environment. In light of the opportunities and challenges of the twenty-first century, urgent need to reassess curriculum, pedagogy, learning process, and assessments to either modify or reinvent them has become inevitable. Focusing just on textbooks and materials while ignoring technology and social learning, risks reinforcing passive learning patterns. His Majesty expressed his deepest conviction about the indispensable role of ICT in modern education on the auspicious occasion of the 113th National Day in PunakhaDzong on December 17, 2020. This was done in order to initiate a transformative reconceptualization of the Bhutanese educational system. The Royal Decree directed that technology, digitalization, artificial intelligence, and automation be integrated into education.

> In preparing our youth for the future, we must take advantage of available technologies, adopt global best practices, and engineer a teaching-learning environment suited to our needs. Technology is the argument of our time and a major indicator of social progress. The irony in our context is the absence of technology in classrooms for a generation of students who are exposed to and live in the digital age. (Royal Decree, 2020)

Moreover, E-learning appeals to a wide range of students with a variety of academic needs that traditional education programs are unable to address. The demand for E-learning stems from a desire to deliver high-quality education to all students (Chaney, 2001). There is a widespread perception in developing countries that implementing E-learning improves educational quality (Hvorecky et al, 2005). E-learning, rather than traditional classroom

instruction has been shown in numerous studies to improve academic performance, increase motivation, and foster learning (Curtin, 2002).

Therefore, virtual learning environments, web-based training, and other electronic-learning applications are necessary at every educational institution, and educational technology should be widely accessible to all the learners (Debevc et al., 2007). However, there is a significant disparity between the use of technology in schools and other educational institutions and the availability of technology to students. It takes time for technology and development to reach the full population in developing countries. The benefits of technology do not reach those who cannot afford to pay a high price for education (Macleod, 2005).

In addition, it was found that developing countries face many challenges in applying E-learning including shortage of key E-learning components such as computers, network infrastructures, electricity, ICT understanding and skills, and active participation of children and educators (Aung&Khaing, 2015).

World Health Organization (WHO) declared COVID-19 as a pandemic that has posed a contemporary threat to humanity (WHO, 2020). The sudden shutdown of educational institutions as a response to COVID-19 outbreak forced the governments and authorities to use alternatives to conventional learning approaches in emergency to ensure that students are not left without a way to learn and to prevent the pandemic from proliferating. The Royal Government of Bhutan issued official directions to close schools and continue teaching through various online platforms as a quick response to the outbreak of corona virus (Kado et al., 2020).

Bhutanese schools formally initiated E-learning and tried fully utilizing and bringing technology to advantage during school closure due to the COVID-19 pandemic. But the challenges were numerous and obvious, prompting some research and press attention in both online and print media.

Thus, this study's aim is to find concerns connected to the use, benefits and the most pressing challenges of E-learning in rural secondary schools of Bhutan.

Problem Statement

The COVID-19 pandemic has given online education in Bhutan an unprecedented push. As schools and institutions closed nationwide by the mid of March 2020, most schools were concerned about the teaching and learning. In the midst of upsurge in COVID-19 cases across the country, it was not possible to resume in-school classroom sessions for the academic year. To ensure the continuity of education, the Ministry of Education in collaboration with the Royal Education Council (REC) developed Adapted Curriculum as an Education in Emergency (EiE) contingency plan. By recording lessons using Adapted Curriculum, they introduced remote or home-based learning for children in grades PP-XII across the country. Teachers performed the sessions, which were recorded by local audio-visual studios and shown on national television beginning March 25, 2020. For all of the key stages, 442 lessons were recorded (Key stage I-Classes PP-III, Key stage II- Classes IV-VI, Key stage III-Classes VII-VIII, Key stage IV-Classes IX-X, and Key stage V-Classes XI-XII). Teachers were asked to create video lessons for all of the key stages, which were then distributed via Bhutan Broadcasting Service (BBS), Sherig YouTube, Google Classroom, and other E-learning platforms (Ministry of Education [MoE], 2021).

Self-Instructional Materials (SIM) were developed for 'Reaching the Unreached' to help students living in remote areas who have limited or no access to BBS and Internet for E-learning lessons. A total of 160,675 SIM booklets were printed and delivered to 32,135 students around the country. Similarly, 221 SIM lessons were aired on BBS radio and Kuzoo FM (MoE, 2021).

Despite the provisions made for schools to conduct online classes, disparities between rural and urban, literate and illiterate parents, rich and poor posed challenges. The viability of implementing online teaching and learning system in a developing country like Bhutan was uncertain. According to a teacher from one of the distant districts, the school does not have a proper internet connection, and only a few students can afford to buy smart phones, tablets, or a laptop. In addition, the students could not afford on high data consumption, which made the online classes expensive. Instead of spending the money to buy basic household necessities, it had to be spent on topping up the internet data (Drukpa, 2020). Some teachers questioned parents' ability to supervise their children's learning using an online system (Rinzin, 2020). According to Singye (2020), there were also issues with not having a continuous supply of electricity in some rural places especially during the peak summer season.

The purpose of this research is to investigate the opportunities and challenges of E-learning, as well as the attitudes of students and teachers in rural secondary schools toward E-learning.

Although some studies on E-learning have been conducted in Bhutan, all of the studies (Choeda et al., 2016; Jamtsho& Bullen, 2007; Kinley, 2010; Wangdi et al., 2021; Wangmo et al., 2020;) have focused on the experiences and perceptions of students and teachers in higher education institutes, mostly in colleges of education that are urban - based with efficient infrastructures and internet service. No study has been undertaken in a rural context.

'Rural' in the context of this study is characterized as scattered settlements, difficult terrain, inadequate public facilities including health and motorable roads, stronger traditional beliefs, and poor socioeconomic and environmental conditions, as defined by Dendup et al. (2020).

Significance

E-learning and ICTs are the priority in today's digital world and their advancement is changing the education scenario and transforming the teaching and learning process from the traditional physical environment to the digital environment. Education under inevitable circumstances that disallow traditional face-to-face teaching, conferences, seminars and consultations are made efficient through E-learning. E-learning is being used very effectively in university teaching for enhancing the traditional forms of teaching. Students in Bhutanese universities find web access to the lecture notes and selected e-resources in support of the study and this kind of access gives them much flexibility for study. E-learning formally substituted traditional setting of teaching and learning in Bhutanese schools due to the COVID19 pandemic and while increased opportunities and benefits were derived, challenges faced were apparent too. Therefore, in addition to further amplifying the benefits, there is also an urgent need for in-depth and pointed investigation of the challenges and find out what students and teachers have to say about E-learning in the context of rural secondary schools of Bhutan. This study is the first endeavour to investigate the status of rural secondary schools of Bhutan towards E-learning. Therefore, the following are the significance of the study.

- It will provide empirical data on challenges of implementing E-learning in rural secondary schools of Bhutan.
- It will act as a base for developing possible interventions on use of E-learning for teachers and students.

- It will add on to theoretical knowledge of E-learning in context of rural secondary schools of Bhutan.
- The current study's findings will be useful to students, teachers and administrators of rural secondary schools as they work to improve the content and delivery of E-learning.
- The study can be used as reference by the future researchers.

Research Questions

The research aims to answer the following main question and sub questions:

Main Question: What are the opportunities and challenges of implementing E-learning in the rural secondary schools under SarpangDzongkhag?

Sub Questions:

1. What are the opinions of teachers and learners on E-learning?
2. How often do teachers use technology and media platforms for teaching learning?
3. What E-learning tools and media platforms do they often use?
4. What are the opportunities gained by students and teachers from implementing E-learning?
5. What are the challenges faced by students and teachers in implementing E-learning?

This research study aims:

1. To highlight the impacts of E-learning on teaching and learning.
2. To study the perspectives of students and teachers of rural secondary schools towards E-learning.
3. To study the opportunities gained and challenges faced by students and teachers in implementation of E-learning in rural secondary schools under SarpangDzongkhag.

CHAPTER TWO: LITERATURE REVIEW

Concept of E-learning

The use of information and communication technologies (ICT) for educational purposes has increased in recent decades, and the spread of network technologies has generated substantial changes in E-learning practices (Kahiigi et al., 2008). Any definition of E-learning, on the other hand, must address the question of what constitutes E-learning and what does not (Guri-Rosenbilt, 2005). The variety of viewpoints on E-learning can lead to misunderstandings and even contradictions (Mason & Rennie, 2006). Some of the definitions of E-learning are given below:

E-learning, according to Hoppe et al. (2003), is learning that is facilitated by digital electronic tools and media.

E-learning, according to Sharma and Kitchens (2004), comprises learning using web-based training facilities such as virtual institutions and classrooms that allow for digital collaboration and technology-assisted distant learning.

E-learning is the delivery of knowledge and instructions to individuals through computer network technology, primarily over or through the internet (Wang et al., 2010).

E-learning is described as learning using electronic devices such as desktop/laptop computers, smart phones, CD/DVD players, and other similar devices. It first appeared in the 1980s as a competitor to traditional face-to-face learning (Abuhamdeh, 2010; Wains & Mahmood, 2008).

E-learning can be regarded of as a basic concept in educational technology delivery or as a pedagogical technique (Catherall, 2005). Also, it can be a blended learning technique, in which the learner participates in both face-to-face and online activities (Allan, 2002).

Electronic learning, or E-learning, is a concept of internet-enabled or computer-assisted learning. It specifically refers to learning that is aided by the use of digital tools and content. E-learning encompasses a wide range of applications, including interactive learning packages, web-based learning environments, and communication tools such as e-mail, discussion rooms, chat, and video conferencing.

In the context of this study, E-learning is the delivery of education (all activities relevant to instructing, teaching, and learning) through various electronic and social media (Koohang& Harman, 2005).

Teachers' and Students' Attitudes towards E-learning

Information technology, in general, presents opportunities and even though we witness rapid progress in E-learning, it remains at an early stage of development. The real issue is not only to meet specific E-learning prerequisites, such as access to ICT tools, networks and trainings, but also to change teachers' and students' attitudes about E-learning. In this scenario, the role played by teachers and students gains due importance as it is their perspectives and attitude, which is critical to motivation and learning (Koohang& Durante, 2003). Ultimately it is the acceptance of students and teachers that helps in reaping the benefits of E-learning. It is critical to recognise the necessity of assessing the readiness of

organisations, teachers, and learners to embrace this learning style in order for E-learning to succeed (So &Swatman, 2006). An E-learning readiness assessment can assist schools in identifying aspects that must be considered in order to ensure that E-learning approaches are suited to the requirements of students and to investigate how teachers and students accept and use E-learning.

It is critical to change teachers' and students' attitudes regarding E-learning and persuade them to adopt it. Another factor to consider is the technical proficiency of those who will engage with the E-learning system (Gold et al., 2001). Overall, the literature on E-learning implementation issues boil down to three perspectives of E-learning: students, teachers and accessibility to computer devices and internet facility. This informs this study's approach to looking at E-learning problems from these three perspectives, which will be delineated in the following section.

Students' Perceptions of E-learning was the subject of a study done by Mamattah (2016). The study's major goal was to find out what students think about the concept of E-learning, as they are the primary beneficiaries of this technology-enabled learning. 80 participants were used to collect data at Ho Polytechnic in Ghana. The study's findings revealed that the majority of students believe E-learning is an innovative notion that should be encouraged and educational institutions in Ghana should invest more in systems that enable E-learning rather than constructing satellite campuses across the country, as is currently the case.

A study on the 'Attitude of University Students towards E-learning in West Bengal was undertaken by Kar et al. (2013). The study included 308 university students from four universities in West Bengal. The samples for the survey were chosen using a stratified random sampling technique and the findings demonstrated that students have a positive

attitude towards E-learning, and that their attitudes were unaffected by personal factors such as gender, study stream, or residence.

A study on the readiness and implementation of E-learning among academic staff at Jordanian institutions of higher education done by Qazaq (2012) surveying 367 academic staff members revealed that academic staff was making progress, but more efforts should be made by the institutions to address infrastructure and E-learning technology limitations to aid in adoption of E-learning. The study also found that upgrading computers in universities is deemed critical in order to fulfil the growing need for speed and efficiency in the use of E-learning.

Alenezi (2012)'s study on "Faculty Members' Perception on E-learning in Higher Education in Saudi Arabia" that looked at how attitudes differed among teachers depending on their age, gender, education level, and teaching experience revealed that there is a distinction between E-learning levels depending on different aspects of identity. The first indicator of differences was gender perceptions, with female perceptions more positive than male perceptions and age-wise, 44 and below showed more favourable attitudes than elder service members. Perceptions were also stronger with those who had a bachelor's degree and those with fewer than ten years of teaching experience. Teachers had a generally positive attitude toward e- learning, believing it to be a tool that improves learning.

Opportunities of E-learning

According to Commission of Higher Education (2020), E-learning guarantees the continuation of inclusive and accessible education when traditional modalities of instruction are unavailable, such as in the event of national emergencies. Due to the COVID19 outbreak, most countries have enacted lockdown and social distancing protocols, which have resulted in the closure of schools and training institutes. Teachers are delivering quality education

through multiple online channels, which is a paradigm shift. Despite the problems faced by both teachers and students, E-learning has proven a remedy for this unprecedented worldwide pandemic. Making the transition from conventional face-to-face learning to E-learning can be a completely different experience for both students and teachers, which they must adjust to because there are few or no other options. Through numerous media platforms, the school system and educators have adopted "Education in Emergency", and were driven to adopt a system for which they were unprepared.

During the pandemic, E-learning tools were critical in assisting schools and universities in facilitating student learning during the shutdown of universities and schools. In an educational setting, the internet has become the most crucial instrument. The computer and information technology, which was made possible by an internet connection, became the second library (Schweitzer, 2008). The growing and extensive internet library has offered users with not only the chance to acquire additional knowledge, but also self-directed skills. This illustrates that the internet connectivity to technology continues to aid in the growth of E-learning, also known as computer-assisted learning (Kovel-Jarboe, 2001).

Students who prefer self-regulated learning have found that E-learning is beneficial (You & Kang, 2014). Learners who were able to hone in on their self-regulated learning skills practiced time management, routinely reviewed material, sought support from teachers or peers, met deadlines, and had the ability to reflect on their own learning (Kirtman, 2009).

It is impossible not to overstate flexibility as one of the most compelling reasons for students to choose E-learning. It allows students to work whenever and wherever they want. Many teachers and students noted on how they were able to focus more on the learning materials and less on concerns like parking, traffic, and other distractions that often occur in a typical classroom setting (Thomson, 2010). Cruther's (2008) study also emphasized that E-learning can provide time and location independent access to learning materials' sources and contents,

save costs, and improve educational quality. There are more advantages of this paradigm over the rigid teaching pattern of a physical classroom: it allows for individualized and self-paced learning; the learner can immediately raise questions and doubts, receiving immediate feedback, which may not be possible in a physical classroom; and E-learning makes it easier for slow learners to catch up. Furthermore, students can access session recordings at any time to review them.

Thus, E-learning has become a significant instrument for improving the delivery, interaction, and facilitation of both teaching and learning processes in today's technology-driven society. By employing various pedagogical structures, E-learning promotes flexibility in learning, increases interaction, and aids learning. Boulton (2008) highlights that students develop a variety of new skills, such as determining their own learning pace, becoming independent learners, and taking ownership of the learning.

However, despite its well-known benefits, implementing E-learning is not as simple as it appears. If not done correctly, it can cause a slew of issues and challenges than the promised benefits (Graham, 2006).

Challenges of E-learning

Researchers are deeply concerned about the issue of the digital divide. As is generally known, a sizable portion of the population still lacks access to the Internet or the necessary IT skills. Although the rapid development of ICT has made Internet connectivity easier and more affordable, reducing the digital gap, governments around the world will continue to be concerned about fair access. As a result, E-learning is not for everyone in most nations (Kearsley, 2002).

After the government stated that schools will be closed to curb the proliferation of corona virus infection, the first-ever online teaching and learning in Bhutanese education

system was adopted in the Mid-March of 2020 (Kuensel, 2020, 6 March). Schools were instructed by the Ministry of Education to continue teaching through internet channels on social media platforms so that students remained engaged at home throughout the lockdown.

Bhutan has been using E-learning method to combat the COVID crisis for more than a year now. However, in a developing country like Bhutan, the viability of adopting a digital online teaching and learning system is unknown. The same sentiment was expressed in Asio and Bayucca's (2020) study, which found that government schools were not yet prepared to implement distance learning.

Nima (2020) found that the main issue was poor internet connectivity, as well as students' lack of access to smart phones and television at home. Also, Parents who were mostly farmers were more occupied in farming, and children were expected to help them. According to a teacher from one of the remote schools, the school does not have a proper internet connection, and only a few students could afford to buy smart phone. Some teachers questioned parents' ability to supervise their children's learning using an online system (Rinzin, 2020). In addition, according to Parks (2021), a UNICEF Bhutan official, parents have struggled to facilitate children's learning, particularly for younger children. The challenges were felt most acutely by both parents, who worked in offices. Working single parents struggled even more with home-based learning. Additionally, the most common barriers to online learning are difficulty adjusting learning styles, having to perform responsibilities at home, and poor communication or lack of clear directions from teachers (Baticulon et al., 2020). Furthermore, due to an unforeseen significant shift from traditional face-to-face teaching learning to online education, student readiness was perceived as a disadvantage (Picciano& Seaman, 2009).

Since 2003, when Hong Kong's schools were closed due to the SARS (Severe Acute Respiratory Syndrome) crisis, online learning has been used extensively for teaching and

learning (Fox, 2007). And, since 2019, the COVID19 pandemic has re-enacted the episode, but this time on a global scale. However, because of the lack of services and infrastructure, it took some time to gain prominence in underdeveloped and developing country such as Bhutan (Kinley, 2008). Previous researches have also revealed common issues with the new abilities required for students and teachers to use and benefit from E-learning methods (Andersson&Gronlund, 2009). The more experience students and teachers are with computers and the internet, the more likely they are to adopt and use E-learning. Many academics, however, claim that specialized skills and experiences are required to fully utilize E-learning technologies such as wikis, blogs, discussion forums, virtual meetings, and video - conferencing, which are crucial to successful implementation of E-learning (Appana, 2008). Samtse College of Education, Bhutan, has made concerted efforts to incorporate ICT for learning support in the delivery of distance teacher education programmes. In-service teachers at Samtse College of Education who participated in IT-facilitated distance education considered the IT-based learning support to be beneficial. However, major obstacles to full integration included overloaded network systems, lack of technical support, inadequate ICT resources, a crucial need for training, and resistance to change (Jamtsho& Bullen, 2007).

CHAPTER THREE: METHODOLOGY

Research Paradigm

According to Burns (2000), research is a methodical inquiry. According to Creswell (2008), research is a series of steps used to gather and analyse data in order to better understand a topic or issue. Mertens (2005), the researcher's theoretical framework influences the concept of research. That framework, or paradigm, directs the collection, analysis, and interpretation of data (Glesne, 2011). A paradigm, according to Creswell (2009), is a world view, which Guba (1990) defined as a basic set of beliefs that guide action.

This research adopted a constructivist paradigm. The constructivist paradigm relies on participants in the study providing data that represents their backgrounds and experiences (Mackenzie &Knipe, 2006; Mertens, 2005). This approach is appropriate for the study because the study aims to explore the real-world environment and the lived experiences of people in that environment (Creswell & Creswell, 2018) as in understanding the E-learning experiences and perspectives of students and teachers in rural secondary schools of Bhutan. This paradigm allows the researcher to ask series of open-ended questions to understand the opinions of participants on a particular issue.

Research Approach

The study adopted qualitative approach. According to McKenzie and Knipe (2006), researchers that use the constructivist paradigm collect and evaluate data using a qualitative approach. In order to grasp participants' viewpoints and build meaning, qualitative research necessitates a comprehension of them (Lodico et al., 2010). Researchers are particularly interested in understanding how things occur. According to Cohen et al. (2013), qualitative research answers 'how' and 'why' things occur. Therefore, through this approach this study

aims to understand the opportunities and challenges of E-learning as experienced by students and teachers in rural secondary schools.

Research Strategy

Narrative research, phenomenology, ethnography, grounded theory, and case studies are five major types of qualitative studies, according to Creswell (2007). The sample size for narrative research is typically small—one or two participants. Narrative research was not chosen since the study required a larger sample size.

A researcher uses case study to understand the essence of human experience (Lodico et al., 2010). Although a phenomenological study and a case study have some similarities in that they are both based on participants' perspectives, the significant difference is that a phenomenological study simply discusses those perspectives, whereas case studies provide detailed descriptions of one or more cases to address the study's research questions, issues, or problems (Glesne, 2011).

An ethnographic researcher explores a group's cultural aspects in a local setting over time (Creswell, 2009). The study's main focus is on the participants' experiences and perspectives, not on cultural influences. Also, the purpose of this study is not to construct a theory to explain a phenomenon, therefore grounded theory is rejected (Glesne, 2011).

Case is bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Yin, 2014). The case study, according to Baxter and Jack (2008) allows for the investigation of a real issue within a specific setting, utilizing various data sources. Interviews, observations, documents, video materials, and field notes are all examples of data collecting tools that can be used in a case study. A case study is "an in-depth description and analysis of a bounded system," according to Merriam (2009).

Yin (2004) stated that a case study can contain either a single study or multiple studies. According to Baxter & Jack (2008), a multiple case study differs from a single case study in that the researcher studies multiple cases to identify similarities and differences between the cases. However, this study does not seek to compare the two cases or establish similarities and differences between them. The possibility exists for the researcher to carry out an embedded single-case study. This suggests that the researcher can explore the cases separately while taking into account their shared background as part of a single, more comprehensive unit being studied. In this study, two separate schools are examined as subunits of one broad case, which is the case of a rural context. This gives the researcher the power of ability to look at subunits that are located within a larger case (Yin, 2003).

Furthermore, the three categories of case studies that Yin (2014) posited are exploratory, explanatory, and descriptive. Each type of case study is unique, and used for different purposes and to answer different questions. When there is no predetermined result, an exploratory case study is employed. Yin (2014) asserts that exploratory case studies are appropriate when "what" and "who" inquiries are raised and when a thorough and in-depth description of a social phenomenon is required.

Thus, this study adopts single exploratory case study design since the researcher aims to study perceptions, opportunities and challenges of teachers and students associated with E-learning implementation in two rural secondary schools under SarpangDzongkhag. The study is bounded by time, as it occurred over a period of about three weeks.

Sampling strategies and sample size

Non- Probability; Purposive Sampling

The study adopted non-probability sampling because it targets a particular group that does not represent the wider population but itself (Cohen et al., 2018). Hence, non-probability sampling is the best for case study as it would deal with one particular case.

The technique used under non-probability sampling for the study is purposive sampling because it allows the researchers to choose sample that has in depth knowledge about a particular issue. Since case study deals with in depth analysis of the case, it is vital for the researchers to have easy access to the right sample and this can be possible because of purposive sampling. Cohen et al. (2018) illustrates purposive sampling as one of the best techniques for case study.

Sample Size

Two sections of class nine from two rural Middle Secondary Schools under SarpangDzongkhag were the target study sample for the case study selected through purposive sampling. Twelve students of class nine, a focus group of six from each school consisting 3 boys and 3 girls were selected to get information-rich samples.

One ICT teacher, one teacher of any other subject and Principal of the respective schools were selected through purposive sampling.

Data Collection Tools

This research employed the following different data collection tools: Semi-structured Interview (one-on-one with teachers and focus group discussion with students), observation and the analysis of document. The individual purposes, extent and implementation of the three different data collection methods used are discussed in the sections below.

i. Semi-structured Interview

The data was collected through interview with semi-structured questions. The semi- structured questions for the interviews should be designed to enable the respondent to consider and reflect, share thoughts and feelings, and maintain control over the discussion related to the research topic. The fact that the interviewee is in charge of the discussion results in responses that are not influenced by the researcher's interference ensures that the answers are not influenced by the researcher's opinions, feelings, or biases (Cassell, 2009).

Through the interview, the experiences, the opportunities and the challenges of E-learning were explored. In this study, one to one interview was held with teachers whereas the focused group interview was carried out for students.

Focus Group Discussion

A focus group, according to Marczak and Sewell (2007), is a group of interacting individuals who share some common interest or characteristics and are brought together by a moderator who uses the group and its interaction to gather information about a specific or focused subject.

The focus group technique is a type of qualitative research methodology that involves a structured and focused discussion with a small group of people, which is led by a facilitator (moderator) or a moderating team (Prince & Davies, 2001; Marczak and Sewell, 2007) to generate qualitative data through a series of open-ended questions. The word "focus" has a significant meaning: it indicates that the group will discuss a specific issue of interest rather than broad generalities (Boddy, 2005).

Focus groups have the advantage of being able to cover a large number of people in the same group (Wall, 2001), as well as being an effective technique of gathering a huge amount of information and specific perspectives or attitudes (Hines, 2000). Focus groups

have a significant benefit over other research instruments, such as surveys, in that they allow the researcher to delve deeper into the subject under investigation (Barrows, 2000).

In this study, convenience sampling was used to determine 6 mixed group participants from each of classes nine and ten, comprising 24 from the two schools. The participants were seated in quiet libraries and ICT rooms that were ideal for in-depth discussion with the minimum disturbances. As the interviewer posed questions and encouraged the discussion, the interviewees' responses were tape recorded with prior consent.

ii. Observation

During the fieldwork for this research, observational studies were performed. An observational study is designed to allow researcher to observe what is going on in the field. Rather than assuming what is going on, the researcher enters the environment to examine and see for oneself and then record and describe the findings (Patton, 2001).

Four observation types—complete participant, participant as an observer, non-participant or observer as a participant and complete observer—are typically used to describe how involved an observer is in terms of both participating and observing (Creswell &Poth, 2018). For this study, the researcher performed non-participant observation.

In non-participant observation, researchers play a more passive role and do not engage with the study participants as they would in other types of observation. In settings that are pertinent to the research topic, such as when utilizing or providing a service or product, whether it be physical or digital, study subjects are watched. Non-participant observation is frequently used to level out researcher biases in other methods and to highlight differences between people's statements and their actual behavior (Liu &Maitlis, 2010).

For this study, classroom observation is a crucial source of data. The researcher developed a classroom observation tool that made it simple to list E-learning characteristics

and provide narrative descriptions of teacher and student behaviour, passively. The teachers were informed prior to the classroom observations, and mutually decided on an observation schedule (day and date, class, section, period). Teachers were also informed on the methods of recording data.

This study examined the status of E-learning and teachers' and students' attitudes toward it by observing their conduct in the classroom and noting any characteristics of E-learning in the lessons. Non-verbal evidence such as school ICT facilities and infrastructures, internet connectivity and bandwidth, activities that extend to E-learning, students' access to technological devices and school internet facility, and teachers' and students' skills in usage were examined.

iii. Document Analysis

Document analysis is a type of qualitative research in which the researcher interprets documents to give them voice and meaning in relation to a certain subject of focus (Bowen, 2009). According to O'Leary (2014), there are three main types of documents:

Official, on-going records of an organization's actions are known as public records. Student transcripts, mission statements, yearly reports, policy manuals, student handbooks, strategy plans, and syllabi are all examples of documents.

Personal Records: First-person narratives about a person's actions, experiences, and views. Calendars, e-mails, scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers are all examples of documents.

Physical Evidence: Objects observed in the study setting (often called artefacts). Flyers, posters, agendas, handbooks, and training materials are just a few examples. In order to understand the status of E-learning in the two cases under study, documents such as lesson

plans, the period allocation for ICT classes and the incorporation of ICT and internet in the lesson were analysed to further understand the status of E-learning in rural classes.

Data Analysis

Data analysis in qualitative research, according to Bogdan and Biklen (1982), is the systematic search and organization of interview transcripts, observation notes, or other non-textual information that the researcher gathers to gain a deeper knowledge of the phenomenon.

The data from this study were analysed following Creswell's (2012) thematic analysis procedures. The detailed readings of raw data was used primarily to derive themes. The aim of inductive analysis is to find categories and themes in the data (Patton, 2001). In an analytical context, the data was organised, recorded, and structured.

Data gathered from the semi-structured interviews, document analysis and observations were recorded, compiled, transcribed, coded and categorised into themes using colour coding to draw themes for discussion.

Trustworthiness

The trustworthiness of the study was maintained through three means: i. Pilot testing, ii. Member checking, and iii. Triangulation

Trustworthiness helps to enhance transparency and researcher's bias (Singh, 2014) and improves accuracy of the research work. It will also ensure that the data is reliable and collected through reliable methods.

i. Pilot testing

To ensure trustworthiness, pilot testing was carried out with four teachers pursuing Masters in Samtse College of Education and five students of Samtse Higher secondary school. The students went through focused group interview. Pilot testing helps the researcher to analyse the questions for the interview and evaluates if it generates the desired outcome (Stofile, 2008). Pilot testing allowed the addition and deletion of questions as per the requirement of the study.

ii. Member checking

Member checking validates the credibility of results (Birt et al., 2016). Data or results after the interview were transcribed and sent back to the teacher and student participants to check for accuracy and resonance with their experiences.

iii. Triangulation

Triangulation is a method that allows data validation (Noble &Heale, 2019). Triangulation can enrich research where aspects of research will be brought together for analysis and validates each other. In this study, researcher used methodological triangulation and triangulated all the results collected through the different data collection tools. Method triangulation brings together data collected through different means to ensure accuracy (Stofile, 2008). The data collected from semi-structured interview from teachers and students were triangulated to validate the results of the data.

The data collected through the three data collection tools were triangulated to further validate the data. Dang points out that when there is a triangulation in a method, the strength of one method will help overcome the weakness of another method (2015).

Ethical consideration

According to Best and Kahn (2006), ethics is the basis of qualitative research. Research on human subjects raises ethical concerns due to questions that may demand the disclosure of personal and confidential information. Participants must be kept safe from harm, and vulnerable communities must not be exploited (Eide& Kahn, 2008). Participants should be aware that participation is voluntary and that they have the right to withdraw from the study at any time without repercussions (Drew et al., 2008).

This study followed all the ethics of a researcher as per Royal University of Bhutan. Approvals were sought from the Dzongkhag Education Officer, Sarpang to conduct research in the different schools. The principals of the schools concerned were alsonotified and got approval to carry out the research.

The participants' confidentialities were maintained by providing maximum anonymity. The names and the addresses of the participants were protected. Before conducting the interview, the interviewer obtained the interviewee's informed consent to ensure that the interview is conducted in an ethical manner. Before asking for the interviewee's permission to participate in the interview, the interviewer made sure that the interviewee had all of the necessary details about the study, the interview, and his or her rights. The participants were briefed on the research topic and the reason for carrying out the research.

Following the transcription of the interviews, the data was mailed to each teacher participant so they may review it for bias, manipulation, or any other influenced interpretation, maintaining the presentation of the data as accurately and objectively as feasible. The researcher took steps to protect these study data as personal information and to prevent their disclosure to unauthorised persons. A password-protected folder is where the data are hidden.

CHAPTER FOUR: RESULTS

Concept of E-learning

One of the aspects of this study was to look into the teachers' and students' understanding of E-learning.

Six (T1, T2, T3, T5, T6, T7) out of eight participating teachers define E-learning as the use of technology and the internet for teaching and learning. While using social media and applications to teach and learn was the commonly held understanding among students and most teachers, there was some disagreement as to whether E-learning simply applied to learning outside of the classroom, from homes, or if it could be applied even inside of classrooms.

E-learning, according to T4 and T5 is virtual learning or remote learning. Similarly, FG1 and FG4 agreed that E-learning is distance learning. T1 and FG1S3, on the other hand, asserted that E-learning can also be blended learning, which combines traditional classroom contact teaching with internet usage.

T1 asserted:

> When we say E-learning, I believe that it's more of using technology and internet in the process of teaching and learning. It can be blended learning whereby we use textbooks and notebooks in classrooms along with mobile phones or desktop, etc. with internet connection.

Overall, E-learning, also known as online learning or electronic learning, refers to the learning through the use of electronic technologies and media channels. In a simpler language, E-learning is defined as internet and technology assisted learning.

Teachers' and Students' Attitude towards E-learning

Besides examining teachers' and students' understanding of E-learning and deriving concepts, the study also looked at attitude of teachers and students towards E-learning. According to the findings, the majority of the teachers had no prior experience with online teaching before COVID-19. In contrast, only a few of the teacher participants had past experience of teaching online prior to COVID-19. While those who had experience teaching online were either ICT teachers or teachers with a background in ICT, those who had no prior experience did at least have some acquaintance with the online teaching and learning platforms they had used while enrolled in their tertiary institutions.

For an instance, T4 claimed that he had experienced using online platform at college only, where Virtual Learning Environment was used to offer the majority of course materials and assessments and yet he is confident in E-learning due to more advantages. Likewise, T7 stated:

> …I tried to implement E-learning as much as possible and as far as possible so that I can transform my teaching from traditional teaching methods to a modern teaching method. So during this process, if I share my experience I feel that the E-learning is effective in teaching learning process…

Additionally, when teachers were asked about their preference of E-learning tools, frequency of usage and some of the justifications behind adopting those, 75% of the participating teachers (6 out of 8) used Telegram and Messenger while the remaining 25% used Google Classroom, Zoom, and WeChat for their online classes.All the teachers saw more advantages

of E-learning and all claimed to have used ICT tools and media in their teaching and seen the effectiveness of E-learning.

For the majority of the students, taking sessions via smartphones was a new experience. And, most of the students had positive opinions about E-learning, despite their complaints about the insufficient training they had received, network problems in their location, and expensive data packages. To cite some examples:

> "…Sometimes when teachers teach in class, we don't understand what they are trying to teach but through YouTube videos and searching in Google, I understand the steps and idea, so I find that more engaging…" (FG1S3)
>
> "Watching videos where there are different content-based animations. Maybe that is the most interesting." (FG2S7)
>
> "…I think mostly I enjoyed PowerPoint presentations because there are colors, pictures, music and videos." (FG2S8)
>
> I am a scout and our scout leader had enrolled us into a Zoom meeting which I thought was the most engaging one. There were friends from other schools of other Dzongkhags and also scout leaders from other countries. It was very interactive. (FG3S13)
>
> "…I felt great that I was able to search in Google for correct answers whenever I had doubts..." (FG3S15)
>
> "It is fun learning. Without physically meeting friends we can see them as well as we can see our teachers." (FG4S19)
>
> "I like online learning because we don't have to hurry copying notes from green board. It makes handwriting dirty. We can see notes whenever we want again and again." (FG4S20)

Overall, the findings indicate that the majority of the teachers and students have a favourable attitude toward online learning. The teacher participants said it was a transformational – efficient teaching strategy that catered to a variety of student needs. In a similar vein, despite numerous challenges, student participants in focused group discussion cited E-learning's entertaining, engaging, and befitting aspects in modern education.

Opportunities of E-learning

Resourcefulness

The respondents to both the one-on-one and the focused group interviews had a generally positive opinion of the opportunities of E-learning. Over 91.67% of FG participants (22 out of 24 students) and 100% of teachers (T1-T8) acknowledged that E-learning enhanced academic learning with abundant resources online. FG1, FG3 and FG4 unanimously agree that learning online offers them accessibility to abundant and accurate content-based media materials at their disposal.

FG1S3 and FG3S13 find E-learning appealing due to the self-explanatory media resources and interactive media tools. Likewise, FG3S14 and FG4S19, S20 and S21 pointed that the internet is a great resource that students can use for learning. Reasons include ease in searching vast content of any learning topic with sites such as Google and YouTube. T7 supported by stating that:

> "Students can download many learning resources – definitions and examples of concepts."

The usage of a self-explanatory video on "Renewable Energy" from YouTube during the lesson observation (1) on "Impact of Energy derivation from Environment & Bioenergy" appears to have facilitated the learning from the previous session. Following the screening, a question-and-answer session clearly demonstrated that students had a greater comprehension

of the topic. Additionally, at the conclusion of the lesson, students were given a link to another YouTube video that they may watch and then list the advantages and disadvantages of renewable energy.

Most teachers (T1, T2, T3 and T5) affirmed that both teachers and students enjoy E-learning with convenience of more time for effective resources and planning serving the needs of diverse learners. The lesson observed successfully demonstrated use of various resources for teaching and learning. For example, the teacher had PowerPoint presentation prepared with contents downloaded and edited, images and GIFs used from Google and labtoons.com, and videos presented using laptop and projector. If provided the devices and internet, E-learning is easier and faster for accessing learning materials through exploration as stated by FG1, FG2 and FG3.

Flexibility

The most positive aspect of E-learning for rural secondary schools was that it enabled access to education whenever and from wherever. T1 said:

> "Valuable family time, comfort and schedule flexibility come as perks of E-learning implementation."

As commonly mentioned by FG1, FG2, FG3, and FG4, E-learning increased comfort and flexibility for students, who studied from the delivery of online sessions at their own pace without having to walk for hours each day while lugging a large load of books to and from school. One of the students commented:

> As we were learning from home during pandemic time, I got to spend time with parents, to help them with house chores as well as study. I got enough time to complete my homework and with the help of internet and electronic devices like

> mobile phones, it made my learning easier. There was flexibility and comfort in E-learning.

It was identified during an analysis of a lesson plan (1) for the poem "Buddha's Death" that a home task called for students to watch a video that would be shared in the group on Telegram. The teacher's instructions emphasized on urging students to watch the video on their own time in the evening before bedtime and reflect on a few philosophical questions while they rested their heads on the pillow. As a result, a concrete instance of enabling flexibility was apparent.

Moreover, many agree that learning online is having a pleasant hour learning at home with tea or juice, comfortably seated or laying back on sofa or bed and not on hard wooden chair or tables (FG2 and FG3).

Efficiency

The manner that learning is transmitted to students has been completely transformed by E-learning. Learning is made simpler, easier, and more efficient with E-learning than with the old-fashioned chalk and board method.

FG3S16 stated:

> Instead of carrying books and going to teachers for doubts we can sit in the same place and ask our doubts. We can also save time by not walking to school and copying notes. A lot of time can be saved without teachers having to write notes on chalkboard and students copying the same in notebooks. Money can also be saved because teachers and students need not buy stationaries from time to time.

Likewise, T7 stated:

> I prefer E-learning over traditional teaching learning method because it is time efficient. For example, we know that when we teach we have to write lots of things.

So if we prepare a simple presentation, then a lot of time will be saved. So, that way we can teach more in a particular time.

A significant amount of time was saved in one of the lessons observed (lesson observation 2) by the teacher's use of an authentic graphic depiction of eight atmospheric layers. If the teacher had attempted to manually draw the atmospheric layers on the chalkboard or used charts, marker pens, and a lot of time, he would have likely taken up half of the class period and not been as successful as he was after downloading the labelled diagram of the atmospheric layers captured from space. Additionally, FG1, FG2 and FG3 favoured use of media platforms more due to its ability to intake as many members as hundreds in a group and yet be efficient in sharing any file formats. Students can revisit shared notes and instructions whenever, no matter how many ever times. Also, apps like Messenger, Telegram and Zoom support face-to-face online interaction.

E-learning enables instant learning through digital devices and the internet. As a result, both teachers and students can save a huge amount of cost and time. Information delivery has become easier and faster. Students can learn at their own pace and access content whenever and wherever they need it by going back to shared notes and instructions as many times as necessary.

Self-paced Independent learning

Most teachers (T1, T5, T6, and T7) asserted that the E-learning has promoted independent learning. For example, T6 opined:

"The advantage of online learning was that students could get ample time to work at their own pace and independent learning with abundant exploration on their own was fostered."

Also, T1 expressed:

"I feel there are more positive sides because when we send them materials to learn by themselves, it is kind of self-exploration whereby they're not depending on teachers. They do it themselves. Somehow they become independent learners."

Similarly, during the focused group discussion with students, FG1S3 added that E-learning was appealing due to the self-explanatory media resources and interactive media tools. Regarding this, FG3S13 also stated:

> Some apps like DDC Dictionary (Bilingual Dzongkha-English dictionary), English dictionary, Poems and Essays apps and YouTube and Google helps in independent learning and academic growth.

As seen in the lesson observation (lesson observation 2), one of the home tasks given to students allowed for the opportunity for self-learning and exploration. It involved taking notes on the eight atmospheric layers of the earth using an internet-enabled smartphone to visit https://climate.nasa.gov/news/ 2919/earths-atmosphere-a-multi-layered-cake/ and read at one's own convenience.

Self-paced independent learning emerged as one of the benefits of online education since students can actually learn at their own pace and in any way they like. They are free to spend as much time as necessary and review any material at any time.

Eco-friendly way of Learning

The environmental benefits surfaced as one of the gains of E-learning. As E-learning is a paperless way of learning, it protects the environment to a lot of extent. As per FG3S13:

> If we all use smartphones and internet, we don't have to use textbooks and notebooks, and trees will be not cut. If we learn from home and need not go to school, we can save lots of trees that go into manufacturing tables and chairs.

Online education also lessens the damaging effects of manufacturing and transportation on the environment. The need of textbooks, notebooks, tables and chairs that are necessary in typical educational institutions can be drastically reduced.

By the same token, when probed with the question "What are the benefits of E-learning?" T8 claimed that many of teachers drive their cars to school from home and back. With online learning in full swing, the use of fuel and pollutions from emissions can be hugely reduced.

Natural resources can be preserved and wastes can be decreased. Thus, E-learning is a very environmentally friendly method of education.

Challenges of E-learning

Inadequate ICT Infrastructure and Facilities

One of the challenges to the adoption of E-learning is inadequate ICT infrastructure and facilities. The importance of infrastructure in the implementation of E-learning became abundantly obvious. Infrastructure including computers, networks, and internet access, as well as computer labs, were mentioned by respondents as being insufficient to serve the large number of students.

Every student participant in FGD expressed that the common challenge faced that needs to be improved is accessibility to adequate infrastructure and facilities at school (FG1, FG2, FG3 and FG4). Further, FG3S14 stated that there is disparity in accessibility to ICT infrastructure and facilities between rural and urban schools:

> Many of our teachers here say that when we go out to other school from here, we'll see many differences. We are class ten, and for same level of students, the quality and standard set is different while we have to appear same board exam paper. There's no equal learning opportunity. So that's why the facilities provided also should be the same. I am sure that students of urban areas are more favoured with more facilities and high speed internet connections…

In addition, FG1S1 and S6, FG4S19 and S23 also agreed on the note that there's disparity between rural and urban schools in terms of ICT infrastructure and facilities and learning opportunities.

Even during one-on-one interview with the teacher participants one of the teachers mentioned:

> …It doesn't have ICT facilities that should be in a Middle Secondary School. Like I shared before, we just have one projector for which all the teachers rush and book early. Teachers try to bring students to ICT lab but ICT is a major subject itself and there are about 30 to 40 ICT periods in a week for classes PP to X. It is almost always occupied. (T1)

Evidently, as soon as the session started, the teacher was seen rushing to assemble and enable screening tech tools like laptop, projector, extension cord, and white cloth made from a simple curtain cloth in both of the lessons that were observed. These tools were used to facilitate learning using YouTube videos and presentation contents. Thus, it was observed that inadequate ICT facilities was one of the hindrances to E-learning.

The majority of the teacher participants expressed that to the core of successful E-learning implementation is adequate ICT infrastructure and facilities in schools followed by students' accessibility to smartphones and internet in school and beyond (T1, T2, T3, T4, T5, T7 and T8).

For example, T8 emphasized:

> "The most important thing to consider is accessibility to facilities like enough computers and projectors, students also should have smartphones if the online learning should take place beyond classroom."

FG1S3 also further pointed:

> "…we have more students in a class than the number of computers and several computers already need repairing, and so we fail to get enough hands-on practices…"

T1, T3, T5 and T8 stressed on the need for the Ministry of Education to study ground realities, especially the schools and the infrastructure in rural areas before bogging down teachers with their standards like Bhutan Professional Standard for Teachers (BPST) that has highly prioritized ICT usage.

T3 and T8 further emphasized that only after having all the requirements for E-learning provided, then should Ministry of Education standardize ICT curriculum and anticipate success stories.

Devices and Data Unaffordability

Most of the students expressed costly internet and technology to be the prominent challenge in accessing E-learning materials. Unaffordability of smartphones and data exhaustion is recurrent in the view of every participant.

In the interview, according to T4, T5 and T8, affording a smartphone for students from poor backgrounds in rural areas is difficult. Worsening the scenario is a phone per child since every child of different levels in the family will have a session during the allocated periods. When asked teachers if they enjoyed E-learning, T1 claimed:

> At this moment, I think it also depends on the situation and the locality. I will say that E-learning was not effective in our locality and I didn't enjoy it. Most of the students are farmers' children, they can't afford devices and data package and never comes online.

T1 further shared an incidence:

> Let me share you an incident – I have a student who I asked to come to school with his parents to explain why he is absent in all the online session. His father showed me a Nokia keypad phone and also said that his village doesn't have electricity yet. He said he has to walk to another chiwog to charge his phone. So such pathetic situation, I am sure, won't be in town areas.

Similarly in FGD, many students raised that unaffordability of data package for internet posed as a huge difficulty to learning online. For example, when asked for reasons why they missed online sessions, FG4S23 raised:

> "… I could not attend 100% attendance due to data exhaustion and unaffordability. The mobile was there in my hands, but I had no data. And my parents scolded me for finishing data."

Power Fluctuations and Network Issues

One of the impediments to the effective implementation of E-learning is power fluctuations and connectivity problems. Constant power fluctuations and poor network connectivity in the rural area pose massive challenge to E-learning (T2, T3, T4, T5, T7, and T8). For example, T8 revealed:

> "Sometimes because of frequent power fluctuation, the teachers are in frustration as it affects the conduct of the classes."

T5 supported with the grievance:

> "It is especially during the peak monsoon seasons from May end until September end that the constant power fluctuations occur and network connectivity is disrupted."

Similarly, FG1S1, FG2S8 and FG3S17 raised that the constant electricity fluctuation hinders use of ICT tools and media for teaching and learning. Exhaustion of phone batteries and suspended internet and network connectivity are common in rural areas.

Next in line is the network coverage issue in the locality. There is constant fluctuation in network hindering the internet connection and hence the accessibility to E-learning resources. (FG1S5, FG2S10, FG4S19).

These findings also suggest prevalent digital divide that urban areas have greater access to high-speed internet and less frequent power fluctuations than rural areas.

Therefore, apace with the necessary establishments, there is a need to address power fluctuations and poor network connectivity issues. (T3, T7)

Lack of Training and Skills

The results suggest that 53% (17 out of 32 respondents) of the interviewees believe that the teachers' and students' lack of exposure to and technical proficiency with E-learning and e-resources is impeding the implementation of E-learning. Below are some of the comments from respondents:

> "Moreover, technical faults like limited phone storage and phone hang are unavoidable in the hands of learners with no exposure or experience or training and skills of using tech gadgets." (FG1S5)

Likewise, FG1S3, FG2S9 and S10 raised that it was their first time experiencing learning using internet, technology and media platforms as well as lack of training and skills resulting in remote feeling while accessing E-learning materials.

T6 stated:

> E-learning came ad hoc and ICT teachers could only give a bit of briefing and hands-on practice on certain apps to both teachers and students. For example, during COVID pandemic, both teachers and students faced difficulty in using Google Classroom app because of the lack of training.

Correspondingly, FG1S1, FG2S7 and S10 and FG3S15 declared that it was their first time learning online during pandemic and that they weren't prepared and neither did they receive adequate briefing or training on the media they were going to use.

In lesson observation 2, the teacher was noticed to provide clear instructions on how to follow a "Quizlet" for the students' formative assessment, but many students raised questions about the process, and the activity ultimately failed to achieve its goals, taking up the entire class period. Hence, this proved that both teachers and students need more exploring and practice on using E-learning platforms.

Furthermore, FG4S23 claimed that there needs to be familiarization and practices on more new learning apps. In line with that, teacher participants reported that both teachers and students need to be provided trainings to prepare them for anymore unprecedented circumstances that demands online learning. (T1, T3 and T6)

Lack of Support and Monitoring

Lack of support and monitoring was another challenge students faced with E-learning. Majority of the students felt less motivated to learn and least enthusiastic about E-learning

method since they neither got to interact one-on-one with teachers nor received required parental guidance.

Most FGD participants agreed that they have had least to no interaction with teachers' individual attention or friends' (FG2S7 and S9, FG3S13 and S18, and FG4S19, and S21).

FG3S18 elaborated:

> …When we asked our doubts through voice mesSAGEs, it took so much time to send our mesSAGEs and also many students sent many voice mesSAGEs at the same time, so we either got less responses from teachers or no response at all.

In addition, one of the teacher participants shared:

> "I heard from parents saying that their children instead of indulging themselves in studying, most of them play games and watch YouTube and Facebook in mobile phones. In a week, they spend more than 600 data package". (T4)

Similarly, FG2S7 pointed that students tend to get easily distracted or lose focus from intended learning due to online games and media like YouTube videos and Facebook feeds. To which T2 and T8 reasoned as most parents in the rural areas being illiterate failed to provide necessary support and monitoring. FG3S13 also alluded that most of them lacked parents guidance too since they were illiterate.

Domestic commitments were cited by two members of each FG as one of the struggles experienced by students who lacked parental support and guidance. Students are occupied with house chores, in agricultural fields and grazing cattle (FG1S1, S2, FG2S11, S12, FG3S13, S18, and FG4S21 and S22). The response below from one of the teacher participants confirms that the domestic commitments are evident:

> …and when we call to inform about class, they respond saying they are in the forest looking after cattle. Students did not have any option. They had to look after cattle, most parents are illiterate and work in the field and get drunk at night. Students don't get necessary support.

Further, he pointed:

> Maybe if I was in town areas where the parents are literate and most civil servants with all requirements for online learning at hand, I would have enjoyed the success of online teaching. Here, it wasn't effective and most teachers, including me, were only complaining about student attendance and lack of parents' guidance. (T1)

The aforementioned incidence, which T1 reported, points to disparity in parental guidance in urban and rural areas, from literate and illiterate parents, respectively. Therefore, T1, T6 and T7 also believe that parents of the students must be advocated on productive use of mobile phones in E-learning and monitoring.

Also, T5 said that the administration of the school prohibited the use of smartphones on campus and that if any students were caught using one, their phones would be taken away and returned only at the end of the academic year. T3 adds that the school administration must be supportive in developing policies for enhanced ICT usage and ensure procurement and establishment of all necessary infrastructure and facilities.

The findings, in general, highlight the vital roles that parents, teachers, and administration play as key enablers for the successful implementation of E-learning. It is seen to be of utmost importance to understand and relay to students the support and guidance they need to sustain online learning.

Social Isolation and Health hazard

The data's findings also highlight the prevalence of feelings of entrapment and boredom, and eye strain among students because of prolonged use of digital devices in self-isolated state.

FG1S5 and S6 believed that social contact had been negatively impacted by online learning. The respondents reported that lack of personal interactions with friends and teachers were the negative effects of the required social isolation while learning online during the COVID-19 pandemic, which was followed closely by boredom and loneliness.

As per FG4S19 and S23, what makes it even worse for E-learning is the fact that it brings along the risk of declining focus and concentration from studies due to games and other media, and health issues emerging from screen dependency. FG4S23 further added:

> "It also leads to some health problems like eye problems when we watch mobile for long time. At one time my sleeping time changed and it became a habit that I slept only at around 1 or 2 A.M. I suffered from headaches in the morning during online classes that started from 8:30 A.M."

CHAPTER FIVE: DISCUSSION

Introduction

This study examined the opportunities and challenges of E-learning implementation in rural secondary schools under SarpangDzongkhag. The study collected data by using data collection tools that were complementary to each other which included semi-structured interviews (one-on-one with teachers and focused group discussion with students), observations and document analysis. The key study findings are discussed and interpreted in this chapter in relation to pertinent literature. Four major themes – concept of E-learning, teachers' and students' attitudes toward it, as well as its opportunities and challenges – will be the focus of the discussion.

Concept of E-learning

The findings revealed that E-learning is commonly understood by both teachers and students as a form of internet and technology-assisted learning. The definition agrees with Koohang and Harman's (2005) definition of E-learning, which states that it is the delivery of education - all activities pertinent to instructing, teaching, and learning, through various electronic and social media.

While the majority of teachers and students believed E-learning to be use of internet enabled devices to teach and learn, there arose an uncertainty for discussion - whether E-learning only refers to online learning or if it can also be integrated with in-person teaching and learning. However, Allan (2002)'s broader definition of E-learning clarified the uncertainty that states that E-learning can be blended learning in which the learner engages in

both face-to-face and online activities. This definition describes internet and technology as an important addition to the traditional learning environment.

Teachers' and Students' Attitude towards E-learning

The majority of participants revealed that E-learning was unprecedented and pandemic-driven. Findings indicated that both teachers and students had positive and promising attitudes regarding E-learning because of its massive advantages and engaging aspects, despite the fact that they had little to no prior experience with it. According to the literature study, it's crucial to have both teachers' and students' favourable attitudes about E-learning in addition to fulfilling the requirements for E-learning, such as having access to ICT tools, networks, and trainings. This is entirely consistent with Koohang and Durante's (2003) assertion that attitudes of both teachers and students are crucial to motivation and learning.

The findings of this study, which show that teachers and students have positive attitudes toward E-learning that are unaffected by gender, subject taught, or location, are in line with those of a study conducted by Kar et al. (2013) on the "Attitude of University Students Toward E-learning in West Bengal," which found that students' attitudes toward E-learning are positive and that they are unaffected by personal factors.

The findings of this study are consistent with Mamattah's (2016) study on "Students' Perceptions of E-learning" in Ghana, which found that the majority of students believed E-learning was an innovative notion that should be supported and that educational institutions should invest more in systems that promote E-learning.

Opportunities of E-learning

This study highlights opportunities of E-learning, which showed that online learning helped ensure continued learning providing students convenient access to teachers and

teaching materials during the COVID-19 pandemic as indicated in a study by the Commission of Higher Education (2020) stating that E-learning guarantees the continuation of inclusive and accessible education when traditional modalities of instruction are unavailable, such as in the event of national emergencies.

The study showed that online learning is a comfortable and effective way to learn. Most research participants—teachers and students—agreed that online learning provides access to a wealth of educational resources that can be accessed from any location at any time of the day. This finding is consistent with those of Schweitzer (2008) and Cruther (2008), who found that online learning provides ready access to a large and increasing internet library as well as time and place independent access to the sources and contents of learning materials.

One of the findings also showed that E-learning promoted independent, self-directed learning for students. With the use of interactive media platforms and self-explanatory educational media resources, students can effectively learn at their own pace. This finding is in accordance with Boulton's (2008) research, which showed that students acquire new skills including determining their own learning pace, becoming independent learners, and taking ownership of their learning.

Another promising finding was the environmental benefits as one of the gains of E-learning. It revealed that the negative environmental effects of manufacturing and transportation are reduced by E-learning. It is possible to significantly minimize the amount of textbooks, notebooks, and furniture that are required in schools.

Challenges of E-learning

The findings showed that while teaching and learning online, both teachers and students encountered challenges. These difficulties include inadequate ICT infrastructure and facilities, expensive devices and data, power outages and network connectivity issues, a lack

of training and skills, a lack of support and monitoring, and social isolation and health risks. Relevant agencies should take into account this list of challenges by exploring remedies before implementing E-learning. The transition from in-person to online learning was viewed as challenging by both teachers and students. This presents a significant issue because the majority of developing nations, like Bhutan, are ill-equipped to deal with sudden crises that we have never experienced before.

ICT infrastructure and facilities plays greater role in determining the success or failure of an E-learning system. The present findings confirm that ICT infrastructures and facilities in schools is a huge challenge in successful E-learning implementation. This is basing on the fact that, E-learning depend on ICT tools like availability of enough computers to students and teachers. Overall, these findings are in accordance with findings reported by Aung&Khaing (2015) that most developing countries face many challenges in applying E-learning including shortage of key E-learning components such as ICT facilities, network infrastructures, electricity, and ICT training and skills as a result it is difficult to excel. In this context, there is a need to provide adequate infrastructure and facilities.

In addition, the majority of student participants complained about a lack of support and monitoring: parental support, individualized attention from teachers, and consent from administrators for unrestricted use of smartphones and the internet on school grounds. Similar to this, Baticulon et al. (2020) noted in their findings that the most prevalent challenges to online learning are having to fulfil obligations at home and inadequate or unclear directions from teachers. This is in line with Nima's (2020) findings, which revealed that children are expected to help parents who are mostly farmers with their work, whether it be housework, babysitting, grazing cattle, or working in the field. Therefore, there is a need for advocacy for parents, many of whom are illiterate farmers, to encourage and monitor their children's beneficial use of smartphones and data. Further, the schools must ensure that there

is a significant amount of online interactions between teachers and students that provide individualized attention.

Participants of the focused group discussion also stated that screen time with devices and the lack of immediate communication made online learning socially difficult and detrimental to their health. In order to keep children safe and socially engaged, schools and parents must collaborate in order to manage and monitor their screen time and social time.

The study also showed that disparities between monetarily abled and disabled, rural and urban, and parental guidance in advising and monitoring regarding age-restricted websites, educational apps, and screen time accentuate inequity in education through online learning. Evidences of this digital divide is apparent in students' affordability of necessary technological devices and data, accessibility to infrastructure and facilities in rural and urban settings and massive difference in parental guidance toward students. This finding is in line with Kearsley's (2002) finding which indicated that a sizeable proportion of the population still lacks access to the Internet or the required ICT skills and that there is a serious concern about fair access in terms of owning devices with parents support. E-learning is therefore not for everyone in most countries. Similar to this, Macleod (2005) found in his findings that it takes time for technology and development in poor countries to reach the entire population. As a response, there is a need to gradually provide every school with the necessary resources and training, as well as to advocate for parent ICT literacy.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

Introduction

This study's primary objective was to investigate how teachers and students viewed E-learning and the opportunities and challenges that came with implementing it. The study looked at the status of E-learning in rural secondary schools under SarpangDzongkhag. The study adopted a case study methodology, and the data were gathered employing instruments like interviews, observations, and document analysis in order to meet the study's aims and provide answers to the research questions.

Summary

The study showed that, despite various challenges, the majority of teacher and student participants have a positive attitude toward online learning because of its potential benefits. With easy access to a myriad of online materials, E-learning promotes flexible, independent and efficient learning. The study suggests that schools should practice blended learning, which involves combining online resources with traditional classroom instruction to increase E-learning practice and participation.

Another finding showed that the major challenges for students in rural secondary schools under SarpangDzongkhag were costly devices and internet access, lack of support from schools, and parents, and poor facilities. The student's online learning progress was also hampered by limited digital expertise. According to the study's findings, it is strongly recommended that students be equipped with the digital tools and reasonably priced internet they need to overcome their learning challenges and maintain their smooth transition to E-learning.

Findings from focused group discussion with students revealed a concerning issue that the lack of immediate communication deprived students off their social time. The findings also showed that if students' screen usage is not promptly regulated, it could have a negative impact on their health. It is recommended that schools and parents work together to educate parents on how to monitor device and data consumption in order to regulate and monitor their children's screen time and social time. This will help to keep children safe and socially engaged.

The "digital divide" is a specific issue for E-learning approaches in rural areas, where internet access is frequently inconstant. Therefore, to bridge the digital divide between schools in urban and rural areas, there is a need to establish a clear plan and carry out rigorous assessments of ICT infrastructure and facilities and network coverage in schools.

Limitations of the Study

This study has a number of limitations. Firstly, only students of classes nine and ten were taken for the study. If students from other grades had participated, the study's conclusions would have been more informative and revealing.

Secondly, the study was limited to participants from the two rural secondary schools under SarpangDzongkhag. The following study on the opportunities and challenges of E-learning implementation ought to compare schools in urban and rural settings.

Thirdly, the outcomes of this study may not apply to Bhutan's larger population because it only looked at two rural secondary schools under SarpangDzongkhag.

Recommendations for Future Research

Based on the findings of the study, few recommendations are provided. Firstly, although many aspects of the study's methodology worked well and had substantial resources, the time commitment required for the complete participation was overestimated. Future researchers are recommended to allocate time wisely between visiting the study area and collecting data.

Secondly, as the participants of the study had only experienced E-learning during the pandemic and little practice after the pandemic, their experience and attitude may not be reliable. It might be possible to gain deeper understanding of the varied attitudes of teachers and students by researching the population that participates regularly in online learning.

Thirdly, a qualitative case study methodology was used in this study. Future studies could employ different methods of research approach and strategy to develop a thorough grasp of the state of e-learning in rural secondary schools as well as the opportunities and challenges that come with its implementation.

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