

**THE PERCEPTION OF TEACHERS ON THE USE OF
DIGITAL RESOURCES IN CLASSROOM; A STUDY IN
GOVERNMENT PRIMARY SCHOOLS OF DHAKA CITY**

By

Md Towhidur Rahman
Student ID: 18357006

A thesis submitted to the BRAC Institute of Educational Development in partial
fulfillment of the requirements for the degree of
Master of Education in Educational Leadership & School Improvement

BRAC Institute of Educational Development
BRAC University
December 2020

© 2020. Md Towhidur Rahman

Declaration

It is hereby declared that

1. The thesis submitted is my/our 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/We have acknowledged all main sources of help.

Student's Full Name & Signature:

Md. Towhidur Rahman
Student ID: 18357006

Approval

The thesis/project titled “The perception of teachers on the use of digital resources in the classroom; a study in Government primary schools of Dhaka city” submitted by

1. Md. Towhidur Rahman (ID 18357006) has been accepted as satisfactory in partial fulfilment of the requirement for the degree of Master of Education in Educational Leadership & School Improvement on 31 December 2020.

Examining Committee:

Supervisor:
(Member)

Dr. Mohammad Mahboob Morshed
Assistant Professor, BRAC Institute of Educational Development

Program Coordinator:
(Member)

Dr. Mohammad Mahboob Morshed
Assistant Professor, BRAC Institute of Educational Development

External Expert Examiner:
(Member)

Dr. A.K.M Badrul Alam
Senior Lecturer, BRAC Institute of Educational Development

Head of the Institute:

Dr. Erum Mariam
Executive Director, BRAC Institute of Educational Development

Ethics Statement

The research was conducted by protecting the integrity of the research through following measures. To protect the privacy of the interviewees, an informed consent was designed to address the ethical concern. The consent form designed with the description of important issues such as purpose of study, description of no risk, statement for confidentiality, with the right for withdrawal from interview at any point, no personal gain but volunteering this research (Johnson & Christensen, n.d.). The confidentiality also given high importance by incorporating plan for securing data in mobile device as well as hard copies. The data was placed accurately in transcript and secured to respect individual belief and perception.

Abstract

This study is an exploration of the perception of primary schools teachers on the use of digital resources in the government primary school. Teachers perception were analysed by identifying the factors relating to their preparedness, usage of the digital tools and factors related to the usefulness of digital contents and resources. To identify these factors, the study analysed the teachers' good practices of digital tools and their understanding of the effective digital learning materials.

The study was conducted in form of qualitative research where data was collected from four government primary schools based in Dhaka. The interviews were carried over phone during the COVID-19 pandemic when the government of Bangladesh imposed lockdown in Dhaka and announced the closure of the all education institutions.

The study revealed primary school teachers perceived that the use of digital resources in the classroom is substantially useful for making a class interactive. However, the study indicated that the factors relating to the teachers' preparedness on the use of digital classroom play a significant role while presenting effective digital learning materials or contents are also important for making a classroom enjoyable and helping primary school students achieving learning outcome. More effort on the areas such as increase the digital resources, teachers' professional development, quality digital learning materials, administrative support and infrastructure for accessibility are also proposed by this study.

Keywords: teachers' perception; digital classroom; digital contents; ICT in education; digital learning;

Dedication

This thesis is dedicated to my teachers and family for their significant support and encouragement.

Acknowledgement

I whole heartedly thank my supervisor Dr. Mohammad Mahboob Morshed for his continuous guidance and motivation to keep looking forward. I also like to show my gratitude to my family members for their continuous motivation and believe in me achieving my long-term goal of my life.

Table of Contents

Declaration.....	2
Approval	3
Ethics Statement.....	4
Abstract.....	5
Dedication	6
Acknowledgement	7
Table of Contents	8
List of Figures.....	11
List of Acronyms	12
Chapter 1 Introduction and Background	13
1.1 Introduction.....	13
1.2 Research Topic.....	13
1.3 Statement of the Problem.....	14
1.4 Research Questions	15
1.5 Purpose of the Study	15
1.6 Significance of the Study	16
Chapter 2 Literature Review and Conceptual Framework.....	18
2.1 Digitalization of education sector	18
2.2 Digitalization of Bangladesh education	19

2.3 Concept of Multimedia or Digital classroom.....	21
2.4 ICT in Education.....	22
2.5 Benefits of using digital resources in Education.....	23
2.6 Digital Resources for learning	24
2.7 Teachers' perceptions and the use of digital resources for teaching	26
2.8 Conceptual framework.....	27
Chapter 3 Methodology.....	30
3.1 Research Approach	30
3.2 Research Site.....	30
3.3 Research Participants	30
3.4 Sampling Procedure	31
3.5 Data Collection Methods	31
3.6 Role of the Researcher	32
3.7 Data Analysis	33
3.8 Ethical Issues and Concerns.....	35
3.9 Credibility and Rigor	36
3.10 Limitations of the study	36
Chapter 4 Results.....	37
Chapter 5 Discussion and Conclusion.....	45
5.1 Discussion.....	45
5.2 Conclusion	53

5.3 Recommendations.....	54
References.....	57
Appendices.....	61
Appendix A. Consent Letter	62
Appendix B. Interview protocol and questionnaires.....	63

List of Figures

Figure 1: Conceptual Framework.....25

List of Acronyms

ICT Information and communications technology

IT Information technology

ATEO Assistant Thana Education Officer

HT Head Teacher

Chapter 1

Introduction and Background

1.1 Introduction

The aim of the research was to explore the teachers' perception towards the use of digital resources in the classrooms of the government primary schools. The study reviewed the use of various digital resources such as computer, projectors, internet, digital learning materials relevant multimedia tools. This study describes the good practices of teachers, the motivational factors, user experience and practicality of digital content for teaching and learning. A qualitative study was carried out by interviewing the teachers to understand various use and digital resources in the class. The study revealed that there are various forms of digital resources based on multiple practices for digital learning. There are a number of various explanations among different researchers. To be more specific on the definition of digital resources, the study focused on digital tools and digital learning materials or content.

Study refers digital tools as computer, mobile, multimedia hardware, etc that are being used to access both online and offline digital teaching materials. On the other hand, digital learning materials defined as the digitalized contents such as digital data (audio/video), e-book, or any learning content presented through digital tools (Lin, Chen & Liu, 2017). In order to identify the relationship between these factors with teachers' perception, teachers preparedness on the use of digital resources, their usability or user experience and usefulness of these resources were examined as the key themes of this study.

1.2 Research Topic

Topic: Use of Digital resources in primary school

Title: The perception of teachers on the use of digital resources in the classroom; a study in Government primary schools of Dhaka city

1.3 Statement of the Problem

Digital classroom has been a major priority for Bangladesh Government. Several initiatives have been taken place to introduce multimedia classroom with the aim that this will improve teaching and learning process in the school. As part of the initiatives, Bangladesh Government initially set up 38000 digital classroom and provided training to 20000 teacher on the development of digital learning content (Sayed, Zaber, Ali & Mosharaf, 2017). Several studies show that the use of various digital resources in digital classroom made the teaching and learning process interactive. There are some recommendations and gaps identified in study that refers some issues relating to the capacity development of teachers, digital learning materials and recourse .Bairagi A. K. , Rajon S. A. A., Roy T. (2011) illustrated how the teachers perception on digital resources, digital tool can limit the effective use of technology in the classroom. On the other hand, study indicate that due to lack of quality digital learning materials is influencing usage of digital resources in the classroom (Sayed, Zaber, Ali & Mosharaf, 2017).

This study examined the factors that influences teachers' perception and will address the key issues on their experience on the use of digital learning contents for teaching. Neofotistos (2019) described how the use of appropriate digital learning content increase interaction of students and develop more areas for their critical thinking. This study can also contribute to the improvement of teaching and learning by identifying how teachers of Bangladeshi primary schools are using digital resources for their teaching and their motivation towards using digital learning materials to make their classes interactive and effective for students.

1.4 Research Questions

Key Question 1: What do the teachers perceive on their preparedness of using digital resources in their classes?

Sub-questions:

- a. What are the factors influence teachers preparedness on the use of digital resources?
- b. How do the teachers gain knowledge and skills for using digital tools and digital learning materials in the class?
- c. What types of the digital recourses teachers use in the class?
- d. How accessible are these resources from teachers' point of view?

Key Question 2 : How do the teachers perceive the uses of digital learning materials in their classroom activities?

Sub-questions:

- a. How do the teachers use digital learning materials in the class?
- b. What is the teachers view on the quality of digital learning materials?
- c. What do the teachers perceive about students response on the use of digital learning materials.

1.5 Purpose of the Study

The modernization of technology has extended services in all sectors and the education sector has not been left out in this peace. The aim of using technology and computers in the primary schools has overcome many limitations and researchers defined the importance of technology based primary education. The study explores the perception of teachers using digital resources in the classroom. One of the study found that less number of teachers are using

digital learning content in the classroom although the schools have the digital classroom and the majority of their teachers received the training on using and developing learning materials in the digital classroom (Sayed, Zaber, Ali & Mosharaf, 2017). This study focus the key attributes around teachers' pedagogy dimension, motivation and skill for delivering lesson through digital tools. The purpose of this analysis was to understand the factors that influence the teachers' motivation on the use of other digital tools in the classroom. Obaydullah, & Rahim (2019) indicated how the science class was effective for students in the primary school when teachers use the digital resources for delivering lesson. However, the study focused on key subjects to understand whether this practice has similar positive effect for the students. The other purpose of the study was to understand the teachers' view on the effective digital learning contents in the classroom. Study found that low number of teachers are using digital content from national teachers' portal although majority of the teachers reported that digital content is useful for their teaching. This indicate that, there might be a gap between teacher perception and practice (Sayed, Zaber, Ali & Mosharaf, 2017). This study addressed some information to mitigate this knowledge gaps by identifying the key factors and features for useful digital learning materials.

1.6 Significance of the Study

One of the key reasons for introducing the digital classroom in schools in Bangladesh was not only to contribute to the wider goal of Digital Bangladesh but also to enhance students learning outcome when the traditional approaches showed various limitations and challenges. The finding of the study could contribute to understand the current scenario of digital classroom and will provide some feedback against the effort made the government on introducing the multimedia classroom approach. This study further navigated the good practices of this approach which should help other teachers specially on developing positive perception by describing various uses of digital resources in the classroom. While describing

the good practices and uses, this study identified some gap that leads to some recommendations on proper utilization of digital resources. This will also provide guidance to teachers as the users. Finally, the study identified effective features of digital learning materials. This study not only provided recommendations for teacher but also for policy makers and other stakeholders to focus on developing efficient digital content or learning materials.

It is expected that the finding, discussion and the recommendation of this study provide some solutions for teachers, policy makers and schools leaders on how to embed the digital resources for delivering effective lesson in classrooms. The study indicated overall challenges and opportunities perceived by the teacher on the use of digital resources. The policy makers and stakeholders can consider this information to overcoming challenges and capitalize the opportunities for their future initiatives.

Chapter 2

Literature Review and Conceptual Framework

The information of this literature review gather from various resources like journals, books, reports and documents. The literature review initially described the digital education, the benefit of using digital resources, description of digital tools and digital learning materials. The key topic like teachers' perception, practice towards these digital resources is also covered later part. These topics are described as below.

2.1 Digitalization of education sector

The rapid growth of technology in past years introduced the concept of digitalization of education sector. The increases of uses of communication tools and IT resources has resulted many dimension in education sector such as multimedia tools for education, mobile learning, e-learning. Considering the availability and usability, the Government and business has invested largely on the digital education by applying digital resources in the classroom and developing digital learning materials to improve the teaching learning. (Lin, Chen & Liu, 2017). Similarly, the Government of Bangladesh has invested on digitalization of education sector which is one of the initiatives towards the goal of building Digital Bangladesh. One of the priority step was to establishing digital classroom in primary schools (Parvin, 2013).

Digital learning is conceptualized as the technology enhanced learning instruction that helps to improve the teaching and learning. This concept has broad range of strategies which include self-learning, blended learning, flipped learning etc. (Tømte, Fossland, Aamodt & Degn, 2019). Pai & Tu, (2011) concurred that digital learning is able to engage the student actively hence it helps to achieve the learning outcome. It was also explained that this achievement will depend on the teaching instruction and the use of digital resources. The

digital learning can offer flexible approach of pedagogy and innovative approaches for teaching and learning. Therefore, the effective use of digital resources is the primary issue for digital learning (Lin, Chen & Liu, 2017).

There has been a major shift from traditional approach of teaching to modern approach. This includes use of digital resources for making the teaching and learning process more innovative (Parvin & Salam, 2015). Ojo and Adu (2018) described the importance of using technology in the classroom for the effective teaching and learning. The authors further illustrated the fact that the use of digital learning enhance the overall quality of teaching in both primary and secondary schools. With the aim of making teaching and learning more innovative, the Government of Bangladesh initiated to introduce “multimedia classroom” in more than 20,000 primary, secondary schools and Madrasas. The initiative was undertaken by number of projects by Ministry of Education, Ministry of Primary and Mass Education (MoPME) including Access to Information Project which has been overseen by Prime Minister Office of Bangladesh. These initiatives not only improved the students' learning experience but also developed teacher’s IT skills as well as enhanced teacher’s learning materials and contents (Khana, Monem, Howlader & Roy, 2013).

2.2 Digitalization of Bangladesh education

With the slogan of “Digital Bangladesh”, the government of Bangladesh initiated several project for digitalization of education sector with the aims of ensuring quality and cost effective education for all. Government has been taking timely initiative of transforming schools to technology-based school by establishing digital classroom in the schools. Study reveals that these initiatives has significant impact in the school education, which contributed to the enrolment rate. However, considering the population and number of schools, major

portion of primary schools are yet to be equipped with digital resources (Sayed, Zaber, Ali & Mosharaf, 2017).

Research indicated student satisfaction rate on the response to government's digital classroom initiatives. The study shows over 90% satisfaction rate of students who said they would like to have digital classroom for all subjects. (Chowdhury, 2011). Apart from the digital resources like providing laptop, projector and internet connection, the government also taken a well-timed initiative focusing on the developing learning content by the teacher to ensure the contextual and cultural linkage so that student can adopt these material easily. Teachers from the grassroots level obtained training opportunities on the development of the digital learning materials. A national web platform also established titled as Shikkhokbatayan (<https://www.teachers.gov.bd/>) so that all the materials are available and accessible by teachers and students at any time in a common platform. Although the teachers receive the training on the content development, due to lake of knowledge on ICT tools, most of the teachers preferred to get support from third party vendor/content developer to ensure quality-learning materials for the students. (Sayed, Zaber, Ali & Mosharaf, 2017).

Although government has shown the full enthusiasm and effort on the digitization of Bangladesh school sector, Parvin (2013) has outlined several challenges on the initiatives of integrating ICT in Bangladesh education sector as below.

- *Support toward implementation:* Infrastructure and funding problem has been a common challenges in the implementation process. This is relating to maintenance and lack of resources.
- *Lack of Vision:* Proper utilization of the resources could not be ensured to lack of proper vision on Integrating the ICT in filed level.
- *Perception of users:* Building Positive perception among teachers and head teachers

- *Lack of adequate skill and awareness:* The capacity development of teacher needed to be a continuous process.
- *Teachers' capacity:* Due to workload of teachers, most of the cases they could spent very less or no time to contribute to the digital classes (Parvin, 2013).

Similar challenges identified by other study, which suggested that the teachers' development on the use of this digital resource should be the key focus. It was also advised for the technology based curriculum, effective digital learning materials and relevant software to support the improvement of teaching in digital classroom (Obaydullah, & Rahim, 2019).

2.3 Concept of Multimedia or Digital classroom

Multimedia is consist of various contents in various forms. These forms could be audio, text, visuals (image, videos animation) that are generally presented through electronic devices such as radio, television, computer, projector etc. Since the concept combines various forms of content, it's often considered as important interaction tools of communication or used a medium of communication Thamarana, S (2015). While describing the concept of multimedia tools, the authors also examined the use of these tools in teaching as these offers complex multi-sensory experience to the students by presenting valuable information in most interactive way.

Jshi (2012) compared the traditional classroom with multimedia classroom by defining the classroom setting. In the multimedia classroom, the seating arrangement of the students may be different considering the position of various equipment for audio and visual. The purpose of the multimedia tools have been explained here as the equipment for delivering lesson with audio, video and printing or displaying the text. Therefore, the lesson delivery becomes interactive and students' becomes more familiar with the lessons.

Thamarana (2015) illustrated the learning process with Multimedia with the approaches of the cognitive science research. One of the approaches is how learners differentiate information between visual and verbal presentation. Thus, learners can remember information for longer term if the information are been processed as pictorial model. The information process system in the human brain follows 3 steps which are selecting, organizing, and integrating. Moreover, these steps do not follow any sequence but depends on how the information has been processed which is linked to learning outcomes. Once the information are been constructed by following these steps, human brain stores this in long-term memory. Hence, several researchers stressed the importance of multimedia use in learning process. Multimedia tools are often refer as the tools for Information and communication technologies (ITC).

2.4 ICT in Education

Implementing ICT in the field of education is a common scenario for most of the developed countries. Wang (2008) examined the link that teaching and learning improvement factor linked with the implementation of ICT. To capitalise the benefit of ICT in education, Bangladesh also has established technology driven education in primary and secondary school. Hasan (2014) outlined ICT in education process in Bangladesh was establish through three main phases; firstly, establishing the physical structure of multimedia classroom with one computer, projector and internet modem. In the second phase, training the teacher on the use of the tools as well as to develop teachers led multimedia content. The third phases was to produce various electronic version of textbook as well as digital learning contents to primary and secondary schools.

However, (Cuban, 2001, 2013) argued that the effectiveness of computer in education would rely on the practice of these tools by the teacher and students. The study provide example about K-12 schools in USA where most of the classrooms are fully equipped with computers

but there has been little impact as there was no change observed in teaching practice which also led to no change in students' attitude. Eldeeb (2016) study reported positive students' perception towards e-learning approach. The factor that author has highlighted for this positive attitude is because of the features of the e-learning concept. The features are flexibility, availability, and self-control. These factors identified as the most common features of ICT based education as e-learning approach provides the flexibility to teacher to identify most relevant contents and deliver visual or dynamic lessons that can engage the students.

2.5 Benefits of using digital resources in Education

According to Černochová and Vaníček (2015), there are number of benefits of using technology in the classroom. The key benefits are inked with teaching process as the use of technology introduces more independent and appropriate approaches having more space for teacher's and student's interaction. The other benefits of multimedia classroom are supporting contextualized lesson as per students' needs and increase interaction through multimedia activities. It is more dynamic learning process as it can develop more areas for critical thinking. Furthermore, Kayode and Olaronke (2014) elaborated various purposes of ICT use in the classroom. The authors indicated that multimedia classroom increase the attention of children in the classroom and help them to develop their cognitive, physical and emotional aspects. The study also indicated the technology materials could support children to develop their fine and gross motor skills.

Kiru (2018) identified integrating ICT in the classroom can improve pedagogy approach that helps to enhance students' achievement. The author further argued the frequency of ICT use varies on teachers' perception. On the other hand, the use of ICT in the classroom varies based on the subjects. For instance, the authors provide evidence of teacher using ICT more in English classes than Mathematics.

To elaborate the benefit of multimedia tools in education, Thamarana (2015) further explained the multimedia tools enable teachers to develop their teaching content easily and effectively. The author further add key pedagogical values as this increase students' interest considering the varieties way of communication. The other two pedagogical value are increasing learners' understanding with rich material and enhanced capacity of memorising information.

2.6 Digital Resources for learning

With the rapid development of Information technology, the application of digital resources for learning has been increasing. Digital resources for learning can be referred as computer and network technology that are being used for teaching and learning. Considering the advance growth in the knowledge and technology the use of digital resources can vary as well as the definition of digital learning would be different accordingly (Lin, Chen & Liu, 2017). As per the comprehensive analysis by Keane (2012), the form of digital resources for learning can be summarized as digital tools, digital teaching materials or content and delivery.

Digital Tools: Digital tools are defined as various equipment such as computer, laptops, tablet, and mobile help learner to proceed with learning activity (Keane, 2012). According to Hockly (2011) digital tools are referred as the tools for accessing and for presenting digital learning materials. For instance, computer enables to present digital teaching materials or to access these materials in online with the help of another tool such as wire or wireless network.

Digital content: Digital content refereed as digital learning materials by which learner could extract information and knowledge (Keane, 2012). Digital learning materials referred as digital contents that can be demonstrated by digital tools or hardware such as computer,

mobile and by software or online platform. These resources are easily accessible and assist students to achieve learning outcome. The digital learning materials capable of reducing the gap between schools based in urban and rural places. As a result, digital content could contribute to promote inclusive education (Pai & Tu, 2011).

Digital teaching material is one of the key fundamentals for digital classroom as it covers more creative digital media pictures, video, sound, image than traditional teaching materials, which are able to generate more attention among students, and make the class interactive (Jude, Kajura & Birevu, 2014)

e-learning: It focus on Internet based learning where learning activity take place in online. This is often referred as e-learning. The E-learning is defined on the process where learner use various digital tools such as computer, network, mobile, interactive TV, etc. to access information or to engage in virtual classroom.

Digital learning materials in the classroom: Digital content generally consist of digital data and information and displayed or broadcast by the electronic tools. Digital device such as computer and electronic equipment stores the digital content and present or stream by the computers. These stored data can come in various forms like video, animation, audio, image etc. (Isik, Askun & Ozden, 2011).

Several studies reported the importance of digital learning materials. To make the effective ICT based teaching and learning process, it is important to use the relevant and effective learning materials too. Stith (2004) provided subject specific example while describing the importance of the digital learning materials. The authors showed that the animation format of digital learning material is most useful for biology classes. In this case, the digital content is simulation, which was developed based on the real process inside of human body. So, the type of the digital materials and the content is crucial for effective ICT based education.

Regarding localization of digital learning materials for schools in Bangladesh Chowdhury, J. (2011) has reported some initiatives taken by the Bangladesh government. The first phase was to adopt existing relevant digital learning materials and then to translate and convert them in Bangla. However, it was reported that the initiatives had good success as some teachers and education were going beyond by developing and customizing content and video by themselves. This was possible when 63 teachers were trained in digital content development. The purpose of the training not only making the material but also focus was to develop those as student-centric lesson with the aim that student could develop their critical thinking and understanding on those digital lesson rather than memorizing the lesson. There were six-core team established to develop subject wise materials for Literature, Mathematics, Social science, Islamic study and Science.

2.7 Teachers' perceptions and the use of digital resources for teaching

Although several studies on ICT education of Bangladesh and report from Ministry of Education provided evidences, how the multimedia has made learning enjoyable for students, the use of multimedia may not be the same in all schools. Neofotistos (2019) revealed that the use of ICT varies from school to school not because of the availability of technology and relevant resources but the pedagogical beliefs of teachers. The teachers' perception towards the technology can limit the use of ICT in the classroom. Considering the findings, the study further advised continuous teacher training in ICT to ensure efficient use of technology in the classroom.

Thamarana (2015) stated that the most common role of multimedia classroom is to support the teacher for the broader discussion and interaction with students rather than teaching in the classroom. In this case the teacher would consider the tools for students' self-learning as it offers the flexibility and increase the capacity of students learning. This also reduce the limit of Teaching and learning. Semerci & Aydın (2018) revealed the factors influences teachers

perception towards the use of IT tools in the classroom. One of the most common factor is teacher's demographics and the other one is their relevant skills. The other interesting aspect of the teachers motivation is their workload although several studied showed that use in ICT can help teacher to manager their time efficiently. The other factor considering the ease of use is accessibility and infrastructure. Eldeeb (2016) shared interesting aspects that teachers' belief is related to the use of ICT as teachers although teachers have adequate computer Skill. Sometimes teachings bring their cultural aspects in the use of technology hence integrating of cultural components with technology is important.

In Bangladesh, teachers faced different challenges in the beginning of the implementation of multimedia in primary schools. Teachers were trained in various faces but the IT equipment was not delivered to schools as soon as they completed the training. Hence some teachers couldn't get opportunity to practice their new skill (NAPE, 2017). Kiru (2018) reported that the use of computer in different subject varies depending how teacher incorporate the tools for each subject. The author explained teachers use digital resources more in the English class than Mathematic classes. The key reason behind this difference was the purpose of classes where English class aimed to construct the knowledge and Mathematics class was to practice the skill.

2.8 Conceptual framework

Researchers examined teachers' perception towards digital tools has multiple dimensions. A study explained teachers' motivation, knowledge/awareness, skill and school culture helps teachers to prepare them on the use of digital resources (Spiteri & Chang Rundgren, 2018). Although this study indicated various other sub themes under for teachers' preparedness, the framework in the figure 1 will only focus on the four key themes. Davis, Bagozzi, and

Warshaw (1989) modified framework for Technology acceptance Model (TAM) where researchers illustrated the uses technology by two key factors, which are ease of use and usability. According to the above, the study will follow the dimensions of usability and usefulness as stated in the figure 1. Similar themes can be outlined in the study that analyzed the Drent framework. The study identified key factors like skill and knowledge of teachers influencing the use of digital resources such as computer, software, video, audio and presentation (Li, Yamaguchi, Sukhbaatar & Takada, 2019).

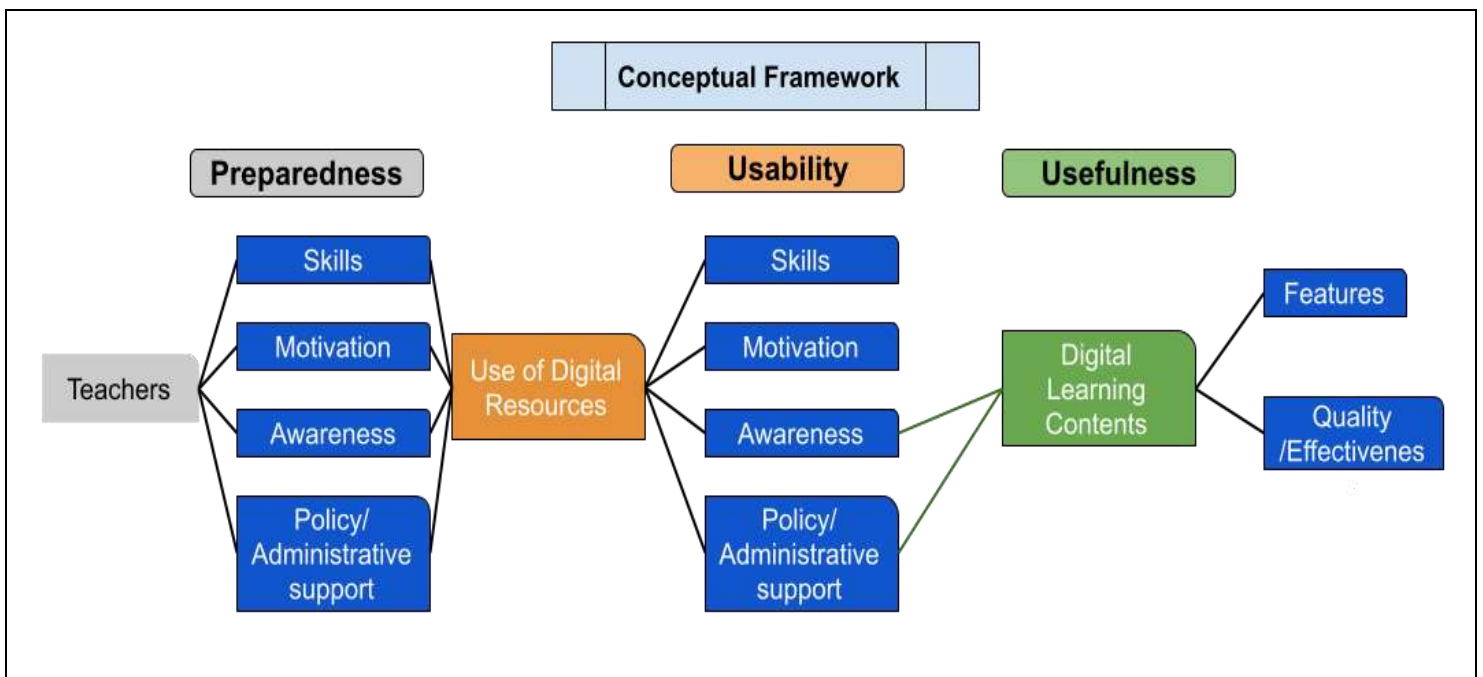


Figure 1: Conceptual Framework

In the above diagram, the teachers is highlighted as the key user although multiple stakeholders are engaged on the management of digital classroom such as head teachers, policy makers, students and parents. To understand the perception of the teacher, the key elements explored such as teachers' motivation, awareness, capacity and relevant administrative arrangement that are the influencing factor for teacher preparedness on the use of digital resources. Regarding usability, the examined factors are access and availability of

resources, supporting infrastructure, students' responses on the use of various digital resources. This study examined other important factor like types of digital resources such equipment like computer, projector, hardware and digital learning materials or contents. Study assumed that the positive or negative response of the students depends on the feature and quality of learning materials. The usefulness of learning materials depends on types of learning materials or contents that teacher adopts or develops for delivering their lessons.

Chapter 3

Methodology

3.1 Research Approach

The study followed qualitative approach through phone interview. Qualitative researchers are often seek for evidence from various data sources apart from the interview to ensure the credibility of data. This help the researchers to avoid biasness and being fully dependent on the data collected from single source (Bowen, 2009). Keeping this fact in mind, the study examined data gathered from feedback of head teacher and Thana Assistant Education Officer (TEOs) to compare the information of the majority participants (teachers).

3.2 Research Site

The study conducted in four government primary schools. The reason for selecting the government primary school was to ensure that study would carry over in similar environment such as the digital classroom set up, types of digital resources and standard guideline, which are similar across all the government primary schools. The selection criteria was to select those schools that have been using the digital classroom or multimedia classroom for at least last two years. These government schools are those where the government project on digital classroom/multimedia implemented. For the purposive selection, the specific area of these schools was within the Dhaka division. Having the researcher based in Dhaka, researcher assumed to have more geographical information about the school and to have more understanding of the local context.

3.3 Research Participants

The method of selecting the 13 participants of the study was purposive .The participants (teachers) was consists of 3 groups where majority (9 participants) were teachers who had at

least one years of experience of using digital resources for delivering lessons and have been teaching in the same school for at least two years. Education qualifications was taken into consideration as it was expected that all teachers would have similar level of education qualification. The two other groups were the head teachers of those schools and the relevant Assistant Thana education officers (ATEO) based in the areas. The consent form signed by the participant in advance as well as it was described in details before recoding of the interview to ensure participant understands that this interview was voluntary, confidential and they keep right to withdraw any point of interview.

3.4 Sampling Procedure

As indicated in the above two sections, the selection of the sampling was purposive. For the purposive technique, the teachers' selection criteria was set to ensure to obtain the relevant data for this study. Similar technique was followed to select the four schools from Dhaka division. As these schools have the required facilities (digital classroom) and have been practicing conducting the classes via digital classroom for longer period. The study expected to gather most relevant data from these schools. However, the key data was further taken into consideration while interviewing the other group of participants (ATEO) who are managing or monitoring activities in these schools.

3.5 Data Collection Methods

The main source of the data collection was phone interview with teachers. Considering the COVID-19 situation, the face to face could not be conducted although the initial plan was to interview in person. The questioner/tools attached in the Appendix 1 and Appendix 2. The questioner in Appendix 1, used for conducting interview of the teachers. There is another set of questioner (Appendix 2) designed for the head teachers and Thana Education Officer (TEO).

The questioner developed in English but most of the participants did not have enough proficiency in English or wished to answer the Bengali. As a result, this interview was in Bengali partially or fully. However, the interview was recorded in mobile device and the participants was notified at the start of the interview. The audio file from the mobile phone was transferred as soon as the interview finished ensuring the security of the interview in case of any loss of mobile or being displaced to other person. The recoding was scripted in form word documents. All the relevant electronic files (audio file, word document) was secured with password protected folder and device. Similarly, the hard copies of notes taken during the interview was secured carefully. As indicated, the other source of the information and evidence was collected through analysing some key documents and literature review.

For the telephone interview, the participants received concept form early. Few phone calls were made to build some rapport with participants. Although a face to face interview is more useful to engage with interviewee and build a rapport easily. To minimize the time and to conduct the interview efficiently, a script was followed to provide the introduction about the interview (Glogowska, Young & Lockyer, 2010). The detailed log and relevant notes was captured for the phone interview. The information included the time of the call, duration of the call. A schedule was prepared and maintained for the phone interview. The interviewee requested to provide their suitable time slot, they could also mentioned about time when they would like to avoid the call (e.g evening, particular time). The scheduled was prepared by keeping some extra slot in case of call drop, network problem or any other interruption during the call.

3.6 Role of the Researcher

The researcher understood that dimension of the qualitative research. Strauss & Corbin (1998) stated that there is a chance of influencing or interrupting the any qualitative research

considering the biasness of researcher’s perception, assumption or previous experience. To avoid the mentioned fact, the researcher cross-checked the interview notes with the interviewees and with a 3rd person to increase the credibility and validity.

3.7 Data Analysis

The data analysis started from the interview transcripts and examined very carefully. At the first round, transcripts were read initially to ensure all the information are well captured, interview note and record are in order. The transcripts were re-read to identify the general themes, highlights key topics with heading. The last time was to generate categories. After these reading, these categories were reorganized under a broad category that were later coded. The interview transcript were printed in hard copies to easily mark/highlight the common theme and categories. Particular sentence or paragraph were highlighted to generate categories. Moreover, the broad categories had a simple tittle. The analysis was narrowed by the use of digital resources and digital learning materials. The table below shows how the expected themes were related with research questions and questioners.

Research Question	Research Sub-Question	Conceptual framework theme	Specific Questions
What do the teachers perceive on their preparedness of using digital resources in their classes?	a.What are the factors influence teachers preparedness on the use of digital resources?	<u>Teachers preparedness</u> Attitude Requirement s of uses Schools rules/policy Motivation	1 .Do you use digital resources for teaching regularly. How long have you been using digital tools in the classroom? 2. What do you perceive on the importance of using digital resources in the classroom Probes: Why did you consider using digital tools in you classroom? Probes: Describe your experience on digital resources in the classroom 3. Is there any instruction/guideline from administration or school leader? Probes: Who provides the instruction? Probes: Why do you follow the instruction or

			<p>guideline? Probes: What are the key points in the instruction? How do you follow the instruction?</p>
		<p>Preparedness : Resources /facilities</p> <p>Usability: Digital tools</p>	<p>4. What are the facilities in place that enable you to use the digital resources in the class?</p> <p>Probes: Who is authorized person to provide you the opportunity of use these resources? Probes: What is the current situation of digital resources in the school? Probes : How have these resources been maintained? Probes: Have you faced any difficulties using this equipment?</p>
	<p>b. How do the teachers gain knowledge and skills for using digital tools and digital learning materials in the class?</p>	<p>Teachers preparedness (knowledge and Skill)</p>	<p>5. How did you acquire knowledge and skills on using these tools? Probes: Why did you engage yourself in the training? Probes: What type of training have you received? What the duration and frequency of these training? Probes: Who followed up after your trainings? Probes: Please explain your experience whether the training is enough for you to use the resources? Probes : How do you see the continuous professional development opportunities? What types of professional development you foresee from these trainings? Probes : What could be included or excluded in these training and why do you think so?</p>
	<p>What types of the digital recourses teachers use in the class?</p>	<p>Usability: Type of digital resources</p>	<p>6. What are the Digital tools you are using for your class? Probes Why are you using specific digital tools?</p> <p>7. What types of Digital learning content you are using in the class? Probes: Why are you using specific digital contents? Probes :As per your view, do you think all students are been benefited by the use of these resources, if not, who are the most benefited group.</p>

	How accessible are these resources from teachers' point of view?	Usability: Access, infrastructure	8. What is your view on the availability of digital tools? Probes: Do you have enough digital tools (multimedia tools, internet, etc.) in the school? Probes; How easy to access all these resources? Probes : Who can access these facilities ?
How do the teachers perceive the uses of digital learning materials in their classroom activities?	How do the teachers use digital learning materials in the class?	Usability :Practice, process	9. How do you select and prepare your lesson plan for using the digital contents? Probes: What is the sources of digital contents? Probes: What is your view on the quality of available digital contents? Probe: Do the all students respond the same towards these contents? If not, then who responds most?
	What is the teachers view on the quality of digital learning materials?	Usefulness : Features of digital learning materials	10. How do you know the contents that you are using are useful? Probes: What are the features that make contents useful for students? Probes: Do you consider of preparing digital content-based lesson plans? If yes, Why?
	What do the teachers perceive about students response on the use of digital learning materials.	Usefulness effectiveness –contents	11. How do the students engage in the learning activities while using the digital content?
		Usability : maximizing the use of equipment and contents	12. Do you have you any suggestion for further improvement on use of digital tools/equipment and digital contents in the classroom?

3.8 Ethical Issues and Concerns

The research was conducted by protecting the integrity of the research through following measures. To protect the privacy of the interviewees a consent form was designed with the description of important issues such as purpose of study, description of no risk, statement for confidentiality, with the right for withdrawal from interview at any point, no personal gain but volunteering this research (Johnson & Christensen, n.d.). The confidentiality also given high importance by incorporating plan for securing data in mobile device as well as hard

copies. The data was written accurately in transcript and secured to respect individual belief and perception.

3.9 Credibility and Rigor

I have over 10 years' experience working in education and skills sectors. Over these years, I have developed interest, knowledge and experience of education development by working in key areas of education and skill fields especially focusing on teaching and learning practice. I have observed that there are lot of opportunities in digital education process considering the high priorities by the government. Therefore, I develop my interest in analysing teachers' perception on using digital resources in the classroom. To do that, I have equipped myself by taking theory courses to conduct this dissertation. In addition to that, I have gained information from the relevant stakeholders, colleagues and from my supervisor along with the extensive literature review. After getting the primary information for this study, I've gone through several steps to develop my research proposal, conceptual framework and research matrix related to my research questions. Having the prior knowledge and information, the data collection process and interview gone smoothly with desired research site and research participants. After completing the data analysis, I found that there are some areas for development to ensure effective teaching and learning process through digital resources, which have been summarised in the section of research analysis and recommendations

3.10 Limitations of the study

In this study, there were some limitations. The first one was the sample size (13 teachers) which was small considering large pool of primary school teachers in Bangladesh. The second was to build rapport with interviewee as the interview was conducted over the phone and interviewees were never met in person. There could be chances in getting more data in face-to-face interview. The study initially planned to observe the classrooms for data

collection but it was not possible as the government enforced closure of all institutes of Bangladesh due to COVID-19. Observation data could contribute more to this study.

Chapter 4

Results

Introduction : During the interview the key themes related to the research questions and sub questions were analyzed. The initial part of the interview was around the preparedness of the teacher on the use of digital resources. The themes for this were teacher's experience, relevant skills, knowledge, and school support for the use of digital resources. In this stage, a significant sub theme identified from interview data that was not in the conceptual framework. This was teacher's professional development under the theme of teachers' skills. Moreover, teacher's preparedness was observed as substantially positive towards its relevant themes such as teachers' motivation, and skills. The other part of the interview was around usability of the digital tools and digital content. Although teachers stated the resources are available in most of the schools but those are not adequate, hence accessing those resources is challenging. Some challenges and recommendations also identified on the infrastructure and overall maintenance. Although the feedback on the topic of effectiveness and related factors for digital contents were limited, the study could examine these have positive influence towards making a class interactive and helps students to achieve learning outcome easily. However, the study identified some areas that requires improvement to ensure effective teaching and learning with the use of digital contents.

The phone interview conducted in a situation when the government imposed lockdown for a longer period due to COVID-19. Hence, most of the teachers were out of their work station and had been going through a stressful time like other. This is one of the challenges of the study as it was observed that most of the interviewee were taking time to confirm their

availability and consent for the interview. This challenge overcome by building rapport with interviewee by making several calls to provide them enough information to ensure they will be confirmable on the date of their interview. The other challenges were the teachers' conceptual understanding on the definition of digital resources as some of them were familiar with different terminologies like multimedia tools/classroom, digital contents etc. This challenge was tackled by providing definition and more information during the interview to clarify the terminologies such a way that interviewees are familiar with.

Teachers' preparedness: The theme of teachers' preparedness towards the use of digital resources highlights many subthemes or factors. However, the following factors were identified as the key subthemes that indicate clear relevance with this theme. This is worth mentioning that teacher's motivation and the skills developed by training identified as significant factors for teachers preparedness.

Motivation: All of the teachers showed their motivation towards their use of digital resources. The reason for this is teachers perceive implementation of digital resources has a positive impact among students. Out of 9 teachers, all teachers have experience using digital resources in the classroom for at least one years and they are continuing to use it in the class as they experienced it increases interaction and students enjoy the class more. This positive impact makes the teacher motivated towards the use of digital resources in their classes.

The above finding was supported by the 3 head teachers (HTs) who are interviewed. They also observed the enthusiasm among teachers and positive impact on the students. In addition to that, 2 of the HTs stated they also encourage all teachers to use the digital resources in their classes although some of them are not trained or not as competent with IT skill for using digital resources. One of the HT stated (Interviewee 5) that "I was so motivated that I

requested one of my teachers to teach me on how to use these digital tools and I had been taking lessons from him on a regular basis”.

A different dimension was discovered while trying to understand how teachers perceive the use of digital tools. One of the teachers said he is very passionate about the fact of using digital tools in the class but he expressed sympathy towards his students as all of them have come from very underprivileged families who do not have computers or smartphones. He (Interviewee1) said “When I taught them phonic sound by showing digital content, they all were very excited about this. However, just after the class, some of the students replied saying that they wish they could practice them at home but their parents cannot afford to get a computer or smartphone”.

Sometimes teachers are motivated by observing the practice of other teachers. One of the head teachers (Interviewee 10) stated “When the digital classroom was introduced, I was a bit confused as it was a completely new concept for me. However, when I observed a class, I found the students are learning very quickly. So, I started preparing myself to use the projector not only for delivering classes but also for special national days to teach students about culture, liberation war and history”

The feedback from the ATEO on the teachers’ motivation was positive. However, the motivation varies from teachers to teachers as per their observation when they visit school. One of the ATEO (Interviewee 12) said “I have observed only the trained teacher has been taking classes in a school where other were still not keen enough as they are not confidence on their ability of operating the digital tools”.

Required Skills and training: Out of 11 teachers in 4 schools, 4 teachers were officially trained by the support of the local education office. 3 of the teachers had prior skills on the use of laptops and others took lessons from their fellows. So, most of the teachers

acquired relevant knowledge and skills from their own initiatives. Out of 7 who are not trained, 4 of them acquired basic skills on the use of digital tools like laptops, speakers, etc where other 3 had acquired advanced skills like creating and customizing learning content before joining schools as teachers. This is very interesting to observe that those three who did not get training are continuing to demonstrate their advanced skills compare to some who got training in ICT in Education by the local education authority. This fact became easier to understand when one of the trained teachers said (Interviewee 11) “I went through 12 days of extensive training in PTI but I didn’t get enough opportunity and resources to practice what I learned from the training”. However, it’s worth mentioning that two of these teacher never used ICT tools in the class before the training. Those three teachers who were trained where initially nominated by the principal to take the training from neighbouring PTIs. 3 head teachers said they could select only one teacher who is a permanent teacher and age below 40 with the aim that the trained teacher will be able to share the learning from the training among other teachers in long run. Teachers went through 12 days training and the key topics of the training are use of ICT tools in education, Microsoft office and PowerPoint, developing learning materials, use of the internet, the use of online contents, using video, images in the class etc. All the three trained teachers recognized the training was effective. However, one teacher said that it was sometimes challenging for him to adopt all the topics in one training as he didn’t have much knowledge about the training earlier.

After the training the teacher was advised to use digital resources at least once in a week although 2 of the teachers felt the need of more frequent uses. Moreover, the teacher was not only able to use the tools but also 2 have stated that they are developing their own learning contents on a regular basis after the training. Teacher emphasised an issue by explain that since there is no clear instruction from the local authority for the trained teachers, it is sometimes challenging to conduct regular classes with the digital resources. For instance,

they were only advised to take at least 1 class per week and don't get any dedicated time to develop digital contents and train other teachers.

Professional development: Most of the trained teachers would like to recommend a follow-up training and the scope for professional development. Although most of the teacher could not see any further opportunity for their professional development, one of the trained teachers recognized that there is an option for professional development by doing well in the training assessment to prove them as the good potential master trainers. The head teachers also recommended that similar training should be organized for HTs so that they could understand the implementation of the training and can monitor the trained teacher on their practice. The feedback on the point of monitoring trained teacher performance, both head teacher and thana education officers indicated that they sometimes observe classes but they don't follow any particular monitoring tools to measure the teachers performance.

Schools' support: Study found that administrative support and advice from school authority influence the teachers' preparedness on the use of digital resources in the class. Since there is no clear instruction from the school authority on the use of digital classroom, teachers prepare their lesson as per their own understanding and own capacity on the handling digital resources. The interview identified need of some support and advice especially on detailed schedule for digital classes, dedicated time for teachers to prepare their lesson, guideline on the use as per the class or subject, monitoring system. To outline this issue, one of the teachers (Interviewee 1) said that "I was advised to take at least one class by using digital resources but I do not have any specific schedule for that nor I get extra time to prepare a digital content. On the other hand, I had to spend lot of time to fix the digital tools as there is no dedicated classroom or a technical to fix the tools for me".

Usability of digital tools and contents in the Classroom: This is another key factor as it was examined that teacher's perception develops on their experience of using digital resources in the classroom. Adequate amount of digital tools and suitable infrastructure are crucial to ensure the use of these resources. The interview questions aimed to understand to what extent these resources are being used and what are the factors that are important to ensure effective use. There are several themes identified that linked with the user experience as described below.

Available resources and Accessibility: Digital tools: The study found the availability of digital resources influences user experience. More available digital tools enables teachers to get more use experience. Under the government project of Multimedia classroom, all these four schools got one laptop, one projector and a set of speakers. The resources are not enough considering the need of the large number of students in these schools. As a result, teachers get limited opportunity to use these digital tools on a regular basis. They even struggle to access these at least once in a week. To ensure equal opportunity, head teachers said they maintain a logbook to make sure all teachers can use the tools at least once a week but they agreed that these tools are not sufficient.

Another challenge was time constraint. Since these tools are not fixed in one room, teachers have to spend significant time on fixing these tools with proper connection. One of the teachers (Interview 4) said that " I get only 40 minutes for a class. I spend around 10 minutes to fix the projector position, power supply, sound system etc. hence, I have to reduce the duration of my class". On the other hand, some teacher who did not get training in setting up IT tools but could operate laptop with basic skills, have to look for the trained teacher to help them in setting up these tools.

Maintenance and required infrastructure: All the 3 head teachers mentioned that they don't get any support or services for maintaining or repairing these tools. Sometime they had to manage funds and to identify service providers for repairing these tools. They face challenges in repairing laptops, projectors etc. and sometimes they have to wait till they manage both funds and identify a service provider. Similarly, schools managed the internet connection by their own initiatives and it was found that all these schools managed to get uninterrupted internet connection.

Usefulness of Digital Contents:

Since the teachers' pensiveness is linked with the effective use of digital resources, especially digital contents, the question relating to the effective digital contents was designed. Although the concept of the quality digital materials are not as much clear among all the teachers, the trained teachers were able to demonstrate the key features of effective digital materials. The teachers suggested a quality digital content should to be enjoyable for students, brief, fits with learning outcome, fit with allocated duration, and meaningful for the students' age group. Having these common features in mind, three teachers confirmed that they customise their digital teaching contents after getting those from various sources and sometimes they create new contents.

The other aspect of demonstrating the digital contents in the class is students' engagement process. It has been identified that the ICT trained teachers are more aware of students' engagement strategies while using digital contents. For instance, before using the digital content, teachers provide a short briefing on the contents explaining what the students will learn from this. After showing the contents, the teacher further explains about the contents and then arrange a quick reflection session followed by a quiz. However, a teacher (Interviewee 4) added an interesting dimension regarding student group, she said, "In my

class (grade 2) I have mix of different age group students. A group of students is older than other group. Sometime older students do not find much interest on particular video contents. So I have to organize a different arrangement to brief them separately”. It was observed that, the achievement of learning outcome depends on suitability of the contents as well students’ engagement activities and lesson plan.

Digital content: The study examined how the teacher perceived the use of digital contents in the classroom and the impact among students. All the 9 teachers mentioned that they use those sort of digital contents that are interactive and enjoyable to the students. These teachers stated that they generally get contents from google, YouTube and shikhokbatayon (<https://www.teachers.gov.bd/>) portal. The trained teachers mentioned that they sometimes customize the materials to align with their lesson plan. Most of the teachers perceive that there are enough contents available and the contents that are available in shikhokbatayon are enough. However, Interviewees (7 and 8) mentioned that sometimes they have to spend some time to find quality digital contents from that portal as not all the contents are suitable. To specify this issue, one teachers (Interviewee 8) said “There are thousands of digital contents are available in shikhokbatayon but sometimes I struggle to find the suitable contents although these are categories in subjects and grades. I noticed that some dialogue and images used in contents are not appropriate considering the target group, age and some are not linked with learning outcome”.

The study identified teacher perception is closely related with the preparedness, usability and usefulness of the digital resources. The themes like teachers attitude, motivation, skills and schools support was observed as the significant factors for preparedness. Similarly, the themes like accessibility, resources, and students’ response are linked with the teachers’ user experience. The factor for the effectiveness of digital contents were examined with limited data compare to the other key themes. Although the data were limited, significant data was

found from four interviewees that indicate the link with themes and provide recommendation on the effectiveness of digital learning contents.

Chapter 5

Discussion and Conclusion

5.1 Discussion

Considering the research questions of this study, the initial part of the interview was to understand the teachers' preparedness and practice on the use of digital resources in the classroom. The relevant factors such as teachers' motivation, available resources, relevant knowledge, accessibility and administrative support have been examined. It was identified that these factors are linked with teachers' perception. Neofotistos (2019) argued the use of ICT tool in the classrooms varies from school to school due to teachers' pedagogical belief towards the digital resources. This study examined similar relation with teachers' perception from the interview data of this study. The study examined the following themes and demonstrated how these are linked with the teachers' perception and playing significant role to influence the use of digital resources.

Teachers' attitude and preparedness: All the teachers responded positive attitude towards the use of digital tool in the class. They believe that teaching through digital tools is very effective as it makes the class interactive and interesting. It helps them to draw the students' attention and make the lesson enjoyable for the students. Similarly, the other research found that this approach support teachers to broader the discussion by interacting more with the students (Thamarana, 2015).

Having this positive attitude, the teachers prepare their lesson plan and schedule in a way that they could take classes with digital tools on a regular basis. The same observation reflects

from the feedback from all the three head teachers attended the interview. As a result, the head teachers are also very enthusiastic towards this practice and always try to support their teachers and encourage other teachers to follow the practice. Moreover, it was also observed that those teachers who had less interest in using digital tools in the class, had very little experience in using these tools due to lack of their skill and awareness on the multimedia tools. Another research indicate the same regarding the effectiveness of teaching through digital resources depends on the motivation of teachers that reflects from their practice (Cuban, 2001, 2013). The head teachers always try to create awareness among the other teachers. Both the Asst. Thana education officers also responded positively and they demonstrated their keenness to encourage the schools on the use of digital resources. They also indicated that not all the schools are following this method at the same ratio as it depends on which school has more motivated head teachers and skilled teachers. This result showed the link of teachers' motivation towards the practice. Based on their observation during their visit to schools, they provide training opportunities and other support to encourage the schools and teachers on the use of digital resources.

Required Skills: The finding of the study express an interesting dimension regarding link between teachers perception with their required ICT skill. The interview explored that most of the teachers develop their skill on the use of digital tools through self-initiative, someone's help and learned by doing. Each school has one teacher who received training in ICT in Education by the local education authority. Since the training opportunities are limited, most of the teachers and head teacher learn from other trained teachers or someone who developed the relevant skills through their own interest and practice. It was observed that skilled teachers are more successful in organizing more interactive classes with digital tools. Similarly, Eldeeb (2016) revealed that the perception of the teachers is linked with the teachers' skills especially on the use of computer as it indicated that the perception would not

be positive unless they acquired the required skills despite of having enough resources. In the interview of this study, head teachers also responded the same that students are more interested in attending classes of those teachers who teach through digital contents. Although skilled teachers are very helpful to support other teachers, sometimes they are unable to help due to time constraints. On the other hand, different set of skills are also very important to teach through ICT tools. For instance, some teachers may have gained skills in presenting digital learning contents through a laptop/projector but they often need technical support in setting up those tools in the class. Since there is no dedicated technician or IT person in the schools, they need help from other trained. Data argued it is important for teachers to have skills in various areas to ensure the smooth uses of the IT tools. Furthermore, data illustrated that, the prior knowledge and regular practice on the digital tools are also important and relevant with the mentioned training to ensure achieving the positive impact from the digital tools. The fact of using the digital tools in the classroom depends on the teachers' prior knowledge and skills. The use of digital resources is crucial for the effective digital learning process (Lin, Chen & Liu, 2017).

Training and Professional development: Data showed, the trained teachers have knowledge and skills in all the relevant areas hence do not need to depend on others to support them during the class. For instance, the teacher gets training in setting up IT tools, relevant software in presenting contents, preparing lesson plans and developing contents and finding them from various sources. Having all the required skills, the trained teacher can deliver class more easily and be able to make their class interesting among students. The researchers Černochová and Vaniček (2015) also revealed the same indicating the use of technology can help the teachers by creating more space and interaction between teachers and students.

The head teachers also provided similar feedback. Two of the head teachers endorsed that all the relevant skills are very important as both of them developed these skills with the support of trained teachers. They also agreed with the fact that they need more trained teachers.

Apart from the challenges of a low number of trained teachers in the school, the other issue is that post-training follow-up. Three trained teachers felt the need of the further training as the 12 days training was very extensive. The other issue was pathways for professional development for trained teachers, as they do not see any opportunities for further professional development. This opportunity is important considering it will encourage trained teachers to perform better in the class and train other teachers. Thana assistant education officers also observed that there is need for further training and professional development. Considering the volume of schools and teachers, they mentioned they would plan for this in long run once they cover most of the teachers in the first round of training.

Usability of Digital resources: All the interviewees agreed laptop, projector, etc are not adequate in the schools which resulted teachers are getting limited opportunities to use those for their classes. If there were enough tools in the schools, it would have been more helpful for less experienced teachers because they could develop the required skills by practicing more. The issue of lack of resources also discovered in other study that showed that majority of primary schools do not equipped with enough digital tools (Sayed, Zaber, Ali & Mosharaf, 2017).

On the other hand, teachers could take more classes in a week, which would make the classes more enjoyable. Some of the teachers also suggested a dedicated digital classroom or computer classroom where all the tools are well setup. This would have saved lot of their time. This would allow teacher to use the tools more and it would enhance their skills in handling tool as well as developing quality-learning contents (Khana, Monem, Howlader &

Roy, 2013). Although the authority provided these tools, head teachers felt the need to have a mechanism for maintenance. Schools have to outsource the support service and have to raise funding from their own, which is challenging most of the time. The other issue was the required infrastructure like power supply, internet and technical staff. These challenges interrupted the use of digital resources in the classroom. The data suggested there should be enough tools and required facilities to ensure the proper utilization of digital resources for delivering teaching.

Effectiveness Uses of digital contents: Digital learning materials is one of the key aspect of digital learning as it make the lesson more creative by demonstrating pictures, video, sound, image that generate more attention among students and make class interactive (Jude, Kajura & Birevu, 2014). The other part of the interview was to understand the practices of teachers towards digital contents in the classroom and their thoughts around the effectiveness of the contents among students. The teachers try to use digital contents for most of the subjects to make their classes interactive for the students. However, teachers use these digital learning materials mostly for Literature, Science and Math classes as it helps students to learn the lesson quickly and increase interaction in the classroom. Other researchers also described how learning materials linked with specific subject. A study provided an example stating animation are more useful for science subject like Biology, as it can demonstrate effective simulation (Stith, 2004). The research of Obaydullah, & Rahim (2019) also showed that how a science class could be more effective through interactive digital contents.

Most of the teachers said that the common source of those learning materials are the teachers portal (ShikhokBatayon), Youtube and google. However, identifying Bangla contents from YouTube and Google is sometimes difficult, for which they have to translate or customize. Most of the teachers felt that there are enough materials available online. The study found teachers use are generally use video, animation, image and power points slides.

The study examined most of the teacher download the contents from online instead of creating their own materials. The reason for this are, there are enough materials available in online and teachers do not get dedicated time to create their contents. The study of Semerci & Aydın (2018) indicated the same by explaining that how the use of ICT tools in the class is related to the teachers' workload.

Regarding the quality of available learning materials, teachers felt all contents are not suitable that area available in open platform or in Shikhok Batayon portal. Teachers have to spend lot of time looking for suitable contents and some cases they felt the need of creating their own contents. Interviewees explained the need of the quality materials and the features of these contents. Teachers suggested quality content should be fully aligned with the learning outcome, easily understandable by students, should have contextual synergies, brief and able to make the lesson interesting. While teachers are preparing their lesson plan, they select/create the particular contents by keeping those features in mind. Similar aspects were elaborated by other research that indicated a good learning materials support develop cognitive, physical and emotional aspect of the children Olaronke (2014). The same study also showed that interactive class could develop children's fine and gross motor skills.

The other important aspect is teachers' instruction guideline from authority and classroom settings, which sometimes rearranged depending on the setting of digital tools and number of students. Therefore, it is important for teachers to have their own strategies for engaging the students to ensure effective teaching through digital resources. Pai & Tu, (2011) described achieving learning outcome through digital learning is very effective but it is depends on the instruction of the teachers and classroom setting.

Summary of discussion: The above discussion on teachers' feedback indicates the synergies of various factors relating to the teachers perception on the use of digital resources in the

class. It provides observations on how significant these factors are to ensure good practice of digital resources as well as positive impact among students. Another study also showed that there is a clear gap between teachers perception and practice which affecting impact of multimedia classroom (Sayed, Zaber, Ali & Mosharaf, 2017). Therefore, the above discussion could reveal some important issue and suggestion for further improvement. The points below are briefly highlighted to demonstrate the importance, issues and suggestion relating to teachers ' perceptions on the use of digital resources.

Teachers' attitude: Positive attitude identified among teachers towards digital resources as teachers have observed the positive impact among students. However, it is notable to mention that teachers who have prior knowledge and skills on the digital tools are willing to use these tools in their classes. Building awareness among teachers is very important to maximum the uses of digital resources.

Available digital tools: Most of the school has only one computer/laptop, projector, and speakers. These tools are not enough compared to the number of students and classes. Teachers could only take one class per week. More digital tools would enhance teaching and learning practice.

Access to the resources: The tools are mostly access by the permission of the head teachers and teachers could get opportunities to use them rotation wise by following a logbook for requesting in advance. School faces challenges in using the tools due to power cut, smooth Internet service. On the other hand, due to technical problems sometimes teachers cannot use laptop/computer for a long time, as not enough resources are available.

Administrative support for digital resources: Head teachers are keen to support the teachers on the use of digital tools in the classroom. However, their main limitations are funds for managing internet service and maintenance of the tools. On the other hand, there is no

technical staff or support service available for these resources. It would be helpful for the schools if the local education office could extend their support on this.

Monitoring practice: Head teachers observed the class on a regular basis although there are no monitoring tools or surveys followed by them. Similarly, there is no systematic monitoring system in place from the local education officer. An exclusive monitoring tools or surveys should be in place to measure the impact of the teaching and learning through digital resources.

Teachers training: The ICT in Education training offered designed for 12 days having all the important topics that a teacher should know to deliver teaching with the help of tools and to present and create quality digital learning contents for students. More teachers should get the training, as the number of trained teachers is not enough.

Teachers' professional development: The post-follow up training and support is identified as important factor for teachers' professional development. In addition, the better performer trained teachers should be recognised to encourage other teachers to adopt the best practices.

Digital contents: There are enough materials available in online and teachers portal for different grades. However, there is a need of having more subject wise quality contents that are aligned with country context and more meaningful for students. Teachers should get a comprehensive guideline, rewards and enough time to develop quality digital contents.

Strategy to include digital contents: To increase the students' performance there should be more classes delivered through digital tools and more quality contents need to be developed. The school should have a student engagement strategy deploying the skilled teachers who could develop lesson plans for teaching for using the suitable digital learning materials and measuring the students improvement for this intervention.

5.2 Conclusion

In this study, the use of digital resources in the class has been identified as significant approach for enhancing teaching and learning. The aim of the study was to identify the key factors of teachers' perception on the use of digital resources in the classroom. The research questions precisely related to teachers' preparedness and their experience in using digital tools and learning materials. The interview of the study covered eight teachers, three head teachers from four different schools in Dhaka city along with the relevant two assistant education officers. The study identified key factors such as teachers ICT skill, available digital resources, infrastructure, digital contents, schools' support and monitoring are influencing teachers' perception and their practice towards the digital resources in their classes.

The study explored the issues relating to these factors and identified some areas for further improvement. The necessity of proper teachers training has identified as the significant factor of teachers preparedness. The study also found that Teachers training factor is closely linked with the follow-up training, continuous professional development and customised ICT training for school leaders. The other factor was a comprehensive monitoring system for both training and practice of the schools, which could ensure proper utilisation of digital tools despite of not having adequate resources. Considering the continuous challenges of limited digital tools and infrastructure, a monitoring system and administrative support could extend the use of digital tools by ensuring the best use of the resources. The other significant factor is use of digital learning contents as it has direct impact on the teaching and learning. The study found that teachers should have knowledge and skill in developing or selecting suitable contents for their students. Although there are enough contents available in online teachers' portal and websites, teacher should be able to identify and use most suitable one and develop their own contents as and when required as per their lesson plan.

Three limitations discovered in this study. The first one was relating to the factors in the conceptual framework, as all factors could not be explored equally due to limited understanding of the interviewees and length of the study. The other limitation is the coverage as the study could only cover four schools of Dhaka city. The third limitation was the COVID-19 situation. Due to this situation, limited data were collected through only phone interview and classroom observation could be conducted during the closure of the schools.

The study is expected to contribute to develop researcher understanding about the key aspects that influence teachers' perception on the use of digital resources in the primary school classes. It provides significant insight to researcher on the required administrative support and policy for teacher training and their professional development. The other input from the study was to develop researcher knowledge on the key features of a suitable digital learning contents and its use in the classroom. Researcher developed the understanding on how a teacher prepares their lesson plan by selecting or creating most suitable digital resources and how they engage students in the class accordingly. The overall findings relating to the purpose of the study would help to develop knowledge for others. This study also provides significant information and recommendation to the relevant stakeholders and practitioners for the further improvement of teaching and learning through digital resources in primary schools.

5.3 Recommendations

The finding of the study suggests the following to develop positive perception of the teachers towards the use of digital resources as well as towards the effective use of digital contents to improve teaching and learning practice in the primary schools.

- To ensure best use of the digital resources in the classroom, building awareness and motivation among teachers on the use of digital resources is highlighted. Both schools

and authority should have a plan to promote the best practices of the use among other teachers.

- In order to develop positive perception, more teachers should be included for the ICT training. However, there has to be system in place to support the trained teacher such as follow-up training, providing standard guideline to trained teachers, encourage the trained teacher to train other by allocating dedicated time
- Pathways for teachers' professional development should be introduced to encourage trained teachers to continue their good practices. Recognition for best practices is also important in order to motivate more teachers to use of digital resources in their classes.
- Providing administrative support for teachers by allowing them enough time and maintenance of the tools should be ensured.
- Prepare a monitoring system along with a comprehensive observation/monitoring tools for head teachers and education officers to increase the accountability. This will not only help to measure the performance of teachers but also will identify the best practices for others.
- More effort to be made to develop quality-learning materials as well as to ensure best use of these learning materials. More emphasis is required for the use of suitable learning contents to engage students considering their age, background and context.
- A student engagement strategy should be in place for schools in delivering classes using effective digital contents .
- A policy and instruction should be prepared for teachers and head teacher for the proper utilization of digital tools and digital contents.

It is expected that the above recommendations will contribute to enhance the use of digital resources for more effective teaching in the primary schools.

References

- Bowen, G. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27-40. doi: 10.3316/qrj0902027
- Černochová, M., & Vaniček, J. (2015). Informatics Education: Current State and Perspectives of Development Within the System of Field Didactics in the Czech Republic. *International Journal Of Information And Communication Technologies In Education*, 4(3), 14-31. doi: 10.1515/ijicte-2015-0011
- Cuban, L. (2001). Oversold and underused: Computers in the classroom. *Cambridge, Mass: Harvard University Press.*
- Chowdhury, J. (2011). Localization of Digital Content for Use in Secondary Schools of Bangladesh. Retrieved 15 January 2020, from <https://eric.ed.gov/?id=ED523765>
- Davis, F., Bagozzi, R., & Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003. doi: 10.1287/mnsc.35.8.982
- Denscombe, M. (2002). Ground rules for good research. Buckingham: Open University Press.
- Eldeeb, R. (2016). Student's perception to e-learning. Retrieved 14 January 2020, from <http://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-3/Version-4/G04343336.pdf>
- Glogowska, M., Young, P., & Lockyer, L. (2010). Propriety, process and purpose: considerations of the use of the telephone interview method in an educational research study. *Higher Education*, 62(1), 17-26. doi: 10.1007/s10734-010-9362-2
- Hasan, S (2014). ICT Policies and their Role in Governance: The Case of Bangladesh, *Science, Technology and Society*, Vol. 19(3): pp. 363-381.
- Hockly, N. (2011). The digital generation. *ELT Journal*, 65(3), 322-325. doi: 10.1093/elt/ccr041
- Isik, A., Askun, C., & Ozden, M. (2011). Perceptions of Students and Teachers about the Use of E-Learning / Sharing Portal in Educational Activities. *Adaptation, Resistance And Access To Instructional Technologies*, 53-75. doi: 10.4018/978-1-61692-854-4.ch004
- Joshi, A. (2012). Multimedia: A Technique in Teaching Process in the Classrooms. *Current World Environment*, 7(1), 33-36. doi: 10.12944/cwe.7.1.05
- Johnson, B., & Christensen, L. *Educational research* (5th ed., pp. 294-296). Boston: Peason.
- Jude, L., Kajura, M., & Birevu, M. (2014). Adoption of the SAMR Model to Asses ICT Pedagogical Adoption: A Case of Makerere University. *International Journal Of E-*

Education, E-Business, E-Management And E-Learning, 4(2). doi:
10.7763/ijeeee.2014.v4.312

- Kayode, O., & Olaronke, K. (2014). Perceived Importance of ICT in Preparing Early Childhood Education Teachers for the New Generation Children. *International Journal Of Evaluation And Research In Education (IJERE)*, 3(2). doi: 10.11591/ijere.v3i2.5405
- Khana, D., Monem, D., Howlader, D., & Roy, A. (2013). Assessment of Multimedia Classrooms (MMC) and Teacher-led Content Development. Retrieved 15 December 2019, from <https://a2i.gov.bd/wp-content/uploads/2017/10/6-Report-assessment-of-multimedia-classrooms-mmc-and-teacher-led-content-development.pdf>
- Kiru, E. (2018). Mathematics Teachers' Use of Information and Communication Technologies: An International Comparison. *International Journal Of Research In Education And Science*, 167-173. doi: 10.21890/ijres.383119
- Lin, M., Chen, H., & Liu, K. (2017). A Study of the Effects of Digital Learning on Learning Motivation and Learning Outcome. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(7), 3553-3564.
<https://doi.org/10.12973/eurasia.2017.00744a>
- Li, S., Yamaguchi, S., Sukhbaatar, J., & Takada, J. (2019). The Influence of Teachers' Professional Development Activities on the Factors Promoting ICT Integration in Primary Schools in Mongolia. *Education Sciences*, 9(2), 78. doi: 10.3390/educsci9020078
- Parvin, M.S. (2013). Integrations of ICT in Education Sector for the Advancement of the Developing Country: Some Challenges and Recommendations-Bangladesh Perspective. *International Journal of Computer Science and Information Technology*, 5, 81-92.
- Pai, J. C., & Tu, F. M. (2011). The acceptance and use of customer relationship management (CRM) systems: An empirical study of distribution service industry in Taiwan. *Expert Systems with Applications*, 38(1), 579-584.
- PMID (Participatory Management Initiative for Development). 2013. *Report on 'Assessment of Multimedia Classrooms (MMC) and Teacher-Led Content Development'*. Prepared for Access to Information (A2I) Programme, Government of Bangladesh and UNDP Bangladesh: Dhaka, Bangladesh, 80 p.
- Neofotistos, V. (2019). *Factors Influencing the Use of ICT in Greek Primary Education..* [online] Eric.ed.gov. Available at: <https://eric.ed.gov/?id=EJ1225927> [Accessed 15 Dec. 2019].
- Ojo, O., & Adu, E. (2018). The effectiveness of Information and Communication Technologies (ICTs) in teaching and learning in high schools in Eastern Cape Province. *South African Journal Of Education*, 38(Supplement 2), 1-11. doi: 10.15700/saje.v38ns2a1483

- Obaydullah, A K M & Rahim, Md. (2019). Use of ICT for Primary science Teaching and Learning at the Primary Schools in Bangladesh. 5. 642-651.
- Parvin, M. (2013). Integrations of ICT in Education Sector for the Advancement of the Developing Country: Some Challenges and Recommendations-Bangladesh Perspective. *International Journal Of Computer Science And Information Technology*, 5(4), 81-92. doi: 10.5121/ijcsit.2013.5406
- “Research Ethics.” *Educational Research: Quantitative, Qualitative, and Mixed Approaches*, by Burke Johnson and Larry B. Christensen, SAGE Publications, Inc., 2004, pp. 294–296.
- Sayed, M., Zaber, M., Ali, A., & Mosharaf, P. (2017). Enumerating the Obstacles of Accelerating the Use of Digital Classroom: Lessons from Bangladesh. *SSRN Electronic Journal*. doi: 10.2139/ssrn.3044273
- Sayed, M., Zaber, M., Ali, A., & Mosharaf, P. (2017). Enumerating the Obstacles of Accelerating the Use of Digital Classroom: Lessons from Bangladesh. *SSRN Electronic Journal*. doi: 10.2139/ssrn.3044273
- Semerci, A., & Aydın, M. (2018). Examining High School Teachers' Attitudes towards ICT Use in Education. *International Journal Of Progressive Education*, 14(2), 93-105. doi: 10.29329/ijpe.2018.139.7
- Shin, D., Shin, Y., Choo, H., & Beom, K. (2011). Smartphones as smart pedagogical tools: Implications for smartphones as u-learning devices. *Computers In Human Behavior*, 27(6), 2207-2214. doi: 10.1016/j.chb.2011.06.017
- Stith, Bradley. (2004). Use of Animation in Teaching Cell Biology. *Cell biology education*. 3. 181-8. 10.1187/cbe.03-10-0018.
- Spiteri, M., & Chang Rundgren, S. (2018). Literature Review on the Factors Affecting Primary Teachers’ Use of Digital Technology. *Technology, Knowledge And Learning*, 25(1), 115-128. doi: 10.1007/s10758-018-9376-x
- Strauss, A. M., & Corbin, J. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. (3rd Edition.). Newbury Park, CA: Sage Publications, Inc.
- Tømte, C., Fosslund, T., Aamodt, P., & Degn, L. (2019). Digitalisation in higher education: mapping institutional approaches for teaching and learning. *Quality In Higher Education*, 25(1), 98-114. doi: 10.1080/13538322.2019.1603611
- Thamarana, S (2015). Role of Multimedia Resources in Teaching and Learning of English Language. 10.13140/RG.2.1.2043.6723.
- Sayed, M., Zaber, M., Ali, A., & Mosharaf, P. (2017). Enumerating the Obstacles of Accelerating the Use of Digital Classroom: Lessons from Bangladesh. *SSRN Electronic Journal*. doi: 10.2139/ssrn.3044273

Wake, D., & Whittingham, J. (2013). Teacher candidates' perceptions of technology supported literacy practices. *Contemporary Issues in Technology and Teacher Education*, 13(3), 175–206.

Wang, Q (2008).A generic model for guiding the integration of ICT into teaching and learning, *Innovations in Education and Teaching International*, Vol. 45(4). pp. 411-419.

Appendices

Appendix A. Consent Letter

Consent letter Sample

This is an academic research study. Please take your time to read this form carefully and decide your participation for the interview. Please feel free to ask if you need any clarification.

Research title: The perception of teachers about the use of digital resources in the classroom of Government primary schools based in north Dhaka.

Introduction:

The purpose of this study is as below

- To explore the perception of teachers using digital resources in the classroom.
- To highlight key attributes around teachers' pedagogy dimension, motivation and skill for delivering lesson through digital tools.
- To understand the teachers' view on the effective digital learning contents and its usability in the classroom.

Considering the following criteria, you have been invited for the interview.

- You are teaching in this school for at least two years.
- You have been using digital/multimedia classroom for at least 1 year.

Procedure of the interview: If you provide your consent to this interview, the researchers will schedule a time as per your convenient for a phone interview. The interview will 45 minutes and the full interview will be recorded. However, the information will be protected during and after the interview and you will be identified in code name throughout the study. During the interview, you may wish to pass any question.

The audio file from the mobile phone will be transferred as soon as the interview finishes. The recoding will be scripted in form word documents. All the relevant electronic files (audio file, word document) will be secured with password protected folder. Similarly the hard copies from interview will also be secured carefully. All these data will be kept until the research publishes.

There is no known risk involved with your participation to the research. However, you have all right to withdraw yourself from the interview at any time. The data will be captured in the transcript and you will have right to go through with transcript at any point.

Please note, your participation in the interview is voluntary and you will not be paid for the interview. Your agreement on the interview will be highly appreciated. It is hoped that this study will help the teacher and policy makers for the effective use of digital resources for improved teaching and learning.

Your signature on this form indicates that you understand the purpose of the research and the interview process. It is also confirmed that you have taken time to read this form and your relevant queries answered by the researcher.

Participant's Name (printed): _____

The study will be reviewed and accepted by Brac University, Dhaka. If you have any further question please feel free to contact the researcher as below

Name of researcher: Md Towhidur Rahman

Address

Email :

Supervisor Name:

Supervisor Email:

Appendix B. Interview protocol and questionnaires

Name of the School:

Date of Interview conducted:

Name of teacher:

Designation & Subject:

Interview Introduction

Thank you so much for your agreement and managing time out of your busy schedule to take this for agreeing to participate this interview. I am a post graduate students of Brac University currently conducting my thesis on the teachers' perception towards the use of digital resources in the classroom. Throughout this interview, I would like to get insight on the view of teachers towards the use of digital resources.

To be more specific on the definition of digital resources, the study will focus on digital tools and digital teaching content. In this study digital tools defined as hardware such as computer, mobile, multimedia hardware, etc as the tools which are being used to access both online and offline digital teaching materials or content. On the other hand, digital learning materials defined as the digitalized contents such as digital data (audio/video), e-book, or any learning content presented through digital tools

This is to confirm that your information will not be shared with anyone else and your identity will be anonymous. There is no risk associated in this research and your perception is entirely voluntary. You can skip any question and you have right to withdraw your participation at any point of this interview. The interview will take 45 minutes and the full interview will be recorded to ensure all of your information have been captured correctly and maintain the allocated timeline. However, the information, recoding and script will be protected. The interview script will be shared with you for your further consideration and confirmation.

Your contribution to this study is highly appreciated and it is hoped that this study will provide useful insight to teachers and policy makers on the best practice of digital resources to help them to on effective use of resources which may improve the teaching and learning.

Please feel free ask if you need any clarification or wish me to turn off the recoding at any point. Before we begin, do you have any question to ask?

To reconfirm, did you sign the consent form? Do I have the permission to switch on the recoding?

Questioner for teachers

1 .Do you use digital resources for teaching regularly. How long have you been using digital tools in the classroom?

2. What do you perceive on the importance of using digital resources in the classroom?

Probes: Why did you consider using digital tools in you classroom?

Probes: Describe your experience on digital resources in the classroom

3. Is there any instruction/guideline from administration or school leader?

Probes: Who provides the instruction?

Probes: Why do you follow the instruction or guideline?

Probes: What are the key points in the instruction? How do you follow the instruction?

4. What are the facilities in place that enable you to use the digital resources in the class?

Probes: Who is authorized person to provide you the opportunity of use these resources?

Probes: What is the current situation of digital resources in the school?

Probes : How have these resources been maintained?

Probes: Have you faced any difficulties using this equipment?

5. How did you acquire knowledge and skills on using these tools?

Probes: Why did you engage yourself in the training?

Probes: What type of training have you received? What the duration and frequency of these training?

Probes: Who followed up after your trainings ?

Probes: Please explain your experience whether the training is enough for you to use the resources?

Probes : How do you see the continuous professional development opportunities? What types of professional development you foresee from these trainings?

Probes : What could be included or excluded in these training and why do you think so?

6. What are the Digital tools you are using for your class?

Probes Why are you using specific digital tools?

7. What types of Digital learning content you are using in the class?

Probes: Why are you using specific digital contents?

Probes: As per your view, do you think all students are been benefited by the use of these resources, if not, who are the most benefited group.

8. What is your view on the availability of digital tools?

Probes: Do you have enough digital tools (multimedia tools, internet, etc.) in the school?

Probes; How easy to access all these resources?

Probes : Who can access these facilities ?

9. How do you select and prepare your lesson plan for using the digital contents?

Probes: What is the sources of digital contents?

Probes: What is your view on the quality of available digital contents?

Probe: Do the all students respond the same towards these contents? If not, then who responds most?

10. How do you know the contents that you are using are useful?

Probes: What are the features that make contents useful for students?

Probes: Do you consider of preparing digital content-based lesson plans? If yes, Why?

11. How do the students engage in the learning activities while using the digital content?

12. Do you have you any suggestion for further improvement on use of digital tools/equipment and digital contents in the classroom?

Questionnaire for Head Teacher and Thana Education Officer/AEO

Name of the School:

Date of Interview conducted:

Name :

Designation:

1. Please describe your view on the implementation of digital classroom in the schools that based on your area.
 - a. Probes: What are the support you are providing from your office?
2. What are the facilities are available in your schools for teachers to use digital resources?
 - a. Probes: What types of digital tools/equipment are available in the schools?
 - b. Probes: How frequently do the teachers get opportunity of using the resources?
 - c. Probes: Who manage and monitor these resources?
 - d. Probes: How are these resources are been maintained in the school?
3. How accessible are these materials for all teachers in the school?
 - a. Probes: Are the all teachers using these? Who use these resources most?
 - b. Probes: Do you think there are enough resources are available in your school?
 - c. Probes: Do the school get uninterrupted electricity and internet? What are the issues related to that?
4. What are the initiatives taken for teachers on the use of digital resources?
 - a. Probes: How do the teachers gain their skills and knowledge on the use of digital resources?
 - b. Probes: Do they get training? What are the types and frequency of these training?
 - c. Probes: Why did you nominate your teachers in the training?
 - d. Probes: What type of training did they received?
 - e. Probes: What was the duration and frequency of these training?

- f. Probes: Please explain your view on how the teachers are utilizing their knowledge and expertise from these training?
 - g. Probes: Is there any opportunities for your teacher on the continuous professional development ?
 - h. Probes: What could be included or excluded in these training and why do you think so?
5. What is your view on the practice of using these digital tools in the school?
 - a. Probes: Is there any guidance or administrative policy in place?
 - b. Probes : How often the teachers use these digital tools ?
 - c. Probes: Are these tools accessible by all teachers?
 6. How do you follow-up and monitor the use of digital resources in the school?
 - a. Probes: Did you get any training on this?
 - b. Probes: What types of training did you attend?
 - c. Probes: Did the training cover both the use of digital tools and use of digital contents?
 7. Do you have any instruction for schools or teacher on the use of effective is digital learning contents?
 - a. Probes: How do the teacher select appropriate digital learning contents?
 - b. Probes: What are the sources of digital learning materials?
 - c. Probes: What is your view on the quality of available digital contents?
 - d. Probes: Are these materials student-centred?
 - a. Probes: Do the teachers prepare digital content based on lesson plans? Why do you create the digital contents?
 8. What types of contents the teachers are using in the class?
 - a. Probes: What is your view on the quality of these contents?
 - b. Probes: Who use these contents most?
 9. What is your view about students' achievement/engagement towards digital learning materials?
 10. Do you have you any suggestion for further improvement on use of digital tools/equipment and digital contents in the classroom?