

**Online teaching learning mode for mathematics in primary schools
during pandemic: Teachers' perception and practice.**

By

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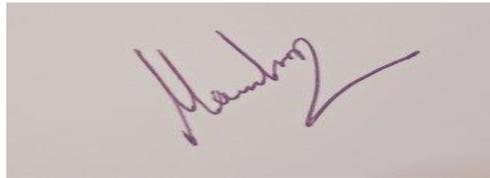
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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Approval

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Ethics Statement

I submitted an ethical permission form to BRAC University and received approval before beginning data collection

Taking consents, comfortability with the interview questions, and secrecy of the participants' identities were all ethical challenges and concerns in this study. For the first concern, all participants received more than just a consent form. Each participant was given a permission form that explained the study's goal and the researcher's involvement. After thoroughly discussing all of their concerns, all of the participants signed the consent form. In the meantime, a few questions may have made participants feel uneasy when replying because the responses may remain confidential. The participants were given the flexibility to avoid any questions they felt uncomfortable answering throughout the interview. Another concern that emerged was the privacy of the respondents' identity. It was also made clear that their identities would not be revealed in public or in the research article. All of the talks were taped and transcribed in accordance with ethical guidelines.

Abstract

The goal of this study was to find Government primary schools teacher's perception and experience on online teaching learning mode during covid-19 pandemic. While suddenly transitioning to online classrooms continues to be met with uncertainty and optimism, recent actions have demonstrated mixed attitude toward this mode, demonstrating the potential of online classes with certain areas to address and difficulties to solve. To get into depth of teacher's perceptions the key questions are broken down into themes and sub themes. This study can help Government Primary School Teachers identify the shortcoming of remote learning and establishing strategy to improve those. The investigation was conducted in a qualitative manner. One-on-one interviews and Focus Group Discussion (FGD) were performed to collect data, and the findings were analysed using the thematic analysis approach. The founded data narrowed down from experienced teachers of two primary government school and I believe the thoughts, experiences, and ideas of stakeholders that might be useful in maximizing on and implementing this mode in the next days. The found data form research suggests even if online teaching is not completely new across many places around the world, I assert that it is a new experience in Bangladesh with very missing practice, which would need some modifications, riffs, and specific requirements on the aspect of the respective authority to make the mode an effective analysis to teaching-learning in the ongoing crisis.

Keywords: Online Teaching Learning, Covid-19, Pandemic, Mathematics, Perception, Challenges, Experience.

Dedication

This Thesis is dedicated to my whole family, who gave their utmost support to make sure that I can give my best to work with newborn.

Acknowledgement

First and foremost, I am grateful to Allah for all of his help and guidance. Then, I'd want to express my appreciation to Abdullah Al Mas-ud sir, my adviser, for his constant help during the whole journey. I'm also grateful to Israt Jahan Ma'am for all of her suggestions as an external expert examiner on my thesis. My heartfelt appreciation to all of the Government Primary School teachers who willingly participated in the study as participants. Finally, I want to express my gratitude to my husband, younger sister, friends, and coworkers who assisted me with numerous resources and logistical assistance during the process.

Table of Contents

Declaration	i
Approval	ii
Ethics Statement	iii
Abstract	iv
Dedication	v
Acknowledgement	vi
Chapter 1: Introduction and Background	01
1.1 Introduction	01
1.2 Research Topic	02
1.3 Statement of the Problem	02
1.4 Research Questions	03
1.5 Research Purpose	04
1.6 Significance of the Research	04
Chapter 2: Literature Review and Conceptual Framework	06
2.1 Online Teaching Learning and Covid-19 Pandemic	07
2.2 Teachers' Perspective and Role on Remote Learning.....	07
2.2.1 Experience of Teaching on Online Platform.....	08
2.2.2. Teachers' Perspective About Online Teaching Learning.....	09
2.2.3. Coordinating and Designing Class Activities on Online.....	09
2.2.4 Class Monitoring and Feedback Process on Online	10
2.2.5 Providing Support to The Students	10
2.3 Feasibility of Remote Learning in The Contest of Bangladesh	11

2.4 Challenges Faced to Conduct Mathematics Class Online	12
2.5 Strategies to address the challenges	12
2.6 Receiving Support from Relevant Stakeholders.....	13
2.7 Conceptual Framework	14
Chapter 3: Methodology	15
3.1 Research Approach	15
3.2 Research Site	16
3.3 Research Participants	16
3.4 Sampling Procedure	17
3.5 Piloting	18
3.6 Data Collection Method	18
3.6.1 Semi-structured in-depth interview.....	18
3.6.2 Focused Group Discussion (FGD).....	19
3.7 Role of the Researcher	21
3.8 Data Analysis	21
3.9 Ethical Issues and Concerns	22
3.10 Credibility and Rigor	23
3.10.1 Credibility	23
3.10.2 Transferability.....	24
3.10.3 Dependability.....	24
3.10.4 Confirmability	25
3.11 Limitations of the Study	25

Chapter 4: Results	27
4.1 Findings.....	27
4.1.1 Online Teaching Learning and Covid-19 Pandemic	28
4.1.2 Teachers’ Perspective and Role on Remote Learning.....	28
4.1.2.1 Experience of Teaching on Online Platform.....	28
4.1.2.2. Teachers’ Perspective About Online Teaching Learning.....	29
4.1.2.3. Coordinating and Designing Class Activities on Online.....	30
4.1.2.4 Class Monitoring and Feedback Process on Online	31
4.1.2.5 Providing Support to The Students	31
4.1.3 Feasibility of Remote Learning in The Contest of Bangladesh	32
4.1.4 Challenges Faced to Conduct Mathematics Class Online	33
4.1.5 Strategies to address the challenges	34
4.1.6 Receiving Support from Relevant Stakeholders.....	35
4.2 Summary of Findings.....	36
Chapter 5: Discussion and Conclusion	38
5.1 Findings.....	38
5.1.1 Online Teaching Learning and Covid-19 Pandemic	38
5.1.2 Teachers’ Perspective and Role on Remote Learning.....	39
5.1.2.1 Experience of Teaching on Online Platform.....	39
5.1.2.2. Teachers’ Perspective About Online Teaching Learning.....	39
5.1.2.3. Coordinating and Designing Class Activities on Online.....	40

5.1.2.4 Class Monitoring and Feedback Process on Online	41
5.1.2.5 Providing Support to The Students	41
5.1.3 Feasibility of Remote Learning in The Contest of Bangladesh	42
5.1.4 Challenges Faced to Conduct Mathematics Class Online	42
5.1.5 Strategies to address the challenges	43
5.1.6 Receiving Support from Relevant Stakeholders.....	44
5.2 Conclusion	44
5.3 Recommendation	46
References	49
Appendices	58
Appendix A. Consent Letter.....	58
Appendix B. Interview Guideline.....	59
List of Figures	
Fig 1	14

Chapter 1: Introduction and Background

1.1 Introduction

Covid-19 is a complicated deadly virus which has brought crisis to human life from all aspects including education sector. Remuzzi and Remuzzi (2020) says, this highly infected virus disease originated at Wuhan city of China spread worldwide rapidly considered as pandemic as it created global crisis since centuries in history (Remuzzi & Remuzzi, 2020). UNESCO (2017) report says (cited in Mishra et al. 2020) that, nearly 264 million children are out of school and the pandemic makes it worse (Mishara et al. 2020). This outbreak leads the educational institutions to shift on online teaching learning platforms says by Preez and Grange (2020). Authors says planning a course suddenly for face-to-face teaching online is difficult than designing a long-term online course. In this crisis moment distance teaching has been a strenuous task for institutions and teacher to implement who actually comfortable in physical contact teaching (Preez & Grange, 2020, p. 93). Previously online teaching learning considered as informal education but, in this pandemic, it turns into formal setup. This research paper is mainly going to explore two important things. Firstly, the stability, compatibility, and feasibility of digital platform specifically in primary education level. Another part is teacher's sudden experience of shifting the teaching platform regarding mathematics and strategies they have adapt to adjust. It will create an opportunity for future researcher weather online teaching learning is going to work in Bangladeshi context which have been considering for digital Bangladesh.

1.2 Research Topic

Online teaching learning mode for mathematics in primary schools during pandemic: Teachers' perception and practice.

Beginning of the year suddenly Covid-19 a deadly virus strikes and rapidly spreads too worldwide. It's just not threatening the health and lives of people but also creates impacts on other sectors like economy, education, communication and more. Like other countries this virus spreads in Bangladesh as well. After long lockdown people and government takes initiatives to adjust with new normal life with restricted movements. I have chosen this topic because as a teacher I have experience online teaching learning mode with primary level students during this pandemic. Bangladesh government has taken initiative to keep the education sector active by distance learning. From teachers' perspective I would like see how this digital platform of online teaching learning works in case of mathematics. This is for the first-time teachers has attempts this mode to teach. Bangladesh government plans to makes digital Bangladesh with involving ICT and technology. This study is to explore the experience new mode of teaching mathematic.

1.1 Statement of the Problem

The education system of Bangladesh is always been very divers and follows specific set of traditional curriculums for long. Teachers already been struggling with the system but newly added digitalize education platform make it more intensive. Chowdhury and Sarkar (2018) states that, to adjust with rapid changing globalized world Bangladesh has faced modification in education system. The changes have faced criticism for failing to ensure quality, equity in access, assessment, and curriculum (Chowdhury & Sarkar, 2018). Most of us aware and victimized by the Covid-19 virus attack, it has created suffocative and challenging time for every

human in the world. From developing countries Bangladesh is not out of the list. With previous existing crisis it's added more instability. Due to social distancing and safety educational institute of whole Bangladesh is closed for long time. Bangladesh government has taken initiative to open online platform for teaching learning but technological and economical barriers make it slow to get best output compare to developed countries. This new platform of teaching learning has great impact on learning process. Two main factors affect the learning process are lack of practice of technology in teacher and uninterrupted internet connection. Author feels the sudden cut of internet and electricity in rural areas hampered teaching learning process results drop in motivation and participation (Mondol & Mohiuddin, p. 242). Ruoslahti (2020) states, time to prepare the lesson in completely new pattern and accommodating so many students in one call was challenging and pressurized for a teacher (Ruoslahti, 2020). There is ongoing argument regarding the quality of online teaching. Teacher and students are just being forced to adjust in a new platform.

The study focused to know about teachers teaching experience during this outbreak and being part of growing sector of developing country. The main interest is to know the struggle of adjusting in the system and platform where already existing system was struggling to work on.

1.4 Research Questions

Key Question 1:

How do teachers perceive digital teaching learning modes for mathematics during covid-19 pandemic?

Key Question 2:

How do the teachers design the teaching learning process to achieve learning objectives through digital modes for primary grades mathematic skills?

Key Question 3:

. What are the challenges faced by the teachers to conduct mathematics classes online?

1.5 Purpose of the Study

The purpose of the study is to explore and find out teachers' perspective and experience on online teaching learning mode for mathematics during covid-19 pandemic. Adapting completely a new online platform teacher has to face many barriers and challenges. To respond to covid-19 pandemic Bangladeshi government has taken initiative and strategies to minimize the gap on education. UNICEF (2020) states (cited in Farhana et al. 2020) that, 42 million students are out of class and depending on online teaching learning platforms (p. 97). It moves the teaching learning system from physical to online. Without having any prior knowledge most of the teacher has started adapting and responded in GOB plans with available gadgets they have. The main goal is to see teacher acceptance, adaptability, and strategies to adapt with this new experience. The challenges faced by teacher will come out by this with possible solution for future recommendations.

1.6 Significance of the Study

The topic is decided to explore is really new in national and international context. From personal experience as teacher, I have faced similar sort of situation which inspired me to explore other teacher's experience on same platform. From the literature review it can be found that online teaching learning is new concept, which whole world is trying to adapt to increase mobility. The results of the study can be used in future to see the flexibility and adaptability of the remote teaching in the context of Bangladesh. On this same topic so many research has been conducted but in the context of Bangladesh few research can be found which creates a scope to

future study. The angle and factors I want to investigate from the view of implementing digital learning in near future. Future researcher will be benefitted by the findings. The research will create an opportunity to show future consistency of digital online teaching learning.

Chapter 2

Literature Review and Conceptual Framework

In this this chapter, I have reviewed different type of literature from different sites. I have used secondary sources like journals, research paper, articles, websites, and books to understand and evaluate my research topic from different research perspective.

In this literature review, I have reviewed teacher's perception on online teaching learning process of mathematics in the pandemic under the different themes. The categories are given below-

2.1 Online Teaching Learning and Covid-19 Pandemic

2.2 Teachers' Perspective and Role on Remote Learning

2.2.1 Experience of Teaching on Online Platform

2.2.2 Teachers' Perspective About Online Teaching Learning

2.2.3 Coordinating and Designing Class Activities on Online

2.2.4 Class Monitoring and Feedback Process on Online

2.2.5 Providing Support to The Students

2.3 Feasibility of Remote Learning in The Contest of Bangladesh

2.4 Challenges Faced to Conduct Mathematics Class Online

2.5 Strategies to Address the Challenges

2.6 Receiving Support from Relevant Stakeholders

2.7 Conceptual Framework

In this chapter, I have connected the research query of online teaching learning platform for mathematics with others works, then break down and organized them into sub themes. This new

platform has been compared in the context of the Bangladesh from the view of teachers. Based on the whole study a conceptual frame work has been established.

2.1 Online Teaching Learning and Covid- 19 Pandemic

In this 21st century the internet is playing greater role in our daily lives and managing how we educate, learn, and socialize. From Sadiku et al. (2018) article presents current and history of online teaching learning. Now a days internet is using as platform for education purpose. Currently online teaching learning takes over the education. In 1800's distance teaching learning has initiated in United States. Online teaching learning set up in such way that learners can connects virtually and easily. Online teaching can be fruitful if students need can take into consideration. Online teaching learning comes with challenges and opportunity. It is flexible and benefitted for students and teachers both. Underdeveloped countries students cannot effort online teaching learning due to less of connectivity with technology and internet access (Sadiku et al., 2018). According to Sadiku et al. (2018), "Issues facing an online instructor include being effective in delivering the course, responding to student emails, getting used to the online tools and infrastructure" (p. 74). Its effectiveness in terms of collaboration is been questioned compare to traditional setup classes. Additionally, in international context online teaching learning during Covid-19 pandemic put students and teacher in unpredictable situation. A case of Indonesia presents teachers view on teaching mathematics online and its barriers during covid-19. Online teaching learning has two order obstacles like access, technical, and hardware, and another is pedagogy, personal acceptance and inclination (Mailizar et al., 2020, p.3).

2.2 Teachers' Perspective and Role on Remote Learning

The key role player of online teaching learning process is a teacher. Czerniewicz (2020) says, during covid-19 pandemic social distancing is mandatory, it will be crucial for teachers to keep connection with students in virtual platform to activate education sector. Koohang and Durante (2003) says, human witness faster progress in e-learning platform but it is in trial stage. The author enforced that the motivation and learning on online platform solely depends on role played by a teacher and their view and attitude towards it (Koohang & Durante, 2003).

According to Sims et al. (2002), conducting online class mostly depend on teachers' capability as some teachers might not have the skill to teach online (Sims et al., 2002). Buddhini and Charlotte (2016) added that Cultural background leads to different perceptions of Teachers.

2.2.1 Experience of Teaching on Online Platform

Ruoslahti (2020) presents, teachers experience of sudden movement to online platform of classroom and refers covid-19 period as practical implication of digital learning; its impact on future e-learning based education. Ruoslahti (2020) states a teacher experience that, I had little pre knowledge on online classes but it was hectic to move and change new form of assessment means new addition extra load of work. The new platforms create digital divide and raise concern regarding equal epistemological access of a student (Preez & Grange, 2020, p. 91). Moreover, Ruoslahti (2020) shares teacher's unpleasant experience of less interactive class than physical class. Its shows that the level of experience on using online tools and expertise differ teachers experience of conducting class.

2.2.2 Teachers' Perspective about Online Teaching Learning

Preez and Grange (2020) says, the covid-19 pandemic has created a scope for digital online teaching learning to being introduce in practice (Preez & Grange, 2020, p. 90). Mailizar et al. (2020) suggest findings from the study that learning mathematics online creates highest level barrier to students. The evidence suggest that students have less access to internet connection and not well prepared for online class before pandemic. Mailizar et al. (2020) also added that, it is not only scenario of Indonesia but also for others developing countries. Kulal and Nayak (2020) mentioned that the best way for teachers to consider what is currently being presented and the path to a complete understanding of the classroom by considering, teacher awareness, education, mentoring, and best practices. Conrad and Donaldson (2004) emphasized the importance of building community awareness in online education from a teacher's perspective.

2.2.3 Coordinating and Designing Class Activities on Online

A case study by Ruoslahti (2020) represents that, practical transitioning from traditional classroom to online learning during covid-19 outbreaks. He mentions, due to covid -19 virus breakouts most of the international institutes has shifted all teaching activities to online platforms by using online apps like terms, zoom, and Google Meet. As like international countries Bangladesh government also introduce online teaching learning platform during pandemic. Mondol and Mohiuddin (2020) says to coordinate class teachers tired best hold classes with minimum attendances with maximum completion of syllabus with available students from different part of the country. Bao (2020) states that, to design a complete online based class required intricated lesson plan, materials, audio/ video content. Bhuiyan (2020) states that, distance learning gets significant importance as part of digital platform to keep education sector active during pandemic by using apps like Zoom, IMO, and Google Meet (Bhuiyan, 2020). Bao

(2020) added the difficulty and challenges to design class for effectively. It is really hard to design well for effective, meaningful learning under the condition of hurried, incomplete and rushed.

2.2.4 Class Monitoring and Feedback Process on Online

The Mailizar et al (2020) says, online teaching learning of mathematics is challenging because it is tough to explain the concepts and set curriculum online but students barriers create more impact on learning. There is strong correlation between students learning success, curriculum, and online based platforms (Mailizar et al., p. 7). Bhuiyan (2020) has raised question on online teaching learning assessment system and its challenges to meet the objective that, assessments like answering questions, assignment, marking, giving feedbacks is difficult (Bhuiyan, 2020). Torres (2021) depicted that, learners are responsible for learning in their own hands and in the hands of their parents. Learners and their parents rely solely on learning materials, textbooks, worksheets, learning guides, and other learning materials for self-study. Additionally, teachers have taken the responsibility of monitoring the progress (Torres, 2021, 467).

2.2.5 Providing Support to The Students

Concern and problems faced by students in online teaching learning is been motivated and self-paced through the time. Online courses are best instructed when they are designed to take advantage of the learning opportunity can be managed by proper technology and access (Sadiku et al., 2018). Turi et al. (2019) says (cited in Ruoslahti, 2020) that, adapting ICT and mobile technology are persuade by social factors like comfortability and experience of use (p. 286). Cao et al. (2020) presented her research that covid-19 have affected mental health of students in Hubei province of China. Online teaching learning requires proper consideration of time and space along with skills. Preez and Grange (2020) mentions, students who are comfortable in

traditional mode of teaching might find new digital mode challenging due to insufficient access to digital platforms. According to Mondol and Mohiuddin (2020), this new challenging tragedy pushed teachers to search feasible ways of instructions and makes students ready for new mode of teaching learning.

2.3 Feasibility of Remote Learning in the Context of Bangladesh

Mondol and Mohiuddin (2020) says, online teaching learning is not a new concept but in Bangladeshi context feasibility is in question due to some scams and unstable conditions, In Bangladeshi context online teaching learning experience, mixed response from teacher's can be found. As like other developing country covid-19 virus has impacted the education system. Farhana et al. (2020) mentions that, government of Bangladesh has initiated to broadcast prerecorded school lesson for primary and secondary level students. The equipment required online classes is not cost friendly in Bangladeshi context. In Bangladesh online teaching learning gets influenced by internet access, speed, price, teacher's expertise, and teaching method. In Bangladeshi context most of the teacher are not trained and prepared to conduct online class which makes the online teaching learning ineffective for students. Teacher have mixed attitude with this new initiative. From the survey of GOB is founds that, 81% teacher are active in taking online classes. Farhana et al. (2020) mentions, most of the teacher takes helps from their children and online support. Teachers are more comfortable to take assignments and presentation rather than exams. Most adaptive teaching method is demonstration rather discussion. The teaching strategy keeps changing to control the class. The online teaching learning is in transition period for the teachers and need time to get into up to mark (Farhana et al., 2020, pp. 99-102).

2.4 Challenges Faced to Conduct Mathematics Class Online

The online teaching learning challenge barriers from context to context. In Bangladesh the challenges are mainly less practice, nearly unprepared start, missing information of students from divers' locations. Ngalomba (2020) mentions mainly in Africa online teaching learning is very challenging where 9.5% of the population has internet access at home. He also added, china has most access to internet (Ngalomba 2020). If the internet access availability is been compared during covid-19 a visible divide can be observed. The digital initiatives come with various challenges. Ribeiro (2020) says (cited in Adedoyin & Soykan, 2020) that, the change comes in teaching platform with logistical and operational challenges. To add more, disruption during online teaching learning can be socio-economic status, lack of digital competencies, assessment procedure, extra workload, and compatibility (p. 4). Adedoyin and Soykan (2020) added that, with barriers this new platform open opportunities for students and teacher to involve through fast and flexible system with future scope (Adedoyin & Soykan, 2020). Another challenge faced by teachers is discontinued and irregular contact with students. To fit the regular curriculum into new online platform is another constraints and stress for teacher. The risk of online class Ruoslahti (2020) states that, identification of true participation of students to mention in exam, cyber security, and appropriate content access by students (Ruoslahti (2020), pp. 288-290).

2.5 Strategies to Address the Challenges

According to Czerniewicz Moravec (2020) emphasizes that change and emergency is a normal aspect to come in life but protective measure and preparation needed for unexpected changes. He added to be successful in this situation and context preparing students a must to do (Moravec, 2020, p.39). Bao (2020) suggested 4 instructional strategies to teach and adjust on online platform. The strategies are- "making emergency preparedness plans for unexpected problems,

dividing the teaching content into smaller units to help students focus, emphasizing the use of “voice” in teaching, working with teaching assistants and gain online supports from them, strengthening students' active learning ability outside of class, and lastly combining online learning and offline self-learning effectively” (Bao, 2020).

2.6 Receiving Support from Relevant Stakeholders

According to Torres (2021), Stakeholder involvement is an ongoing commitment to student self-learning, especially during these difficult times. He added, after this outbreak, learning interventions and solutions have been introduced to ensure that learners continue to be educated, helping both private and public institutions in the education sector to continue learning and prevent learning slippage. Parents plays the role of teacher and active stakeholder as well. Study continued under active supervision of parents. Ceka and Murati (2016) says, building strong partnerships with key stakeholders not only builds clear connections, but also facilitates the transition from responsibility for teaching learning to responsibility for student learning. Handerson and Mapp (2002) studies shown that parental involvement in the education of children improves educational performance from early childhood. It keeps them in study longer and promotes the child's overall positive development. Ensure that your children receive the necessary preparation and support for access to education and learning, unless the parent is fully responsible for their children's homeschooling. Emerson et al., (2012) describes that, when parents, teachers, students, etc. see themselves as educational partners, a compassionate community is formed around them and their work begins. Through this partnership, stakeholders (teachers, students, parents, organizations) learn from each other and participate in practices related to the school’s programs. Actors learn from each other through the process of social participation in the sense of the concept of community of practice (Emerson et al., 2012).

2.7 Conceptual Framework

In this study, I) How do teachers perceive digital teaching learning modes for mathematics during covid-19 pandemic? ii) How do the teachers design the teaching learning process to achieve learning objectives through digital modes for primary grades mathematic skills? iii) What are the challenges faced by the teachers to conduct mathematics classes online? – was answered. Based on the literature review part, it has been figured out over all Covid-19 pandemic and effect on education. The role and perception of teachers on online teaching learning which effect the teaching learning process. And, the challenges, stakeholders support, strategies to face the challenge to get best output in new mode of teaching learning. Therefore, this framework's motive was to understand teachers experience, perception, challenges, strategies, stakeholders' involvement on remote learning for mathematics. Head Teacher's perception, challenges, and strategies to achieve a successful curriculum implementation. The framework is given below –

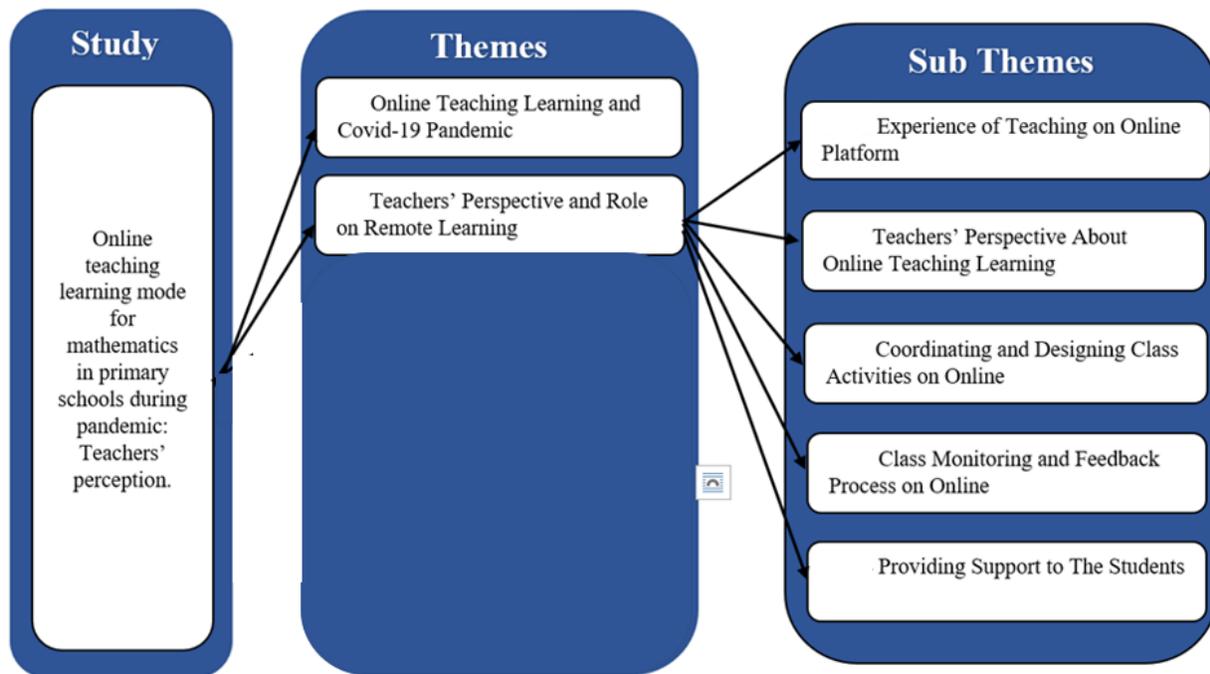


Figure 1: Conceptual Framework on Online teaching learning mode: Teachers' perception

Chapter 3

Methodology

In this chapter, the whole process of conducting the research is been explained. Firstly, the research approach has been discussed with rational based on research query and questions. Later, detailed information and description about research site, research participants, sampling procedure, data collection method have been discoursed. Other sub chapter's, role of the researcher with thoroughly discussed data analysis have been provided with sub sections. In the subsequent chapters ethical issues and concerns; limitations have been addressed with credibility and rigor of the research.

3.1 Research Approach

For conducting the study qualitative research approach has been chosen. Biber and Leavy (2011) demonstrated the main focus of qualitative research that, in the social context its objectify and extract people feelings, experience, circumstances, and situation into texts (Biber & Leavy, p. 4). Qualitative research approach is chosen to discover the research question as it allows to conduct in depth explorations of different phenomenon. DeJonckheere and Vaughn (2019) Qualitative research interviews unfold as an interviewer asks questions of the interviewee in order to gather subjective information about a particular topic or experience. As my research topic is exploratory, qualitative research approach is best fit to reach in conclusion and findings the answer of the research query. To get the information there have designed 18 semi structured and FGD questions which needs to be analyzed in thematic pattern. So, qualitative research approach is finest guiders for me to find participant response in organized manner. To justify the selection of the approach, for my research I need in depth information of teacher's perspective and

practice to get into conclusion and making the outcomes productive. To find and get insight of teachers experiences and perception in de during online teaching learning, interviews and descriptive data would be great choice. Qualitative research approach gives the opportunity collect data in descriptive manners and analyze it for study relevance.

3.2 Research Site

Hazaribagh Thana is densely populated area containing diverse education institutions like private and public school, college, and university where different community and socio-economic background students enrolled. Two government primary school from Lalbagh Thana is chosen for research purpose. The both schools consist total 1000 students and 22 teachers in total. The teachers is chosen from grade 2 to 4. During face-to-face classes the teachers were facing problem to ensure students regular attendance and active participation. Both of the schools teach underprivileged children from lower class community. During the Covid-19 pandemic in sudden changed teaching mode teachers had the experience of remote teaching learning. This research site participants helped to get divers perception on online teaching learning which will helped to get proper findings as they are experienced in both mode of teaching process.

3.3 Research Participants

To conduct this qualitative research the participants is chosen from selected two government primary schools. The participants are specifically teaching mathematics in this new mode. The grade level they are teaching is between 2-4. Participant are mix of male and female participants. There is total 10 participants. The participation is voluntarily and for short period of time. All of the participant are in teaching profession minimum 7 years. For semi structured interview 6 participants has participated from both school and 4 participants actively participated for

Focused Group Discussion (FGD). Among the 6 interviews from interview 4 participants has joined another FGD to gain more divers data.

3.4 Sampling Procedure

To conduct this research from non-random purposive sampling, homogenous sampling is been used to select the participants. This sampling techniques is the most common used sampling techniques of qualitative research. According to Omona (2013), Sampling is very crucial in qualitative research which actually contains sampling design and sample size considerations. He added that sampling itself is a term that excels research in general and research patterns in particular. This sampling procedure involves a group and individuals who carry same characteristics, platforms and background (Omona, 2013, P. 179). The researcher is aware what information needs to gathered and who are willing to participate with required knowledge and experience. Proceeding the research participants has been selected on three criteria: a) Government primary school teacher b) working on Lalbagh thana c) participant is mathematics teacher and experience teaching mathematics during Covid-19 pandemic on online platform. Collecting data in research is very important because it gives a meaning to the theoretical framework. Etikan et al. (2016) state that purposive sampling create opportunity for researcher to used available resources with well experienced participants. This sampling also gives flexibility and importance to participants willingness and availability to participate. Here participants given space and environment to express with freedom and insightfully (Etikan et al., 2016, p. 3). In this research participants have participated with full consent. They are experience in such activities and had training for professional development in primary teacher training institute yearly and monthly. They have articulated their experience in a very expressive manner.

3.5 Piloting

Qualitative interviewees provide strong and in-depth information. There is a possibility that inexperienced participants might not be able to express well throughout the interview. Piloting for participants is a fundamental to get the answer in appropriate manner and give space to practice the answers. According to Majid et al. (2017), “Piloting for interview is an integral aspect and useful in the process of conducting qualitative research as it highlights the improvisation to the major study” (Majid et al., 2017, p. 1073). Before starting the interview, a teacher from selected primary school was communicated to check for understanding. The compatibility of the questionnaire and guidelines has been checked whether the participants can understand it or not. The teacher was able to understand it and participated actively. Feedback from interviewee regarding the whole process have been taken. The interviewee suggested keep the identity anonymous as some answers are sensitive and out of set protocol.

3.6 Data Collection Methods

For the data collection I have chosen Semi structured in depth interview and Focused group Discussion (FGD). For the research query data collection is one of the crucial steps. These two methods have been used to know teacher’s experience they have faced during teaching mathematics.

3.6.1 Semi-structured in-depth interview:

Under this method I have chosen one to one in depth interview on online platform. This method is more suitable and appropriate for qualitative research. DeJonckheere and Vaughn (2019) said semi structured interview is an effective and widely used interview format to gather open ended qualitative data in research (DeJonckheere & Vaughn,2019, p. 3). It intends to collect key information from participants who have personal experience, insight, and opinions related to the

topic. Bloom and Crabtree (2006) depict that, the main informants are selected based on their knowledge and role. The ability and willingness to serve interviewer. He also provides example that how the individual in-depth interview allows the interviewer to explore deeply into social and personal matters (Bloom & Crabtree, 2006, p. 315). Keeping all those insights of in-depth individual interview I have decided to use this method. The interviewer does not follow strict formalized pattern question. Participants will be asked predetermined but more open-ended question to allow and set a discussion sort of environment. This individual interview will help to collect relative and rich data to find my research query. After reviewing scholarly literature and discussion on remote learning during Covid-19 pandemic the questionnaire of interviews has been established. The interview has taken based on 10 open ended questions. 5 math teachers from two government primary schools have participated in the interview. A consent form and details regarding research topic has been shared with the participant. As it is really unsafe to conduct interview face to face, I have chosen to interview them on online platform by using their convenient technology. I interviewed 3 women and 2 adult men participants of government primary school. I recorded the conversation of the interviews by using online app.

3.6.2 Focused Group Discussion (FGD):

Focused Group Discussion (FGD) planned to conduct two focused group to foster discussion among teachers and cross matching found information in interview. Nyumba et al. (2017) described Focus group discussion is a procedure where researcher conduct interview with group of homogenous traits people and have discussion in a precise subject to gather personal belief and experience. I think sometime in interview participants might skip and forgot to mention but in FGD other participants might remind and create space for discussion, sharing, validate the information. Mishra (2016) mentioned that, the main focus of the group is interactions within the

participants via sharing. The participants can influence each other by the discussion (Mishra, 2016). The focus groups will create a chance to compare participants' views gathered from other methods. My main intention to gather information by generating discussion about the research query which will come out from collective participation. Mishra (2016) says, if any participants feel uncomfortable or have personal issues it should be avoided as participants are key informants. My focus group discussion participants have great interaction and communication during discussion. In the group discussion there was 5 participants and asked 8 set of questions. Interview participants on the discussion on impact of remote learning, challenges, opportunity, and innovation and studied later thoroughly. One FGD has been conducted.

In both data collection method, due to the safety protocol and concern of the researcher and the participant, all of the interviews were conducted online.

Mishra (2016) suggested, the interviewer must be aware of not being biased and affecting the participants. All of the participants were given full freedom to participants without biases and flexibility ensured. If anyone one was uncomfortable to answer was given space to skip it. Interviewer interaction was professional and friendly enough to gain trust and tension free environment have been established. The questionnaire was structure in such way that sensitive and personal question kept in the end of conversation until reliability established. Forty minutes time frame has crossed to an hour as participants being comfortable to share their experience in details with example. Even though a one-hour time slot was predetermined for each interview, most of the interviews took more than an hour. I recorded the conversation and discussion and taken notes for thematic analysis.

3.7 Role of the Researcher

Throughout the research process I have acted as an active researcher and regular master's student at BRAC Institute of Educational Development (IED). From October 15 to November 5th, 2021, I have interviewed teachers to collect data for this research. Fink (200) mentioned, while interviewing the researcher must be empathetic towards the interviewee so the participants feel comfortable and easy to tell own story. During in-depth interviewing and focus group discussion process, I was aware of being a researcher. Though I was teacher for two years but played roles of researcher during the data collection process. My role was to ensure my interviewee are easy to share the experiences. McGrath et al. (2019), Building rapport and establishing comfortable interactions in the qualitative interview situation is very important and is preferably done well in advance of the interview Starting of the interview I have cleared the expectation and main focus of the research by maintaining ethical concern. I had to explain the question with my own experience to make it relatable for them. Leading question has been asked to get depth insight. Throughout the whole interview process, I tried to be as reflexive and conscious a possible.

3.8 Data Analysis

To analyze found information from respondents I have used thematic analysis of qualitative research. According to Kiger and Varpio (2020) the ability to be utilized within a wide spectrum of disciplines and methodological frameworks, as well as to be widely used in various of research questionnaire, formats, and size of the sample, is a defining property of thematic analysis. It refers to perceiving, understanding, and evaluating thematic patterns in qualitative data. A conceptual framework is frequently established based on the themes to organize and summarize the researcher's empirical findings. In this study, the research question and key questions were divided into 6 themes and five sub-themes. Eighteen new elements were included

in the form of interview protocol, which were designed based on the themes and subthemes. Braun and Clarke (2006) introduce six steps of thematic analyzing of data such as getting familiar oneself with the data, creating preliminary codes, naming themes, reviewing themes, defining and identifying themes, and completing the report. All the steps have been followed accordingly to analyze the data. To present this study the data has been organized in these and subthemes. Kiger and Varpio (2020) mentioned that when attempting to comprehend experiences, thoughts, or behaviors throughout a data set, thematic analysis is an appropriate way of analysis. Interviewee responses has been analyzed based on the teachers' perceptions and experiences on online teaching learning.

3.9 Ethical Issues and Concerns

While conducting the interview in data collection process the ethical code of conduct has been maintained strongly. McGrath et al., (2019) recommend interviews be conducted at a time and place of the respondents' convenience, in a comfortable setting, free from any potential disruptions and noise. In most cases, you will need formal ethical approval. However, you will always need your interviewees' informed consent (Illing 2014). Consent is voluntary and must not be enforced, manipulated, or threatened at all. Before taking interview full consent of the interviewee have been taken by providing and explaining the consent from consisting research questions. After sharing the form, the participants get enough time to review and share the consent. Illing (2014) enforced that, informed consent from participants is mandatory which refers informing participants about study, risk, confidentiality (Illing, 2014, p. 11). Additionally, there was some question which can make the participants unwilling to answer but clear explanation of the confidentiality of information ease them to share. In extreme case they were allowed to skip the question. McGrath et al., (2019) clarify confidentiality means protecting the

identities of those who consent to participate in the investigation and retaining the data in a format that protects the identities of the participants. Anonymity goes beyond confidentiality because researchers do not collect any named data (McGrath et al., 2019, p.1004). This means that researchers cannot determine which respondents provided the data. This type of data gives participants more freedom to make negative comments without fear. Another concern came from the participants whether their identity will be disclosed while using the data but participants has been assured that their identity would be anonymous if they wish to do so. Temporarily, I have changed the sequence of the question for participants pattern of answering the questions. While taking interview I got biased by the answer in some point and shared own experience relatively to make the participants comfortable to share.

3.10 Credibility and Rigor

In qualitative research establishing participants trustworthiness and interviewer capacity to conduct is essential to get the results of the study. I have had prior experience of conducting research related work like interviewing, communicating, and observing as being undergraduate students to carry out the study. Lincoln and Guba (1985, As cited in Ardiansyah, 2007) stated terms like credibility, authenticity, transferability, dependability, and confirmability to create reliability in qualitative research (Lincoln & Guba, 1985, As cited in Ardiansyah, 2007, p. 219). To conduct this qualitative research all the mentioned terms has been applied and ensured.

3.10.1 Credibility

Korstjens and Moser (2018) demonstrated, credibility compares the research findings with credible information collected from the informant's original data, and correct interpretation of the interviewee's own experiences, and representation by the researcher (Korstjens & Moser,

2018, p. 121. The investigator describes own experience with the participants to verify the study findings. This research participants were chosen for their experience and relation with the topic not for position they hold to make the findings credible. Ardiansyah (2007) mentioned, establishing credibility needs long period engagement with participation and triangulation communication among source, methods, and researchers. a relevant set of question has been provided to create relevance with the research topic which gives richness to the data. The interviewee had full space and environment to share experience with authenticity based on their experience.

3.10.2 Transferability

Barnes et al. (2012) explained, transferability is a process where research findings in one situation can be applied in another similar situation. This process is done by the readers of the research who can find similarity and apply its own requirement. To do this properly readers must have detailed idea about the original research. according to De Leeuw et al. (2021), the term “transferability,” which is more typically connected with qualitative research, refers to the extent to which the efficacy of an intervention could be replicated in a different population and location. To make sure transferability in this research the methodology section depicts as detailed manner as possible. The literature and every chapter are aligned with the research topic. If any researcher wants to work on this similar topic of online teaching of teacher perception can easily access and connect with the resources.

3.10.3 Dependability

According to Shenton (2004), in order to address the issue of dependability, positivists use ways to demonstrate that comparable findings would be produced if the study was performed in the

same environment, using the same procedures, and with the same participants. He also added, even if various investigations produce conclusions that aren't totally consistent with one another, this doesn't mean that one or both are untrustworthy. It's possible that they merely reflect various realities, and gaining an understanding of the causes for the differences might be just as beneficial to the reader as the actual outcomes (Shenton, 2004). A faculty member of the BRAC Institute of Educational Development oversaw and supervised all of the research study's processes on a regular basis

3.10.4 Confirmability

Panton as cited in Shenton (2004) objectify that the difficulty of achieving true impartiality, because even tests and questionnaires are devised by people, and the researcher's prejudices are certain to creep in. Confirmability may be proved by outlining the methods used to arrive at findings and interpretations. Researchers can demonstrate that the conclusions were drawn directly from the data. This may be demonstrated by including extensive quotes from participants that illustrate each study issue. This research's replies were recorded and transcribed without any biases. I haven't utilized any of my prejudices during this process.

3.10 Limitations of the study

While conducting the research the main barrier would be conducting interviews face to face. As social distancing is highly recommended for safety of the researcher and the participants as well. The interviews and focused group discussion cannot be taken physically. Another challenge can be selecting right participants and getting authentic answer. The information can be biased. To address the barrier there can be some possible strategies. The interviews and FGD have been conducted online using online platform and app with participants are available. Tech-savvy participants needs to be chosen for conducting interviews and FGD. The whole process must be

well recorded for transcribing and cross matching later. I have got very limited time to collect data but collected enough to investigate the research query.

Chapter 4: Results

In this chapter, the main purpose was to present and analyze the data collected from the interviews. To collect the research data, interviewees responses gathered using online app zoom and Google Meet by conducting one-to-one in depth interview and Focus Group Discussion (FGD). While interviewing 18 semi structured purposive questions has been asked. All the questions were focused on online teaching learning and teachers' perception. Every interview has been recorded and transcribed for further procedure. Each conversation was recorded, which was transcribed later. All the responses been analyzed and organized in thematic method under qualitative research to generate patterns under each category. Later, with the help of the thematic analysis method, the responses were organized to generate patterns under the category of online teaching learning mode. Every information has been categorized and written down under themes and sub themes of the research.

4.1 Findings

The response from interviewee were organized into the following themes and sub themes

4.1.1 Online Teaching Learning and Covid-19 Pandemic

4.1.2 Teachers' Perspective and Role on Remote Learning

4.1.2.1 Experience of Teaching on Online Platform

4.1.2.2 Teachers' Perspective About Online Teaching Learning

4.1.2.3 Coordinating and Designing Class Activities on Online

4.1.2.4 Class Monitoring and Feedback Process on Online

4.1.2.5 Providing Support to The Students

4.1.3 Feasibility of Remote Learning in The Context of Bangladesh

4.1.4 Challenges Faced to Conduct Mathematics Class Online

4.1.5 Strategies to address and the Challenges

4.1.6 Receiving Support from Relevant Stakeholders

4.1.1 Online Teaching Learning and Covid-19 Pandemic

A teacher has shared that, education sector is the most affected one during covid-19 pandemic.

To talk about online teaching learning most teachers were in support of it for developed countries context but not Bangladeshi education context. Remote learning sounds good in theory not in practice. A teacher in support remote learning explained that-

The limitation Covid-19 puts on human movement came as curse for us but online teaching learning came as blessing to keep continuing the activities. It was most needed and wisely chosen step any authority can take on that situation (Interview 2, 10/10/2021).

Most of the participants agreed that remote teaching learning was timely needed platform to activate the teaching process. Remote learning is an opportunity for us to cope up in the crisis. By using distance learning mode teacher could reduce the dropouts in this pandemic and it is a epoch-making tools. Many teachers believe Online teaching learning best alternative approach government taken to adjust with the crisis in education sector.

4.1.2.1 Experience of Teaching on Online Platform

Teachers shared that their experience were full of uncertainty and scattered but somehow had to manage the task in personal and professional life. A teacher says,

whole team followed upper-level instructions and added own ideas to keep the connection active with the students. Taking mathematics class is time consuming and troublesome (FGD 2, 17/10/2021).

At the beginning the teacher made list of students and communicated. The experience with students were overwhelming and challenging. Teaching using online platform and from a distance was a whole new and first thing for teacher and the students as well. Few teachers shared somewhat obliged to follow order of authority though they were not prepared for it. In focused group discussion teacher shared experience of difficulty to control over the students. Another experience is teacher unable to ensure whether the students giving full concentration or not. While sharing over all experience a teacher says-

Students were very interested to join class as it is fun to learn in new platform and meets friends on video but their participation during class was not up to mark (FGD 1, 16/10/2021).

Teachers discussed the experience of observing negative impact on students of using technology to study. A teacher shared in angrily

During class students starts playing games or watching other contents which indicates that they are misusing the opportunity and online addition turning into habit. Parents cannot forbid as they take it to study (Interview 5, 20/11/2021).

Moreover, student found learning online is tough than offline and teacher found it exhausting to teach.

4.1.2.2 Teachers' Perspective About Online Teaching Learning

During conducting online class teachers had mixed notion of using technology. Most of the participant believed using online app makes them uncomfortable to teach and give less outcomes than face-to-face class. Sometimes students misused the platform. However, a teacher says using technology in teaching was needed and an option to choose only as we cannot reach them

physically. While sharing perception regarding continuing teaching in same platform all teachers were unwilling to continue in remote teaching method. A teacher shared-

Even if a teacher is comfortable to teach but students lacking's on affordability lower the chance of adapting this new mode of teaching (Interview 3, 15/10/2021).

While sharing negative views on remote learning a teacher says with regret that-

We were forced to be worked in this new mode. Nothing can be better than teaching face-to-face. I was not comfortable at all (Interview 4, 19/10/2021)

In focus group discussion teachers discussed more in-depth information that remote learning creating more learning gap than face-to-face class because as in regular set up class a teacher can monitor and decide need of the child but in remote learning the students is out of control of a teacher. Teachers shared mixed perspective on the question whether Covid-19 is an opportunity for innovations or created challenges. Some of the participant says it is an opportunity as it teaches us to adapt advancement and technology. however, others say it created challenges for teachers which lead us to fall behind.

4.1.2.3 Coordinating and Designing Class Activities on Online

Different teachers have adapted divers' strategies to coordinate and design mathematics class online. At the biggening teacher started sharing video with detailed steps to follow but most of the students were out of monitoring. It was so tough to track whether the video has reached or understandable by the students or not. Questions were arising like are the students able to follow the instruction? Or are they able to download e-learning large file. If every student can be provided with proper materials for conducting online class would be easier. In face-to-face classes daily six classes used to take place but in online platform its lower to single class per day. It was impossible to conduct multiple lesson in a day or single setup. Many teachers say they

could not properly conduct and design mathematics class in proper manner using example of real, semi real, and unreal materials as it can make the learning long lasting for students. Teacher used office word and PowerPoint to conduct class. Many teachers think clear and precise instructions helped to make mathematics learning easy. A teacher in FGD interview shared that-

As primary class students belong to lower level their set and environment of studying is not up to mark. while conducting class 100 percent participation cannot be ensured, eye contact cannot be made, poor communication individually, and less attendance creating learning gap among students (FGD 2, 17/10/2021).

4.1.2.4 Class Monitoring and Feedback Process on Online

Biggening of the pandemic to continuation of education teachers have sent SMS with details of the task and then give reply the work is done or not. By time the ways of monitoring students' activities have changed. Firstly, teachers used to share the digital content with students and collected copies of given task via picture sharing. Then teachers shifted to conducting class online by using whiteboard and students keep following the steps. Students used to share picture or showing the exercise Infront of camera. So, the task and class monitoring on online somehow manageable but giving feedback like face-to-face class is impossible. A teacher shared-

During face-to-face classes teacher could give group works and bring them to board to practice and clarify their doubts on the spot but in remote learning it was impossible to do (Interview 1, 8/10/2021)

Most of the teacher was unable to give individual feedback. While monitoring the class it can be found that students is not attentive got busy into another offline task.

4.1.2.5 Providing Support to The Students

Teachers tried their best to keep students in touch with study. They have started connecting with started using any possible way they can have. They started supporting students using text message at the beginning. After collecting information of availability of internet access and android phone they start teaching using online platform like zoom, IMO, Whats app, Google Meet. A teacher replied about supporting students says-

I tried to take care my students mental health first rather completing syllabus firstly then I move to give task in a very descriptive manner who could not manage online communication. I did so to make them easy in this tough time. After passing a good amount of time with them I used to give class schedule with details task to conduct online class (Interview 6, 22/11/2021).

Teachers tried to use Microsoft office, PowerPoint to show steps of mathematics. They could not use whiteboard as mobile screen cannot fit it.

4.1.3 Feasibility of Remote Learning in The Context of Bangladesh

In the question of feasibility of online teaching learning on Bangladeshi context 8 out of 10 participants response was negative. Other participants were partially agreed that it is feasible. A teacher shared her reasoning that-

This is first time we have tried this platform in a broad manner but we can say we succeeded in some extent. With proper steps and plans we can adapt this platform, and be successful completely as Bangladeshi government emphasizing on digitalization (Interview 1, 8/10/2021).

Meeting all the set objective of NCTB for mathematics and other courses its not possible.

A teacher shared that-

The context of our country and education system is not in right state to support online teaching learning (Interview 3, 15/10/2021).

teachers shared some underlying cause which weaken the feasibility. Those are- long term planning missing, limited budget, expensive, unable to afford purchasing MB and ignorance about online teaching learning. They suggested to increase budget, giving training to teacher and students on this new mode, increasing monthly stipend, and providing technology support can increase the feasibility.

4.1.4 Challenges Faced to Conduct Mathematics Class Online

While talking about challenges most of the teachers shared so many different struggles they have faced during online teaching. Mostly shared challenges were inability to manage android device. Even some of them have android device but no internet connection or very poor band width connection which hampered the teaching learning process. In government primary school most of the students belong to underprivileged socio-economic background. It works a great barrier during face-to-face classes which got more worst for students during online class. A teacher shared about challenges faced by him-

Teaching mathematics was most challenging for me as it is time consuming and lengthy to complete the steps. Time was very much limited and accommodating students in slot was another level of challenge. It creates barrier to meet set objective for mathematics (Interview 6, 22/11/2021).

When students manage the internet connection and device but unfamiliarity of operating online platform apps brings another challenge for teacher and students as well. Normally students to fear mathematics in face-to-face class. While conducting mathematics class online it was so tough for teacher keep students attentive throughout the whole time. They get bored so easily. Students keep skipping the lesson with so many excuses.

4.1.5 Strategies to address and the Challenges

In this Covid-19 pandemic to continue teaching learning education teachers had to face enormous challenges. All of the teacher tried their best to address the challenges and solve according to student's needs. Teachers has to deal with situation mentally, physically, and financially. Biggening of the crisis teachers faced problem to communicate all students as most of them shifted to village due to loosing job. After addressing this problem all of them seek help from the peers and different stakeholder like teachers, community representative, active relatives. One of the teachers says-

I have joined newly as a teacher; due to sudden closing of school I could not collect information from schools which I needed badly to communicate. I used three class representative whom I was connected before to gather other students' information. Later I could reach 52 students out of 65 (FGD 1, 16/10/2021).

Additionally, when teacher got in touch with the students most of the students are unable to afford digital technology to join class. Teachers planned together to divided student according to their availability. Students divided into different groups like having android with active internet access; having button phone no internet; android phone but poor internet connection. To maintain the information teacher have maintained organized Microsoft excel sheet dashboard.

This dashboard is updated weekly and a shared with the headteacher. To maintain different groups of student's teachers figured out different technique. A teacher shares his plan that- I used to send text message to assign work and make short call to give feedback and monitor the task and suggested Shangshad TV who does have button phone. Another group of students with smartphone I have shared e-learning content, self-made video, and details lesson plan. Collected homework as picture and given feedback. Conducted class using IMO mostly and Whats app. With poor internet connection students, I did audio call class with detailed lesson plan.

Another challenge is been faced by students is fear of mathematics and teacher face hard time to finish the lesson as planned. Most of the teacher tried different method to make mathematic learning fun. They have used material like marvels, sticks, short video, storytelling, drawing picture and sharing to make the learning fun.

4.1.6 Receiving Support from Relevant Stakeholders

Throughout this whole process parents were the key role player to keep students in touch with the teacher. Other stakeholder like head teacher, SMC members, elder siblings, and neighbors. Most of the parents belong working class so most of the class has taken during night time.

A teachers shared positive experience with stakeholder's support that-

When I have started taking online class a guardian called me with ownership and asked whether his child missed any lesson. That's encourages me to be active. Other parents used to sit beside her child throughout the whole time of class and monitor the task (Interview 4, 19/10/2021).

In contrast it can be found from some response of participants that parents were not supportive at all. They were not ready to give time as the kid already started working and dropout from study.

4.2 Summary of Findings

In the findings above, the participants have shared their views and experiences of teaching mathematics in online platform which gives a lens to see the bigger picture of education sector. All of the respondents have shared similar thought regarding remote tacking learning and covid-19 pandemic. Respondent believes remote teaching learning is timely needed initiative taken by government but sudden change of teaching mode creates discomfort. While sharing the whole experience of teaching teacher shared more or less common situations. All the teachers have to face difficulty to balance between new mode of teaching and personal mental stability. Everyone agreed no matter how much challenges they had to face the best things they could make connection with the students. Teachers also shared the uncertainty of life affect adjustability in the new mode, sometimes its fells to be forced by upper authority. They think their mental health has been ignored by higher authority. Teachers enforce most on the bad impact of using technology students that they got opportunity to practice online addition. Moreover. Respondents says students take this as fun place to get together rather as learning platform and students' performance was not up to mark. Both teacher and students find learning mathematics online is tough then face-to-face. While sharing perception regarding online teaching learning online teachers shared mixed view. Some teachers shared if they asked choose remote learning over face-to-face, they are not willing to choose online. They have given justification for nt choosing like student's unavailability, unaffordability, and lack of experience. Additionality, some teacher see online teaching during pandemic as an opportunity whereas some finds it as reason to fall behind more. Respondent answered in details of designing and coordinating mathematics class in online. They have shared

strategies and techniques to manage every new arise concern. Teachers used Microsoft excel, word, and PowerPoint, learning materials to makes learning fun. Giving feedback and monitoring students was tough as shared by respondents. All of the teachers used all possible online apps available to connect students according to their availability. However, majority of the respondent shared feasibility of remote learning in the context of Bangladesh is challenging. Teachers gave suggestions to make the platform feasible in the context Bangladesh. Respondents were sharing challenges where economical barriers was the most common face by all. Participants explained the steps of supporting students and addressing the challenges. Most of the teachers have shown gratitude to the relevant stakeholder were involved throughout the journey.

Chapter 5: Discussion and Conclusion

In this chapter, an elaborate discussion was presented to build connection between literature review and data founded from primary source. The discussion section has been organized based on themes and subthemes of the research query. Lastly, few recommendations have been suggested.

5.1 Discussion

5.1.1 Online Teaching Learning and Covid-19 Pandemic

Basilaia et al. (2020), as cited by, Khan et al. (2021) mentioned that, nowadays online based instructing learning is the only scope of tackling the educational emergency, which is going on all through the globe because of the pandemic of COVID-19 (Basilaia et al., 2020). The participants of the research also depict in similar ways that to manage and activate educational activities by using remote teaching learning method was best fit. Respondents also added, it is most prompt initiative taken by the government which ensure safety as well. It can be clearly observed teachers are positive about the sudden decision thought to conduct this they have to face so many challenges. Though it is really struggling to adapt a new mode of teaching but teachers tried their best to fit into it and see the bright side of it. Toquero (2020) says, because of COVID-19, schools at all levels required a prompt shift towards online training, which can be both a chance and a test (Toquero, 2020). Respondents says by overcoming the test with time they have managed to connect and habituated students with the new platform.

5.1.2 Teachers' Perspective and Role on Remote Learning

5.1.2.1 Experience of Teaching on Online Platform

According to Wu (2021), Teachers and understudies have needed to rapidly adjust their teaching techniques, whether or not they were knowledgeable about and ready for online learning. All of the respondents shared about short notice of shifting to new mode, somewhat they were obliged to adjust with the instruction. Lestari and Gunawan (2020) mentioned, before the COVID-19 pandemic, the vast majority of these investigations were centred around universities, while instructors and students in elementary and primary level remain unpractised in crisis distant learning (Lestari and Gunawan, 2020). In Bangladesh online teaching leaning is been practice in university level but secondary and primary level teacher are not experience in it. Wu (2021) also added, During COVID-19, school teachers in primary and secondary schools have deficient experience with changing mode of instructing. Above mentioned all the literature presents how inexperience teachers were to conduct online class. Participants shared experience of conducting class online that tracking students' concentration and ensuring participation were so difficult. Some students were misusing the online platform to play game and other recreation. Watermeyer et al. (2020) shared their research findings that, online relocation is inciting critical dysfunctionality and aggravation to their academic jobs and their own lives.

5.1.2.2 Teachers' Perspective About Online Teaching Learning

Respondents shared that teaching online made them uncomfortable and could not able to get best outcomes due to sudden change. According to Hung (2016), teachers' readiness for online teaching affects the quality of remote education (Hung, 2016). Here, it clearly can be seen that the way teachers used to perform in face-to-face traditional setup of class they could to do that in online

class. As a result, the quality of teaching dropped. It was not a choice for them rather order from the higher authority. Participants shared their mixed perspective that teaching online during covid-19 pandemic creates more challenges than opportunity. Khan et al. (2021) also supporting the findings that as the idea of online teaching is still new, these difficulties are rising and it is not unexpected. Responded added that even if they adapt the platform but student cannot afford the materials requirement due to their socio-economic status. Adedoyin and Soykan (2020) states that it becomes obvious that student with poor financial status will find it challenging to adapt. So as a result, it will create learning gap among students as many participants figured out. This was an expected consequence has been thought before conducting the research.

5.1.2.3 Coordinating and Designing Class Activities on Online

To coordinate class online all the respondents shared different tactics to adapt student in this new platform. Teachers have made e-learning materials, short video but most of them says it was uncertain that they are able to reach the needs. All students were not accessible in online platform due to lacking android device and internet access. Wu (2021) mentioned that “school teachers were more likely to use homemade videos and share their screens for teaching and to arrange a large variety of teaching interactions” (Wu, 2021). Teachers have arranged different setup to meet all students need. A teacher shared sadly that if students could avail materials needed during teaching learning process of mathematics than remote learning would me easier. Putra et al. (2020), as cited by Wu (2021) present research finding that students faced difficulty to learn from home due to absence of learning materials and internet connection.

5.1.2.4 Class Monitoring and Feedback Process on Online

Most of the respondents shared that they have used different ways to monitor students like replying back if homework is done who cannot afford android phone and exchanging picture if task is done by using smart devices. Sintema (2020) reported primary and secondary schools allowed teachers and students to have online classes using android phones and tablets by executing and sharing e-learning contents. Additionally, teacher shared during focus group discussion that somehow, they manage to monitor students' activities but giving feedback was so difficult or not practice at all. As a results students could not realize where to work more and how. For example, Fauzi and Khusuma (2020) identified that students and teacher struggle to implement online teaching learning containing unavailability of amenities; arrangement, execution, assessment, and feedback. they expected remote learning would be helpful but 80% of instructors revealing that they felt disappointed with online schooling. This line indicates that expectation of remote learning does not meet the reality as most students were out of teacher's connection and results distress in teachers.

Abbasi et al. (2020) informed that when students they did not like online learning as much as face-to-face teaching as they were unable to join school physically due to maintaining distance. In the finding it can be found that teachers say not all students were attentive and showed interest to join.

5.1.2.5 Providing Support to The Students

To support student's teacher pushed their limits and connected with students with every possible available device. They have used various online apps like IMO, Whats app, Google Meet, and texting using button phone. If any students do not able to join class on day time teacher used

conduct class at night. Khan et al. (2020) mentioned, during pandemic remote learning got importance in education system. Online platforms like Google Meet, Zoom, Tv have gained acceptance. Here, similarity of used online platform between respondents and author can be seen. It's clearly indicating that despite of being inexperienced teachers adapted online platform to support students and keep education system active.

5.1.3 Feasibility of Remote Learning in The Context of Bangladesh

According to Majed et al. (2021), The thought of selecting a platform for online teaching is connected with administration quality, cost, adaptability and relevance with the academic context. moreover, the targeted students in Bangladesh with restricted levels of affordability in general. Respondent shared similar notion regarding feasibility of online teaching learning in Bangladeshi context is conditional. Most of the students belong to poor socio economic underprivileged community. They are not able to effort to purchase internet connect and related materials to join online class. Even teacher have adaptability to conduct class but students does not have affordability to join. Another concern raised that in remote learning NCTV set objective cannot be maintained which hamper the quality of the education.

5.1.4 Challenges Faced to Conduct Mathematics Class Online

The participant shared their challenges while conducting class online specially mathematics. The common challenge faced by respondents are incapability of students to manage digital technology and equipment's to connect like smart phone, internet access due to their poor socio-economic status. A research survey on cause for not participating presented by Brac.net (2020), as cited in Khan et al. (2021) presents their research findings that, "71.2% students are having limited arrangement of TV, internet, and electricity" (Brac.net, 2020, as cited in Khan et al.,

2020). Khan et al. (2020) also added that in terms of internet connection Bangladesh has the poorest speed represents. Respondents also shared that accommodating student in one setup was the hardest and another concern is less knowledge to operate online platform apps. Uddin (2019) presents recherche findings that “44.6% of the students cannot attend online classes because of lacking logistic” (Uddin, 2019). He added, it is hard for teachers to deal with everybody's notes and utilize them in their materials. The literature data presented above clearly shows that challenges faced by teacher conducting class online as the respondents also shared.in addition, Meashki et al. (2019) noted that though government has encouraged online teaching learning actively still there are limitation from instructor perspective like establishing strong bandwidth network, teachers’ enthusiasm to prepare online content, and administrative support (Meskhi et al., 2019). While discussing regarding challenges teachers says it is tough to do assessment and keep students stick to the class. Arkorful and Abaidoo (2015) as cited by Adedoyin stated that, teachers have limited control of supervision on students to control cheating during assessment process of online teaching learning.

5.1.5 Strategies to Address the Challenges

It is true that challenges faced by teachers and coping up with those was real struggle. Most of the teachers mentioned no matter how big the problem is they did not give up. They have shared their strategies to reach every student, teacher divided them into sub groups based on their availability of phone and net connections. Parkar and Alfaro (2021), students don’t have internet access were communicated and given option to delivery work physically. Wu (2021) suggested to address the challenges teacher must have capacity and mental preparation to implement the practical courses online as per need of students.

5.1.6 Receiving Support from Relevant Stakeholders

Maxwell et al. (2017), as cited in Alinsunurin (2020) presents importance role of stakeholder that, social features of a school rely on its stakeholders. as a dynamic and complex social development, learning inside schools includes a variety of actor and social constructions, which build schools and its social elements (Alinsunrin, 2020). Teachers during interview shared that stakeholders involvement like parents, siblings, community, and school community was like pillar to hold the activities and communication active during Covid-19 pandemic. However, some teachers shared if they could get more involvement of some parents then some students would be able to connected with study rather dropping out. Responded also says that though students are the key stakeholder but parents play role as teacher, mentor, and guardian during pandemic.

5.2 Conclusion

The whole research main goal was to explore teachers' perception on online teaching learning process specially on mathematics during Covid-19 pandemic. The query aimed at to explore teachers experience and challenges faced throughout the time. Exactly what measures they take to adapt with the new mode of teaching and blend students with it. With this intension data has been collected from government primary school teachers in Labagh thana. Although teachers have shared mixed experience but majority explained in common phenomenon. Most of the teachers believe theoretically remote/online teaching learning is a great platform undoubtedly but in the context of Bangladesh it is not feasible. If government can take necessary steps with long term goal to conduct class online can bring great outcomes. Even though teacher tried their best to adjust with the new platform of teaching but students lacking's of technology, poof economic

status, affordability of devices, internet access, inexperience make it tough to reach the set goals. The challenges they have faced create barriers to move smoothly. With regret teachers also shared that it is so challenging to conduct a class per day whereas in face-to-face classes they used to take six classes. Students started misusing the freedom of using devices. Getting full participation and attention is almost impossible. While talking about the challenges, teachers also shared their techniques to address the challenge and overcome it in some extent. Majority of the stakeholders were very helpful to lessen up the hardship of teachers. The purpose of the research was successfully achieved to get in depth information from teachers and connecting it with the assumption and key questions. The data found from respondents completely align with literature findings. Moreover, I have learned a lot from different angles while conducting this research that perception of online teaching learning barriers person to person experiences. While conducting remote teaching learning there will be uncountable challenges but one's must have mindset and skill to find tactics to address those challenges. Once the challenges can be addressed and solutions can be found then the new mode of teaching will blend with the context gradually. Additionally, stakeholders are the strongest connection to get best outcomes of the plan. This study has allowed to explore a new mode of teaching feasibility from teachers who already experience through it. Finally, it can be said that online teaching learning can be easily adaptable if supportive materials and relevant stakeholders support can be available via training and long-term detailed plan not in sudden change. The study also illustrates that online teaching learning has great scope to adjust with fast moving world but cannot be an alternative of face-to-face class. A complete proof that e-learning has a more significant role to play in the future, but it cannot be a replacement to traditional face-to-face classroom learning. A whole shift to online learning is quite complicated. However, we cannot ignore the benefits derived from e-learning. As such,

there is a need to understand the obstacles that come in the way of accepting online learning and take corrective measures to overcome it.

5.3 Recommendations

As online teaching learning is something new in the context of Bangladesh, so that the main executer teachers have mixed perception and experience. Remote teaching learning is an excellent pathway to reach of digitalization the sector of education. During Covid-19 pandemic it creates opportunity and great impact on connecting students to study. To get bets out of this new mode cooperation from different part of the system and lacking's must be mitigated. From everyone's side a strong effort must me made to make sure the participation of all socio-economic classes students in education. The following recommendation should be considered with high priority-

- Planning a long-term scheme that support student's internet access at home. In the findings it clearly be seen that so many students could not attend online class due to lack of not having internet access. Internet access is the most relevant materialistic requirement to activate remote teaching learning as some students at least can manage a smart device from own or others stakeholders but unable to afford expensive internet access.
- Guide family members to use technology for online teaching learning. From the research it can be found that most of the student's participation was effective with the parental involvement. Tannings can be given to family members to teach to operate online technology.
- Positive attitude in teachers to accept something new should be anticipated by organizing soft skill development training session. Along with this student also should offers

environment to socializing after and before class to avoid the found complain that students are not attentive enough in e-learning platform. Adaptation of e-learning strategies that create option for socialization needed which must be ensured by teachers.

- Maximizing stakeholders' relationship as they played one of the key important roles during pandemic. The school members and stakeholder relationship can be developed via activities that established understanding relation towards creating durable cooperation for being success in new mode of education. Stakeholders can play role as bridge between teachers and students.
- Consultations and counseling with the community should be boosted to include the stakeholders in the progress of students as the change of responsibility is in their hands now.
- In primary school level will need to provide outstanding training and support to both students and instructors on the use of online classes, which will make them feel more at ease.
- Students must be scaffolding by teacher to change their mindset in a positive way. Teachers must monitor the transformation in their duties, from merely transmitting knowledge to designing the educational process, which is one of the biggest issues faced by students. Students are always supposed to be spoon-fed in traditional classroom learning, but online classes required a learner-centered atmosphere that requires students to be self-motivated and self-directed.
- Government must take into consideration of online teaching mode for future emergency and plan accordingly to give a comfortable and known platform to teaching learning experience to teachers' and students.

- To gain best outputs from online platform materialistic needs like device availability, uninterrupted internet access, skill to operate smart device, and establishing familiarity of the new mode must be ensured.
- Teacher must be able to identify divers need of students and the challenges must be addressed to overcome the situation. As the new mode of teaching learning must not feel like to be forced to be in rather a step to make learning fast and easy.

References:

- Adedoyin, O. B., & Soykan, E. (2020). COVID-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments*, 1-13.
<https://doi.org/10.1080/10494820.2020.1813180>
- Abbasi, S., Ayoob, T., Malik, A., and Memon, S. I. (2020). Perceptions of Students Regarding E-Learning during Covid-19 at a Private Medical College. *Pak J. Med. Sci.* 36, S57–S61.
doi:10.12669/pjms.36.COVID19-S4.2766.
- Alinsunurin, J. (2020). School learning climate in the lens of parental involvement and school leadership: lessons for inclusiveness among public schools. *Smart Learn. Environ*, 7(25).
<https://doi.org/10.1186/s40561-020-00139-2>
- Buddhini, G.J. and Charlotte, G. (2016), “Cultural perceptions of online learning: transnational faculty perspectives”, *Asian Association of Open Universities Journal*, Vol. 11 No. 1, pp. 50-63, doi: 10.1108/aaouj-07-2016-0019.
- Barnes, J., Conrad, K., Demont-Heinrich, C., Graziano, M., Kowalski, D., Neufeld, J., & Palmquist, M. (2012). *Understanding Generalizability and Transferability*.
<https://writing.colostate.edu/guides/guide.cfm?guideid=65>
- Conrad, R. and Donaldson, J. (2004), *Engaging the Online Learner*, Wiley and Sons, San Francisco.
- Bao, W. (2020). COVID -19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113-115.
<https://doi.org/10.1002/hbe2.191>

- Bhuiyan, A. M. (2020, June 11). *Education system in Bangladesh during COVID-19*. eLearning Industry. <https://elearningindustry.com/rethinking-digitalization-education-system-in-bangladesh>
- Bloom, B. D., & Crabtree, B. F. (2006). Making sense of qualitative research: The qualitative research interview. <https://doi.org/10.1111/j.1365-2929.2006.02418.x>
- Basilaia, G. et al. (2020). Replacing the Classic Learning Form at Universities as an Immediate Response to the COVID-19 Virus Infection in Georgia. *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, 8, 101-108.
- Boyatzis, R. E. (1998). *Transforming qualitative information: thematic analysis and code development*. Thousand Oaks (CA): Sage.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE guide No. 131. *Medical Teacher*, 42(8), 846-854. <https://doi.org/10.1080/0142159x.2020.1755030>
- Czerniewicz, L. (2020). What we learnt from “going online” during university shutdowns in South Africa. *PhilOnEdTech* <https://philonedtech.com/what-we-learnt-from-going-online-during-university-shutdowns-in-south-africa/>
- Ceka, A., & Murati, R. (2016). The Role of Parents in the Education of Children. *Journal of Education and Practice*, 7(5), 61-64. www.iiste.org
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological

impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>

Chowdhury, R., & Sarkar, M. (2018). Education in Bangladesh: Changing Contexts and Emerging Realities. *Engaging in Educational Research: Revisiting Policy and Practice in Bangladesh*, 1–18. https://doi.org/10.1007/978-981-13-0708-9_1

DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health*, 7(2), e000057. <https://doi.org/10.1136/fmch-2018-000057>

De Leeuw, J. R., Motz, B., Fyfe, E., Carvalho, P. F., & Goldstone, R. (2021). Generalizability, transferability, and the practice-to-practice gap. <https://doi.org/10.31234/osf.io/4swex>

Etikan, I. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4. <https://doi.org/10.11648/j.ajtas.20160501.11>

Emerson, L., Fear, J., Fox, S., & Sanders, E. (2012). Parental engagement in learning and schooling: Lessons from research. A report by the Australian Research Alliance for Children and Youth (ARACY) for the Family–School and Community Partnerships Bureau: Canberra.

Fink, A. S. (2000). The Role of the Researcher in the Qualitative Research Process. A Potential Barrier to Archiving Qualitative Data. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 1(3), Art. 4, <http://nbn-resolving.de/urn:nbn:de:0114-fqs000344>

- Farhana, Z., Tanni, S. A., Shabnab, S., & Chowdhury, S. A. (2020). Secondary Education During Lockdown Situation Due to Covid-19 Pandemic in Bangladesh: Teachers' Response on Online Classes. *Secondary Education During Lockdown Situation Due to Covid-19 Pandemic in Bangladesh: Teachers' Response on Online Classes*, 2222-288X (11), 20th ser., 97-102. doi:Journal of Education and Practice
- Fauzi, I., and Sastra Khusuma, I. H. (2020). Teachers' Elementary School in Online Learning of COVID-19 Pandemic Conditions. *J. Iqra*. 5 (1), 58–70. doi:10.25217/ji.v5i1.914
- Henderson, A. T., & Mapp, K. L. (2002). A New Wave of Evidence: The Impact of School, Family, and Community Connections on Student Achievement. Annual Synthesis.
- Hesse-Biber, S. N., & Leavy, P. L. (2011). The practice of qualitative research (2nd ed.). SAGE.
- Illing J. 2014. Thinking about research: Theoretical perspectives, ethics and scholarship. In Swanwick T, editor. *Understanding Medical Education: Evidence, Theory and Practice*. West Sussex: Wiley-Blackwell; p.331–347.
- Koohang, A. and Durante, A. (2003), "Learners' perceptions toward the web-based distance learning activities/assignments portion of an undergraduate hybrid instructional model", *Journal of Information Technology Education: Research*, Vol. 2 No. 1, pp. 105-113.
- Kulal, A., & Nayak, A. (2020). A study on perception of teachers and students toward online classes in Dakshina Kannada and Udupi district. *Asian Association of Open Universities Journal*, 15(3), 285-296. <https://doi.org/10.1108/aaouj-07-2020-0047>
- Korstjens, I., & Moser, A. (2017). Series: Practical guidance to qualitative research. Part 4:

- Trustworthiness and publishing. *European Journal of General Practice*, 24(1), 120-124.
<https://doi.org/10.1080/13814788.2017.1375092>
- Khan, M. M., Rahman, S. M., & Islam, S. T. (2021). Online education system in Bangladesh during COVID-19 pandemic. *Creative Education*, 12(02), 441-452.
<https://doi.org/10.4236/ce.2021.122031>
- Lestari, P. A. S., and Gunawan, G. (2020). The Impact of Covid-19 Pandemic on Learning Implementation of Primary and Secondary School Levels. *Indonesian J. Elem. Child. Educ.* 1 (2), 58–63.
- Majed, D. N., Jamal, G. A., & Kabir, R. M. (2021, November 19). Online Education: Bangladesh Perspective, Challenges and Way Forward. *The daily Star*.
- Mondol, M. S., & Mohiuddin, M. G. (2020). Confronting COVID-19 with a paradigm shift in teaching and learning: A study on online classes. *International Journal of Social, Political and Economic Research*, 7(2), 231-247. <https://doi.org/10.46291/ijospervol7iss2pp231-247>
- Moravec, J. M. (2020). International education in the era of COVID-19: Making learning visible. *Social Education*, 8(1), 38-42.
https://www.academia.edu/42748704/International_education_in_the_era_of_COVID-19_Making_learning_visible?fbclid=IwAR19moVGjk3tONx5E9KLL_JQtaJc4ej2LiA5mhn5aJTJ3vE8KtT8-10xOQ
- McGrath, C., Palmgren, P. J., & Liljedahl, M. (2018). Twelve tips for conducting qualitative

research interviews. *Medical Teacher*, 41(9), 1002-1006.

<https://doi.org/10.1080/0142159x.2018.1497149>

Mishra, L., Gupta, T., & Shree, A. (2020). *Online Teaching-Learning in Higher Education during Lockdown Period of COVID-19 Pandemic*, 1(100012), 1–8.

<https://doi.org/https://doi.org/10.1016/j.ijedro.2020.100012>

Mailizar, M., Almanthari, A., Maulina, S., & Bruce, S. (2020). Secondary school mathematics teachers' views on E-learning implementation barriers during the COVID-19 pandemic:

The case of Indonesia. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(7), em1860. <https://doi.org/10.29333/ejmste/8240>

Majid, M. A., Othman, M., Mohamad, S. F., Lim, S. A., & Yusof, A. (2017). Piloting for interviews in qualitative research: Operationalization and lessons learnt. *International Journal of Academic Research in Business and Social Sciences*, 7(4), 1073-1080.

<https://doi.org/10.6007/ijarbss/v7-i4/2916>

Mishra, L. (2016). Focus group discussion in qualitative research. *TechnoLearn: An International Journal of Educational Technology*, 6(1), 1-5. <https://doi.org/10.5958/2249-5223.2016.00001.2>

Mesghi, B., Ponomareva, S., and Ugnich, E. (2019). E-learning in Higher Inclusive Education: Needs, Opportunities and Limitations. *Int. J. Edu. Manag.* 33 (3), 424–437.

doi:10.1108/IJEM-09-2018-0282

Ngalomba, S. 2020. Using WhatsApp to Enhance Online Learning. *University World News*:

Africa Edition. <https://www.universityworldnews.com/post.php?story=20200421102812987>

Omona, J. (2013). Sampling in qualitative research: Improving the quality of research outcomes in higher education. *Makerere Journal of Higher Education*, 4(2).
<https://doi.org/10.4314/majohe.v4i2.4>

O.Nyumba, T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9(1), 20-32. <https://doi.org/10.1111/2041-210x.12860>

Preez, P. D., & Grange, L. L. (2020). *The COVID-19 Pandemic, Online Teaching/ Learning, the Digital Divide, and Epistemological Access*, 1, 90–106.
<https://doi.org/https://doi.org/10.29086/978-0-9869936-1-9/2020/AASBS01>

Putra, P., Liriwati, F. Y., Tahrim, T., Syafrudin, S., and Aslan, A. (2020). The Students Learning from home Experiences during Covid-19 School Closures Policy in Indonesia. *J. Iqra*. 5 (2), 30–42. doi:10.25217/ji.v5i2.1019

Parker, M., & Alfaro, P. (2021). Education During the COVID-19 Pandemic: Access, Inclusion and Psychology Support Leaving No Caribbean Child Behind. United nations: ECLAC.

Ruoslahti, H. (2020). From Classroom to Online Teaching – A Case during COVID19. *From Classroom to Online Teaching – A Case during COVID19*, 46(3), 1314-2119, 285-292.
doi:<https://doi.org/10.11610/isij.4620>

Remuzzi , G., & Remuzzi, A. (2020). *COVID-19 and Italy: What next?*, 395(10231), 1225–1228.

[https://doi.org/https://doi.org/10.1016/S0140-6736\(20\)30627-9](https://doi.org/https://doi.org/10.1016/S0140-6736(20)30627-9)

Sims, R., Dobbs, G. and Hand, T. (2002), “Enhancing quality in online learning: scaffolding planning and design through proactive evaluation”, *Distance Education*, Vol. 23 No. 2, pp. 135-148.

Sadiku, M. N., Adebu, P. O., & Musa, S. M. (2018). Online Teaching and Learning. *Online Teaching and Learning*, 8(2), 2277-128x, 73-75. doi:10.23956/ijarcsse.v8i2.549

Sintema, E. J. (2020). E-learning and Smart Revision Portal for Zambian Primary and Secondary School Learners: A Digitalized Virtual Classroom in the COVID-19 Era and beyond. *Aquademia*, 4(2), ep20017. doi:10.29333/aquademia/8253

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63-75. <https://doi.org/10.3233/efi-2004-22201>

Toquero, C. M. (2020). Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagogical Res.* 5 (4), em0063. doi:10.29333/pr/7947

Torres, P. D. (2021). Active Engagement of Stakeholders During the Pandemic: Basis for Creating Flexible Learning Environment for Students. *International Journal of Innovative Science and Research Technology*, 6(2), 466-476.

Wu, S. (2021). How teachers conduct online teaching during the COVID-19 pandemic: A case study of Taiwan. *Frontiers in Education*, 6. <https://doi.org/10.3389/educ.2021.675434>

Watermeyer, R., Crick, T., Knight, C., and Goodall, J. (2020). COVID-19 and Digital Disruption in UK Universities: Afflictions and Affordances of Emergency Online Migration. *High Educ. (Dordr)* 81, 623–641. doi:10.1007/s10734-020-00561-y

Appendices

Appendix A: Letter of Consent

Research Title: Online teaching learning mode for mathematics in primary schools during pandemic: Teachers’ perception and practice.

Date:

Dear (.....),

I am Mousume Alam Mile here with you for my thesis purpose and seeks your cooperation. My thesis title is “Digital platform of Primary Education during Covid-19 Pandemic: Teachers’ Perspective on online teaching learning mode for mathematics”. I am a Masters’ (M.Ed) student of BRAC University. In partial fulfillment of my Master’s degree, I must prepare a research monograph. For this purpose, I’m undertaking the above-mentioned research project.

To explain more, as part of my thesis research under BRAC IED, I am interested to explore teachers experience on online teaching learning during covid-19 pandemic specifically teaching mathematics. How teachers actually adjust with sudden change in teaching mode.

This research will require about 1hours of your time. During this time, you will be interviewed about your experiences while teaching and communicating with students. The interviews will be conducted online in your convenient time and will be recorded.

To mention clearly here are no anticipated risks or discomforts related to this research. The records from this study will be kept as confidential as possible. Only I and my supervisor will have access to the files and any audio tapes. Your data will be anonymized and your name will not be used in any reports or publications resulting from the study. All digital files, transcripts and summaries will be given codes and stored separately from any names or other direct identification of participants.

You may also find the interview to be very enjoyable and relatable, as many people who experience this do not get to share their experiences. By participating in this research, you will create opportunity for future researchers.

Your participation in this research is completely voluntary. However, you may withdraw from the study at any time for any reason. The results from this study will be presented in a paper

If you wish to receive a copy of the results from this study, you may contact with me at the telephone number given below.

If you require any information about this study, or would like to speak to me, please call (Mousume Alam Mile) at (+880163937897).

I have read and agree the above information regarding this research study on the experience of teacher, and consent to participate in this study.

_____ (Printed Name)

_____ (Signature)

_____ (Date)

Appendix B. Interview Guidelines

Semi structured interview questions:

1. Can you please share your experience of teaching learning process on sudden changed platforms during covid 19-pandemic?
2. Can you please share your (teacher's) perspective on using technology in the teaching learning process?
3. How do you see the remote learning process?
4. What are the method and strategies to design the teaching learning process to achieve learning objectives through digital modes for primary grades mathematics/ skills?
5. Is online teaching feasible in the context of Bangladesh? Yes/No. Give rational for your response.
6. What are the challenges faced by the teachers to conduct mathematics classes online? Could you please share in details?
7. Is the new mode of teaching learning being capable to meet the set objective completely?
8. Will you be interested to continue on the same platforms after pandemic ends? If yes why? If no, why not?
9. What teaching learning techniques can be adapted to makes mathematics learning interesting in this digital mode?
10. Are parents being supportive and comfortable is this new mode or not? Share your experience.

Focused Group Discussion (FGD)

1. Do you think distance learning creating more learning gap than face to face teaching learning system? Support your answer with rational.
2. What is the impact of digital learning on students as they are more into technology?
3. What does students prefer most the mode of education over and alongside regular mode of education? Kindly explain why?
4. Will you suggest and recommend any alternative method or initiative government could have taken during the covid-19 pandemic?
5. Do the students feel boring and tough to follow the steps of new method of learning mathematics?
6. How are the students are engaging in the new process of teaching learning process?
7. What do you think teaching mathematics in online is tougher than offline- If yes why? If no, why not?
8. Do you think covid-19 has given an opportunity for innovation or created challenges? Which part you support and why?