Challenges and Opportunity of Digital Learning for Students in Secondary Schools in Bangladesh

By

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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

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Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing a 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 that has been accepted or submitted for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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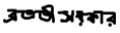

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Approval

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of Spring 2026 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Master of Education in Educational Leadership & School Improvement on 19 April 2026.

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Ethics Statement

This dissertation, titled “Challenges and Opportunities of Digital Learning for Students in Secondary School in Bangladesh,” was conducted following appropriate ethical standards for educational research. Participation was voluntary, and informed consent was obtained from all participants and, where necessary, from parents/guardians and school authorities. Participants’ privacy and confidentiality were protected by anonymizing all personal information, and the collected data were used only for academic purposes. The study avoided any form of harm, coercion, or deception, and all findings were reported honestly and transparently. No animals were involved in or harmed during this research.

Abstract

The integration of digital learning platforms in secondary education has become increasingly important, particularly in developing countries like Bangladesh. The study examines the current state of digital learning in selected public and private secondary schools in Dhaka, Bangladesh, focusing on access, usage patterns, opportunities, and challenges faced by students and teachers. Using a mixed-methods approach, the study administered surveys to 40 students, conducted interviews with 10 teachers, and carried out classroom observations. It explores access, usage, and the impact of digital learning on students' education, health, and safety in both private and public schools in Dhaka. The findings reveal major barriers, including limited digital access, poor infrastructure, and concerns about safety and well-being. While digital learning shows promise in improving educational outcomes, the study calls for comprehensive strategies, including teacher training, curriculum integration, and infrastructure development, to realize its full potential. The findings show that although national initiatives have expanded ICT infrastructure, such as multimedia classrooms and basic ICT training, significant gaps remain between policy efforts and practical classroom realities. Most students primarily rely on smartphones, with limited access to computers or school-based digital tools. Students also struggle with essential digital literacy skills, especially in evaluating credible online information. Challenges such as unreliable internet, lack of software, insufficient devices, and limited training continue to hinder effective digital integration. Health issues related to technology use and awareness of digital safety further highlight the need for structured guidance. The findings provide valuable insights for policymakers, educators, and stakeholders aiming to promote effective digital learning in the education sector.

Key words: digital learning platform, digital literacy, technology, access, tools, wellbeing, content, skills, ICT.

Dedication

To my beloved parents, who were my backbone. Their support and sacrifices were the foundation of my education

Acknowledgement

I am deeply grateful to all those who supported and encouraged me throughout the completion of this research. First, I thank Almighty God for His blessings, which enabled me to complete my thesis work. My heartfelt gratitude goes to my husband for his continuous encouragement and unwavering support during this journey.

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Acronyms

AI	Artificial Intelligence
CAL	Computer aid learning
ICT	Information and Communication Technology
ITU	International Tele Communication Union
LMS	Learning Management System
Moe	Ministry of education
UNDP	United Nation Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER 1: INTRODUCTION & BACKGROUND

Introduction

In recent years, technology has become an indispensable tool in facilitating teaching and learning across educational systems worldwide. Digital technologies such as online courses, virtual classrooms, educational applications, digital textbooks, and learning management systems (LMS) have transformed the way knowledge is delivered and accessed. These tools enable greater flexibility in learning, support diverse learning styles, and promote learner engagement beyond the traditional classroom setting. The integration of technology into education has also encouraged a shift from teacher-centered approaches to more student-centered and interactive pedagogical practices. As a result, educational institutions are increasingly required to adopt digital solutions to meet the changing demands of modern learners.

The Covid-19 pandemic played a significant role in accelerating the adoption of technology in education and highlighted the importance of schools in maintaining continuity in teaching and learning during times of crisis (Seufert et al., 2021). School closures forced educators and students to rely heavily on digital platforms for instruction, communication, and assessment. This sudden transition exposed both the potential and the limitations of digital learning systems, particularly in developing countries such as Bangladesh. While technology enabled learning to continue despite physical restrictions, it also revealed existing inequalities in access to resources and digital competencies.

The education system in Bangladesh faces multiple challenges as it attempts to adapt to the new era of communication and the evolving global education landscape, which is increasingly shaped by digital technology (Zaman, 2020). Although the government and educational institutions have made efforts to introduce digital initiatives, the

implementation of digital learning remains uneven. Many schools, especially at the secondary level, continue to rely on traditional teaching methods due to limited resources, insufficient infrastructure, and resistance to change. At the same time, students are expected to engage with digital content, develop technological skills, and compete in a globalized knowledge economy.

With continuous technological advancements, both traditional pedagogies and learners encounter difficulties in adjusting to digital learning environments. Digital learning depends on the effective use of tools such as computers, laptops, smartphones, and internet-based platforms to deliver instructional content, facilitate interaction, and assess learning outcomes. However, the successful integration of these tools requires careful planning, technical support, and pedagogical adaptation. Teachers must redesign their instructional strategies to incorporate technology meaningfully, while students must learn to navigate digital platforms independently and responsibly.

The effective use of technology in education is closely linked to the availability of appropriate hardware and software, as well as the ease of access to these resources for both teachers and students (Afsari et al., 2009). In Bangladesh, limited technological infrastructure remains a major barrier to the widespread adoption of digital learning. According to the International Telecommunication Union (ITU), only 14.4% of the population has access to the internet (ITU, 2020). This low level of internet penetration restricts students' ability to participate in online learning activities, access digital materials, and communicate with teachers and peers. The situation is particularly challenging for students in rural areas and those from lower socio-economic backgrounds.

The digital divide in Bangladesh is not only defined by limited access to hardware, software, infrastructure, and internet connectivity, but also by disparities in digital skills and competencies. Many teachers and students lack sufficient training and confidence in

using digital technologies for educational purposes. As an educator and postgraduate student, I have personally experienced challenges in using technology due to limited knowledge of newly upgraded technologies, such as artificial intelligence (AI). This personal experience reflects a broader issue within the education system, where technological advancements often outpace the capacity of users to effectively adopt them. Therefore, alongside investments in technological infrastructure, there is a critical need to focus on improving digital literacy, technology management, and integration skills.

Furthermore, digital learning places increased cognitive demands on learners. For instance, when a student is assigned to create a digital presentation using information from the World Wide Web (WWW), they are exposed to an overwhelming volume of information. To use search engines effectively, students must possess cognitive skills such as critical thinking, the ability to verify the authenticity of sources, and strong evaluation and synthesis skills. Although technology can simplify many learning tasks and provide quick access to information, it also increases the demand for higher-order thinking skills. Students must learn how to filter relevant information, avoid misinformation, and apply knowledge meaningfully within academic contexts.

Despite these challenges, digital learning also presents significant opportunities for improving education in Bangladesh. When implemented effectively, digital learning can enhance student engagement, promote independent learning, and provide access to a wide range of educational resources. It can also support personalized learning experiences and help bridge educational gaps if issues related to access and skills are addressed. Therefore, examining both the challenges and opportunities associated with digital learning is essential to understanding its role in secondary education in Bangladesh.

In this context, the present study focuses on digital learning in secondary schools in Bangladesh, with particular attention to the experiences of students. By exploring the

challenges faced by students and the opportunities created through digital learning, this research aims to contribute to a deeper understanding of how digital education can be improved and sustained. The findings of this study may provide valuable insights for educators, policymakers, and educational institutions seeking to develop more inclusive, effective, and future-ready digital learning environments.

1.2 Research Topic

Digital learning in schools in Bangladesh

Research Title

Challenge and opportunity of digital learning for students in secondary school in Bangladesh

1.3 Statement of The Problem

The Government of Bangladesh has taken significant initiatives to integrate information and communication technology (ICT) into the education system by making ICT a compulsory subject from grade VI to XII under the National Education Policy 2010. This initiative aims to prepare students with digital competencies and contribute to the national vision of building a "Digital Bangladesh" (Ministry of Education, 2021). The policy reflects the government's recognition of the growing importance of technology in education and its potential role in national development. However, despite these policy-level commitments, the actual implementation of digital learning at the school level remains inconsistent and challenging, particularly in secondary schools.

Traditionally, knowledge in Bangladeshi schools was transferred primarily through face-to-face instruction using conventional teaching methods. With the rapid innovation and expansion of ICT, teaching and learning processes have undergone considerable transformation. Digital tools now influence how students access information,

communicate, and construct knowledge. In response to the digital age, Burnett (2016) emphasized that school policymakers "should reflect not just what children may do or need in the future but what they are doing now." This perspective highlights the urgency of aligning educational practices with students' current digital realities rather than treating digital learning solely as a future requirement. However, many secondary schools in Bangladesh continue to operate within traditional pedagogical frameworks that do not fully address students' present engagement with digital technologies.

Although ICT has been introduced into the curriculum, the focus of digital education often remains limited to basic technical or operational skills. Students' digital skills are frequently viewed through the lens of employability, overlooking the broader dimensions of digital literacy. According to Gouseti (2024), digital skills should not focus solely on employability but should also emphasize attitudes, values, and practices associated with digital literacy. This includes critical thinking, responsible technology use, ethical behavior, and digital citizenship. The absence of a comprehensive approach to digital literacy limits students' ability to engage meaningfully with digital learning environments and undermines the educational value of technology integration.

The slow adoption of digital learning in Bangladesh can be attributed to several structural and socio-cultural factors. Lack of adequate infrastructure, high costs of digital devices and internet services, and resistance or reluctance among stakeholders are major barriers to effective implementation (Yeasmin & Rahaman, 2013). Many schools lack sufficient computers, reliable electricity, and stable internet connectivity, making it difficult to conduct technology-based instruction consistently. Additionally, financial constraints prevent many families from providing students with personal digital devices, further widening the gap between policy intentions and actual classroom practices.

Students in developing countries such as Bangladesh face multiple challenges related to digital learning, including poor quality of digital learning materials, shortages of skilled and trained teachers, and insufficient funding and infrastructure (Khan et al., 2012). Teachers often receive limited professional development opportunities related to digital pedagogy, which affects their confidence and ability to integrate technology effectively into teaching. As a result, digital tools may be underutilized or used in superficial ways that do not enhance learning outcomes. This situation places students at a disadvantage, as they are expected to adapt to digital learning environments without adequate institutional support.

In addition to infrastructural and pedagogical challenges, concerns related to digital wellbeing, online safety, and digital literacy have become increasingly significant for both students and teachers. Increased exposure to digital platforms raises issues such as excessive screen time, online distractions, data privacy, cyberbullying, and misinformation. These concerns highlight the need for structured guidance and education around safe and responsible technology use. Gouseti (2024) notes that such digital practices raise critical questions regarding students' access to digital resources and the broader educational outcomes of digital learning. Without addressing these concerns, digital learning initiatives may inadvertently create new risks while attempting to solve existing educational problems.

Furthermore, unequal access to digital resources has intensified educational disparities among students. Students from urban and economically advantaged backgrounds are more likely to benefit from digital learning opportunities than those from rural or marginalized communities. This imbalance raises questions about equity and inclusion within the education system. While digital learning has the potential to democratize access to

education, its uneven implementation risks reinforcing existing social and educational inequalities.

Despite national policies promoting ICT integration, there remains a significant gap between policy objectives and classroom realities in secondary schools in Bangladesh. The lack of infrastructure, limited digital literacy among teachers and students, insufficient training, and concerns related to digital wellbeing collectively hinder the effective adoption of digital learning. These challenges indicate that simply introducing ICT into the curriculum is insufficient without addressing the broader systemic issues that affect implementation.

Therefore, there is a pressing need to examine the challenges and opportunities of digital learning for secondary school students in Bangladesh. Understanding these issues is essential for improving policy implementation, supporting teachers and students, and ensuring that digital learning contributes positively to educational quality and equity. Addressing these problems can help bridge the gap between national digital ambitions and the lived experiences of students, ultimately supporting the development of a more inclusive and effective digital education system.

1.4 Research Questions

1. What are the barriers faced by students using digital learning platforms in Bangladesh? How do these challenges influence students' learning?

2. How accessible are digital learning platforms for students in private and public schools in Bangladesh?

1.5 Purpose of the study

The goal of the study is to understand the challenges and opportunities related to students' access to digital platforms. Research questions will help identify factors influencing the

adoption of digital learning and educational outcomes in secondary education in Bangladesh. The study examines the current state of digital education in both private and public secondary schools in Bangladesh, focusing on access, usage, and the impact of digital platforms. It also highlights challenges and disparities between those with limited access to digital technology and those with more, as well as issues concerning schools' digital capacity, teachers' training, and overall digital skills and competencies. This research aims to develop a more inclusive and effective digital learning system for Bangladeshi students. Digital learning is transformative for students. It not only offers quality education but also helps bridge the rural-urban gap by reducing the digital divide. Empowering rural students with skills to compete in national and global job markets is my goal. I want to improve digital literacy and promote inclusive educational practices while providing valuable insights for policymakers and educators.

1.6 Significance of the study

Bangladesh, a developing nation, can improve the quality of education by integrating digital tools and platforms into the mainstream of its educational system. The growing ICT sector has brought significant changes to the teaching and learning process in higher education (Kinnen, 2007; Wood, 1995; Khan et.al, 2012). Research findings reveal that the past two decades have shown a positive impact on students' learning through the use of digital platforms (Mumtaz, 2000; Hattie, 2009). This paper will discuss how digital learning platforms can affect students' skills, knowledge, and engagement, as well as explore the challenges involved. At the same time, it will identify barriers to adoption such as electricity, internet connectivity, limited access to devices, digital literacy among students and teachers, equity issues, and institutional, administrative, and technical limitations. Bangladesh is one of the developing countries with poor ICT infrastructure (Islam & Selim, 2006). According to Bhuiyan (2011), Bangladesh has made notable

progress in introducing digital platforms in the public sector. Therefore, this paper aims to assist stakeholders and policymakers in prioritizing the areas that need attention to enhance students' learning outcomes.

CHAPTER 2: LITERATURE REVIEW & CONCEPTUAL FRAMEWORK

This chapter presents a comprehensive review of relevant literature related to the use of digital learning platforms in secondary education. The purpose of this review is to examine existing studies, theoretical perspectives, and research findings that inform and support the focus of the present study. By reviewing prior research, this chapter seeks to establish a solid academic foundation for understanding the opportunities and challenges associated with digital learning in secondary schools, particularly within the context of Bangladesh.

The chapter is organized into two main sections. The first section focuses on the opportunities and benefits of digital learning platforms for students, including improved access to learning resources, enhanced student engagement, and support for independent and flexible learning. The second section examines the barriers and challenges related to the use of digital learning platforms, such as limitations in infrastructure, electricity supply, internet connectivity, software availability, and digital literacy. In addition, this section explores teachers' attitudes, beliefs, skills, and perceptions regarding the integration of digital learning platforms into classroom practices. Overall, the reviewed literature provides important contextual insights, highlights research gaps, and demonstrates the significance and relevance of the present study.

2.1 Opportunities of Digital Learning

Digital transformation has become a crucial driver of social and economic development and has a profound impact on everyday life. It plays an instrumental role in education systems, training institutions, and knowledge-based organizations. In recent years, digital technologies have reshaped how teaching and learning are delivered, enabling more flexible, interactive, and learner-centered approaches. The Covid-19 pandemic significantly accelerated the adoption of digital platforms for online education and hybrid

learning across the world. This sudden shift uncovered new and innovative ways of learning, allowing both students and teachers to organize their educational activities more flexibly and interact beyond the constraints of physical classrooms (European Union, 2021).

Digital learning platforms can enhance student engagement by making learning more interactive and accessible. Studies have shown that digital learning increases students' attention and participation in classroom activities (Babu et al.2020). Through multimedia content, interactive tools, and collaborative platforms, students are encouraged to take a more active role in their learning process. In Bangladesh, initiatives such as BRAC's computer-aided learning (CAL) program have highlighted the importance of improving teachers' pedagogical skills through the effective use of technological tools. These initiatives demonstrate how digital learning can support both teaching quality and student learning outcomes when appropriately implemented.

However, while digital literacy is often implied through technological education, limited attention is given to digital content creation, digital communication, and collaborative practices involving multimodal production in the Bangladeshi education context. Research indicates that adolescents' online inquiry skills are often underdeveloped, particularly in evaluating and synthesizing information from digital sources (Brand-Gruwel & Van Strien, 2018; Kiili et al., 2008). Teachers in Europe have similarly observed that students require additional training in information-seeking techniques and critical evaluation of online content. There is also concern that students may engage with digital technologies primarily for personal interests rather than academic purposes (Gouseti, 2023).

Despite these challenges, digital technologies offer significant opportunities for communication, collaboration, and social interaction among students. Digital platforms

enable students to connect with peers, share ideas, and engage in collaborative learning experiences beyond traditional classroom boundaries. Such interaction supports not only academic learning but also social development and peer engagement (Smahel et al., 2020). These opportunities highlight the potential of digital learning platforms to enrich students' educational experiences when supported by appropriate guidance and skills development.

2.2 Barriers Faced by Students: Access to Resources

Although technology is deeply embedded in modern life, access to digital resources remains a major challenge for many schools in Bangladesh. Effective integration of digital learning requires adequate hardware, stable internet connectivity, and reliable digital infrastructure. However, many educational institutions in Bangladesh face severe shortages in these areas. Limited availability of computers, poor internet access, and underdeveloped technological infrastructure significantly hinder the adoption of digital learning platforms (Khan et al., 2012).

In addition to infrastructure challenges, electricity shortages present a major obstacle to technology integration, even in major cities. Frequent power outages disrupt classroom activities and make regular use of computers and digital devices difficult. When designing and implementing digital education platforms, ensuring a reliable power supply is essential for sustainability. Moreover, essential resources such as computers, printers, multimedia projectors, and scanners are often insufficient or unavailable in schools. These limitations restrict students' opportunities to engage meaningfully with digital learning.

Upgrading both hardware and software has the potential to significantly improve student learning outcomes. However, financial constraints often prevent schools from making these necessary investments. A fast and stable internet connection is equally critical for effective ICT integration in classroom teaching, as it allows access to online learning materials, communication tools, and digital collaboration platform (khan et al. 2012).

Without adequate access to these resources, students face significant disadvantages in digital learning environments.

2.3 Digital Platform Literacy

Digital literacy extends beyond basic functional skills and includes the ability to use technology effectively, critically, and responsibly. The concept of digital literacy involves not only accessing digital tools but also understanding how to evaluate, manage, and create information in digital environments. Simply engaging with digital technology does not guarantee that students are using it productively or meaningfully (Considine et al., 2009).

In Bangladesh, the education sector is gradually transitioning from traditional teaching and learning approaches to more advanced digital learning models (Zaman, 2020). As a result, modern instruments and new-age technologies are increasingly being introduced into educational institutions (Akber et al., 2009). This shift requires a transformation of formal pedagogical practices, which poses challenges for students, teachers, and institutions alike.

Effective use of digital platforms requires awareness of several key competencies. These include access, which involves knowing how to collect and store information; management, which refers to organizing information using appropriate classification methods; integration, which involves interpreting and presenting information; evaluation, which requires making judgments about the quality, relevance, and usefulness of information; and creation, which includes generating new content through adaptation, application, design, and authorship. Developing these competencies is essential for meaningful participation in digital learning environments.

Additionally, students must understand issues related to digital wellbeing and safety, such as protecting personal information, recognizing safe online behavior, conducting effective searches, and identifying reliable sources (Gouseti, 2024). Although many students

possess basic internet skills, they often struggle to develop critical, informational, and creative skills needed for everyday digital practices (Livingstone et al., 2020). This gap highlights the need for structured digital literacy education within schools.

2.4 Teachers' Attitudes and Beliefs

Teachers' attitudes and beliefs play a critical role in the successful integration of technology in educational settings. Musallam (2001) emphasized that teachers' perceptions of teaching and learning with ICT significantly influence how technology is implemented in classrooms. Even teachers with limited technological skills can effectively adopt ICT if they hold positive attitudes and are willing to learn. Such teachers typically require minimal encouragement to design and implement technology-supported learning activities.

In contrast, teachers with negative attitudes toward ICT often demonstrate lower levels of computer skills and are less likely to accept or adopt new technologies (Harrison & Rainer, 1992). In Bangladesh, readiness for online and digital modes of teaching remains limited. According to Uddin (2020), the education system is not fully prepared to manage pedagogy through online platforms. Insufficient funding, limited access to appropriate technologies, and a lack of necessary skills among both teachers and students contribute to this challenge.

2.5 Lack of Knowledge and Skills

Teachers' knowledge and skills are among the most important factors influencing the success of educational innovation (Pelgrum, 2001). Both developed and developing countries face difficulties in integrating ICT into education due to shortages of skilled teachers (Pelgrum, 2001; Ihmeideh, 2009; William, 1995). Effective technology integration requires not only technical expertise but also subject matter knowledge and an understanding of how students learn (Morgan, 1996).

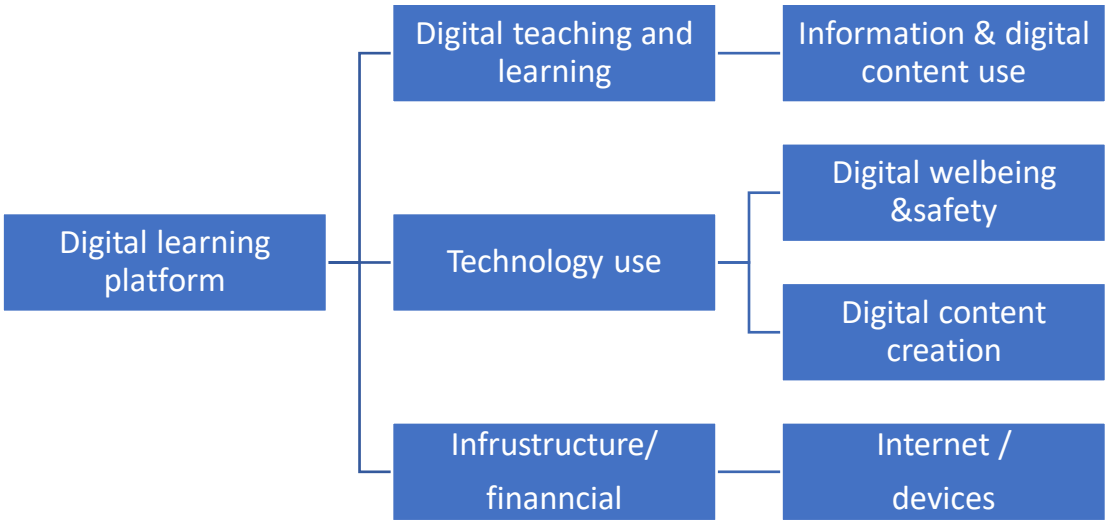
Prior to the Covid-19 pandemic, many teachers did not regularly use online resources in their teaching practices (Shrestha et al., 2021). During the pandemic, teachers were forced to adopt digital tools rapidly, often without sufficient training or support. In England, teachers continue to seek a balance between using digital technology to enhance learning and safeguarding students from associated risks. Remote teaching introduced additional challenges related to online safety and raised new concerns regarding students' digital wellbeing (Gouseti, 2023). These challenges further emphasize the importance of continuous professional development for teachers.

Conceptual Framework

To explore the use of digital technology and analyze the challenges faced by students in adopting a modernized, high-standard education system, a conceptual framework was developed for this study. The framework examines multiple dimensions of digital learning, including digital teaching and learning practices, technology use, information and content use, digital content creation, digital wellbeing, and online safety (Gouseti, 2024). The goal of this framework is to address the complexities associated with diverse digital practices in secondary education.

The conceptual framework serves as a guiding structure for both data collection and data analysis. Its key dimensions and sub-dimensions are used as a coding scheme during the analysis process, enabling a systematic examination of students' experiences with digital learning. By integrating insights from the literature, the framework provides a coherent lens through which the challenges and opportunities of digital learning in secondary schools in Bangladesh can be understood and analyzed.

Figure 1 conceptual frame work



CHAPTER 3: METHODOLOGY

3.1 Research Approach

This study aims to assess how teachers and students navigate this new technological landscape, including how barriers to integration are identified and overcome. It assesses the digital literacy of teachers and students, identifies barriers to technology integration, and explores the use of digital tools and platforms from both teachers' and students' perspectives. The study employs mixed methods, such as surveys, interviews, and observations. The research focuses on the impact of digital technologies on students' learning outcomes, engagement, and overall educational experience in secondary schools in Bangladesh. Its goal is to provide comprehensive answers to various related questions. These include how students use technology for learning, the availability of technology to students, the types of interventions used, how these interventions improve learning, potential negative impacts of digital integration, community involvement in implementing digital platforms in schools, and the role of the government in teacher training. It also considers government initiatives, teacher training, and resource availability. In addition to the benefits of digital learning, it examines its drawbacks, including unintended consequences like cyberbullying and health issues. Research shows that socioeconomic factors are critical in shaping how digitalization is implemented in schools. Therefore, I looked at one public and one private school in Dhaka, as I expect these two represent different socioeconomic contexts.

I rely on a mixed-method triangulation design because it collects both quantitative and qualitative data simultaneously, and combining these results enhances reliability (Opoku et al., 2016). Qualitative research provides insights into people's perceptions and assumptions about their worldview (Salam, 2015). Additionally, qualitative research allows for a close examination of social phenomena or human realities and situations and

it describes information about an issue, enriches, and strengthens data (Salam, 2015) through an inductive and exploratory approach. I conducted in-depth interviews with teachers selected through purposive sampling. The criteria for sampling included teachers who instructed grade 10 students and had at least two years of teaching experience. Written consent was obtained before each interview. A guideline was used to conduct the interviews.

Quantitative research is an inquiry into social and human problems based on testing a hypothesis or a theory by measuring data and analyzing it through statistical procedures (Opoku et al., 2016). I conducted a survey that consisted of a scale (Likert scale) to determine students' accessibility to digital platforms and their integration into education.

3.2 Research site

I conduct research at one private school and one public school, in Mohammadpur, Dhaka, Bangladesh. I have selected these two schools because I can gather data and information more easily than I can from schools I am unfamiliar with. The schools I have selected are similar in size to most public and private schools in Dhaka. The main reason I chose two schools is that I am hoping to get a broad spectrum of data across various socioeconomic backgrounds. I conducted in-depth interviews with teachers from the village in Pirojpur with the same school background.

3.3 Research Participants

Participants were chosen from 10th-grade students because it is the final grade, and these students are better able to reflect on their experience. The teachers selected had at least two years of experience teaching 10th-grade classes. My sample includes 20 students and five teachers; the same sample size applies to the school.

3.4 Data collection tools and Methods:

The tools were developed based on a literature review.

- Classroom observation with a checklist
- Structured questionnaire (Likert-scale+ open-ended) consisted of two parts. The first part included demographic information, such as the participant's age, grade, gender, parents' educational background (Ahmed et al., 2021), and household income.
- Teacher interview guide

I used multiple-choice survey questionnaires, which are based on Van Breukelen et, al. (2006)'s work, to investigate students' (mis)conceptions. The teachers were interviewed to explore and understand their perception of digital learning and challenges in integrating digital tools into their teaching practices, as detailed by Akter (2020) {Appendix B: questions 1-7}. Students' surveys were used to investigate their experiences and challenges {Appendix C: Part B, C, D, E, F}. In this study, the primary data were collected from classroom observation in which I was a non-participant observer (Punch 1998).

Data were collected through surveys, observations, and semi-structured interviews. Classroom observations took place both inside and outside the classrooms of selected schools. A total of ten teachers from both private and public schools, following the Bangla version of the Bangladesh national curriculum, were interviewed using purposive sampling. The interviews were recorded and transcribed. Most interviews were conducted in Bangla, as all participants preferred to respond in their native language. Subsequently, all responses were translated into English after each session.

I used Google Forms and printed it out to distribute to students. The students filled out the form in the classroom in the presence of their teachers; I collected the forms. The data were entered into SPSS. A descriptive analysis is then performed.

The qualitative data were analyzed in relation to the research questions and study objectives, with the conceptual framework guiding the categorization of data into themes and sub-themes. The presentation of the data follows the order of the research questions outlined in the study. The findings are presented below in a narrative format

3.5 Observation

Observation is considered one of the main instruments of social research (Denzin & Lincon, 1998, Salam, 2015). For the classroom observation, I developed a checklist prior to beginning data collection.

During observation. I focused particularly on the available devices, the digital infrastructure, student's engagements, and their participation in classroom activities. I consistently maintained a notebook and an observation guide. Recording all relevant information listed in the checklist. During each classroom session. I stood beside the teacher to clearly observe the student's expression and interactions. The head teacher accompanied me and facilitated the overall observation and data collection process.

3.6 Role of researcher

I explained to the students the purpose of the survey, and I requested permission to do this from the authorities of the school (Carbonaro & Bainbridge2002). I collected data from august to September, 2025 after getting the final approval from my supervisor. All the school were busy too much at that time for their terminal examination but the school authority was helpful to collect the data.

3.7. Data analysis

The principal objective of this study to find out the status of the digital learning platform of the secondary school in Bangladesh, evaluating the classroom atmosphere, identify the challenges faces by students. This section presents the findings collected from 40 students, 35 boys and 5 girls from 10^{th} grade and 10 teachers from a public and a private school in Dhaka Bangladesh, both following the national curriculum. For the research question (RQ1), two sub questions were developed to examine 1) the type of digital devices students and teachers use and their access to technology and 2) the challenges students face in utilizing digital platform including issues related to content, tools, digital inquiry. This section also explores whether the use of digital learning platforms affect their student's health and safety. For the question (RQ3) participants were asked about the challenges like power supply, internet connectivity software availability, understanding of technology and availability of training, A structured survey was administrated to collect numerical data on key variables including digital devices, access to technology, availability of tools and contents. Utilization, challenges, health issues, training and digital safety awareness. Quantitive analysis with SPSS version 26 allows for identifying trends and measuring the extent to which students engage with digital platforms in their daily learning. Applying frequency and descriptive statistics to summarize and present the basic features of the data related to each research question, it should be noted that findings are organized according to the research questions. The outcomes are reported in tables accompanied by a description of results and followed by a brief analysis. The qualitative component of this study aimed to explore teachers' perception of the digital learning platform. To understand this perception, it was first necessary to examine teachers access to digital devices, as their digital skill largely depend on their individual ability to use computer to create, communicate and participate effectively in school activities, teachers'

basic competence is essential for the successful implementation of digital technology in the classroom particularly during teaching.

3.8 Triangulation of the data

Triangulation is a significant element of mix methods research in order to bring trust worthiness of a study by using more than one method or data source to cross checked findings (Bryman, 2008). It allows researcher to compare and validate results obtained through different approaches, thereby strengthening the credibility of the research. In this sense triangulation functions as a form of validation or confirmation of research findings (Salam, 2015).

In present study triangulation was achieved through the use of multiple data collection methods, including class room observation, semi structured interviews and surveys. Each method contributes unique insight into the use of digital learning platforms in secondary education. Observation provided contextual and behavioral evidence, interviews offered in-depth perspective from the teachers and surveys generated quantifiable data on access, utilize and challenges.

The integration of findings from these different methods helps me to compare, support and confirm the results across the data sources. Consequently, triangulation facilitated a more comprehensive understanding of the research problem and enhanced the reliability and validity of the study.

3.9 Research ethics

Ethical issues are important elements in social research, particularly when human behaviour and activities involved to examine the different perspective (Salam, 2015). Therefore, this study strictly followed the ethical guidelines of the BRAC Institute of Educational Development (BRAC IED-BRAC University 2020).

Prior to the data collection, the I met with the headmaster of the selected schools, who acted as gatekeepers and obtained formal permission to conduct the study. Informed consent was collected from the class teachers as all the participating students were under age of 15. Before commencing the data collection, the purpose and procedure of the study were clearly explained to all the participants to ensure their voluntary participation. I assured participants that confidentiality and anonymity would be strictly maintained throughout the study. All information was collected without influencing participants opinions and the collecting data stored safely. The collected data were used for research only and reported under the protection of anonymity (Christian, 2008). Furthermore, I always kept honesty and professionalism during data collection, processing and findings. participants were also informed of their right to withdraw from the research at any stage without any negative consequences.

3.10 Credibility & rigor

Credibility as a standard ensure that research is carried out according to the general rules and submitting research findings to the member of the social phenomena who are studied for conformation (Bryman, 2008), while rigor ensures that the research process was systematic. Transparent and methodologically sound. In this context for the credibility data were collected from multiple sources including students and teachers from both public and private secondary schools. Different data collection methods are questionnaires, class room observation and interviews allowed for triangulation which helped to cross check and validate the results.

Rigor was further maintained through careful research design and procedures during data collections. All research tools were developed on the basis of research questions and relevant literature and they were reviewed to ensure the clarity and relevance.

Finally detailed research process including data collection, analysis and interpretation was maintained to enhance transparency and allow for replication. Together these measures contributed to the credibility and rigor of the study and strengthened the reliability the research findings.

3.11 Limitation

Despite my best efforts this study has limitations. First the findings may not be generalized to a larger population due to a small sample size. Although limits sample restrict generalization the study reveals important issues and raises several questions regarding the utilization of digital learning platforms in the education sector. Second the study would have benefited from a longer period of class room observation, survey and interview in order to collect more comprehensive and accurate data. Due to limits access to teachers in Dhaka some interviews were conducted in rural area of Pirojpur district same school background. As a result, certain response may differ from those that might have been obtained if all data had been collected from the same urban context.

Additionally political un stability and recent changes in the national curriculum over the past years resulted the suspension of multimedia classroom use which affected the availability of practical digital learning experiences during the data collection period.

Despite these limitations the study employed appropriate research methods and careful data collection procedure, therefore the findings can be considered reliable and valid.

CHAPTER 4: RESULTS

Introduction

This chapter presents the result of the study on the use of digital learning platform in secondary schools in Bangladesh. The data collected from 40 students and 5 teachers from both private and public schools in Dhaka following the national curriculum. AS for some reason, I interviewed 5 teaches from private school in Pirojpur with same background. Multiple data collection instruments were used including questionnaires, classroom observations and interviews for understanding the research problem and finding the answer of the research questions.

The results are organized according to the research questions of the study. The chapter first reports on students' access to digital devices and technology as well as the type of digital learning platforms used in the classrooms. Second it presents the challenges faced by the students and teachers in using digital learning platforms in terms of power supply. internet connectivity, software availability. technological understanding, and training. Finally, the chapter highlights teacher's attitudes, skills and perception towards digital learning platforms

Both Quantitative (frequencies and percentages) and Qualitative data (observation notes and interview responses) are presented and analyzed. The results are described objectively without interpretation.

Table 1Access to digital device

Type	Frequency	Percentage
Smart phone	28	70%
Laptop	1	2.5%
Both	7	17.5%
None	1	2.5%

The Quantitative data shows that majority of the students rely on smart phones for digital learning. About 70% of students reported owing only smart phone while 2.5 % indicate that they do not have access to any digital device. This suggest that most students have limits digital device option which may restrict their ability to engage fully with digital learning activities.

Most of the teachers reported that they do not bring personal devices to school other than their smartphone. I C T teacher use school laptop during the class.

Table 2: Access to Technology

Type	Frequency	Percentage
Home	22	55%
Home and school	12	30%
Other	5	12.5%
None	1	2.5%

When examine students access to internet facility 55% reported having access only at home where as 30% had access both at home and at school where as 2.5% have no access and 12.5% use other places. This indicates that while most of the students can use internet outside school fewer enjoy consistent access in both learning environments.

Table 3 Content creation for the class

Types	**Frequency**	**Percentage**
Video	15	37.5%
Presentation	5	12.5%
Other	3	7.5%
Not use at all	17	42.5%

In terms of the type digital content used in the classroom activity the data indicate varied number of percentages of digital materials being used. a total 37.5% of respondents reported made videos as part of their teaching and learning activities. 12.5% used presentations. a significant number 42% reported not using any digital content at all. This suggests that despite some integration of digital resources a sustainable number of participants still remain disconnected from digital learning tools

Table 4 Access in using technology

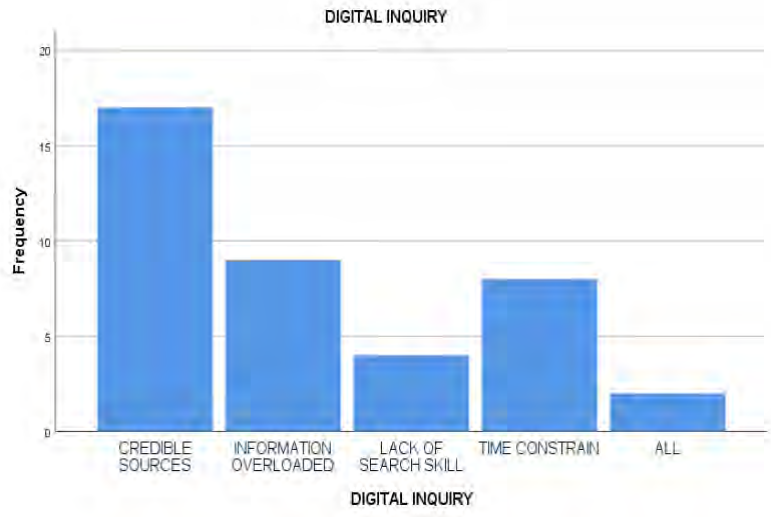
Types	Frequency	Percentage
MS word	7	17.5%
Zoom/ WhatsApp	19	47.5%
Google	2	5%
Other	2	5%
All of them	10	25%

Regarding the use of digital platform, the responses also showed 17.5% using MS word for academic task and a majority (57.5%) relied on communication tools such as zoom or what's up for online interaction or learning related communication. Only 5% of respondents reported using google based tools and another 5% indicate the use of other platforms. 10% participants mentioned that they used all the listed platform which is the indication of small subset with higher competence and access.

Teachers indicate that they primarily use Google Search for finding educational resources. However, they rarely assign tasks that require students to create digital content, mainly due to the lack of available devices.

Utilization to technology

Figure 3: Digital content Inquiry



Students' ability to use digital tools effectively varies. When asked about digital inquiry skills, 42.5% students reported struggling to identify credible online sources, and 225% felt overwhelmed by the amount of information available. Twenty participants complain about time constraints, and 10% reported a lack of search skills. This highlighted gaps in digital literacy and information evaluation skills.

Understanding Digital Safety

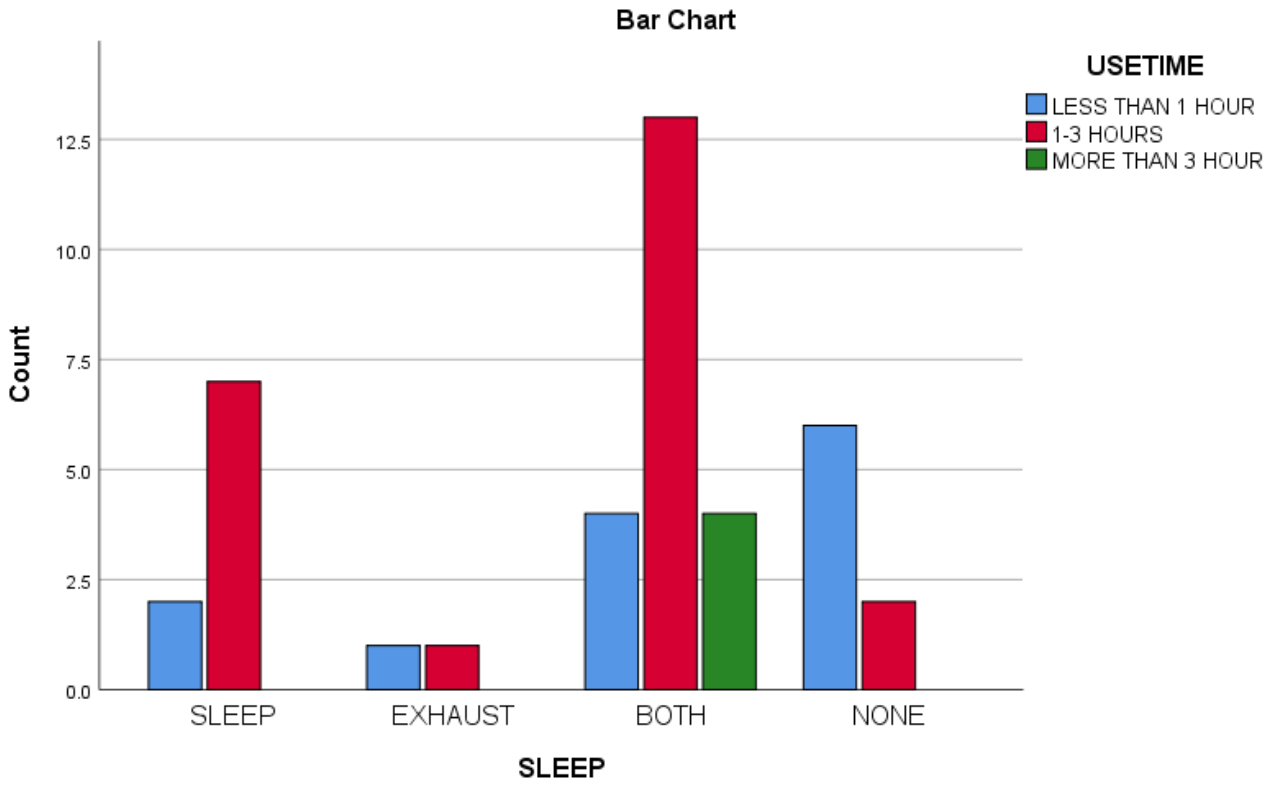
When asked about digital safety concerns they face in daily life, 37% mention issues like cyberbullying, scams, inappropriate content, hacking, and suspicious online behavior. However, only 15% reported using strong passwords to protect themselves. This indicates that although students are aware of online risks, their practical safety practices remain limited.

Health issues

A notable proportion of students experience health-related effects from technology use. About 52% agreed that they experience sleep disturbances and exhaustion after using digital devices. Regarding self-regulation, 75% take breaks between device use. Only 5% reported setting boundaries for technology use

These findings indicate that while many students attempt to manage their screen time, only a small number practice balanced digital habits. When I asked them about the daily duration of digital device use, 32.5% reported using them for around 1 hour per day, whereas 57.5% indicated they used digital devices for between one to three hours. Only 10% of the students reported using digital devices for more than three hours. This figure suggests that although most students engage with digital devices regularly, extended or intensive use remains limited.

Figure 4: Wellbeing



Challenges in using digital technology

The study identified key challenges such as power supply, internet connectivity, software availability, technology understanding, and lack of training. Ten percent of students reported issues with the power supply, but since most students use smartphones, this challenge was less severe. The most significant issue was internet access, with 27.5%

reporting difficulties. Lack of software was reported by 12.5% of students. About 37.5% of students complained about a lack of knowledge or proper training. When asked about the training they had, 65% responded that they did not have any. Overall internet availability and limited resources appear to be main barrier to effective digital learning.

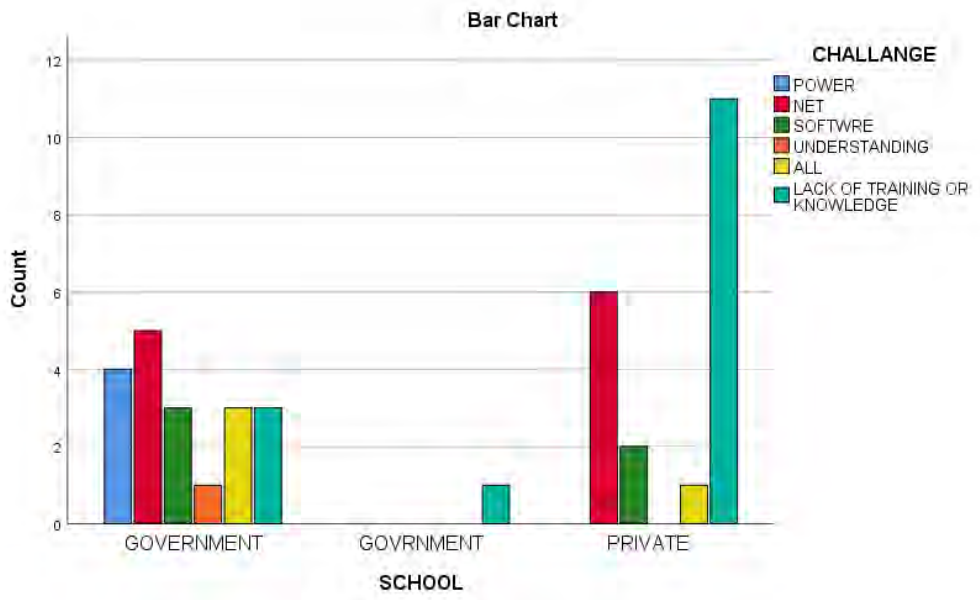
Table 5 Challenges in using technology

Variables	Frequency	Percentage
Power supply	4	10%
Net connectivity	11	27.5%
Software	5	12.5%
Lack of training / knowledge	15	37.5%
Understanding	1	2.5%
All of them	4	10%

Comparison between Public & Private Schools

Both public and private schools have at least one multimedia classroom equipped with a laptop, with public schools having a smart TV and private schools using a projector. The government funds the public school, while private schools rely on community support or contributions from alumni. Despite having government WIFI, teachers reported that the internet speed is too slow to support both student and teacher use adequately. When comparing private school and public-school data showed the differences between them were shown.

Figure 5: Comparisons between Public and Private school



The comparison shows that both school types experiences challenges but the nature and intensity vary. Government school participants reported a mix of problems, including power, internet, software and lack of training with some facing all issues simultaneously. Private school participants on the other hand, were particularly affected by internet- related challenges and lack of training, even though they reported no issues with understanding technology.

Training/ support

Only 32% of students received formal training on using digital devices. Other sources of support or guidance for using digital platform include

Table 6 Guidance to use technology

Type	Frequency	Percentage
Parents	15	37.5%
Friends	3	7.5%
Teachers	1	2.5%
Online	10	25%
None	11	27.5%

This suggests that structured training opportunities are limited and most students rely on parents following by online resources (25%) when they need any guidance.

Only ICT teacher had a formal academic background in ICT. Most other teachers lacked training in digital content creation and classroom technology integration, some expressed little interest in improving their digital skills. believing that the use of digital tools could be distract students for learning,

Interview findings:

The qualitative component of this study aimed to explore teachers' perception of the digital learning platform. to understand this perception, it was first necessary to examine teachers access to digital devices, as their digital skill largely depends on their individual ability to use computers to create, communicate and participate effectively in school activities. Teachers' basic digital competences are essential for the successful implementation of digital technologies in the classroom particularly during teaching. Therefore, these section presents how teachers perceive access and utilized digital tools in their professional practice.

The qualitative data collected from teacher interviews and head teacher statements were analyzed using thematic analysis. After repeated reading and coding of the responses, several recurring patterns emerged. These were grouped into four major themes: 1) access and use of digital devices 20 digital skills and professional competence 3) perception and attitude towards digital technology and 4) institutional and infrastructure challenges.

Theme 1: Access and Use of Digital Devices

Teachers' basic digital skills largely depend on their individual ability to use devices to investigate, create, and communicate effectively in classroom activities. The findings

indicate the most teachers rely primarily on smart phones for accessing digital content. Google search is the most commonly used platform for study materials.

Only some teachers reported using YouTube as an additional learning resources;

> "*I use You Tube to prepare my lessons. From You Tube I can learn things beyond the syllabus."*

Although all schools receive free WIFI support from the government, teachers reported that the internet speed is often insufficient, especially when many users are connected simultaneously. As one private head teacher stated

> *"We get free internet from the government, but it is not adequate for the large number of students"*

this theme indicates that while digital devices are present in schools' accessibility and quality of technical resources remain limited.

Theme 2. Digital Skills and professional competence:

The frequency of technology use in the class room depends significantly on teachers' digital skills and the availability of technological infrastructure. Beside ICT teachers only a few teachers have received formal training in digital content creation or the use of digital tools for classroom activities.

> *"If we gave any assignment which require to use digital gadget parents also not cooperative even though they have facility in house," (ICT teacher)*

Some of the teachers appeared reluctant to upgrade their digital competences and expressed negative attitude towards digital technology. A public-school teacher commented,

> *"I feel digital devices distracted students more than they benefit them"*

However, some teaches demonstrated a positive attitude and willingness to learn new technologies independently. A few mentioned that they learn from the family members

even their children when institutional opportunities are unavailable. One teacher (Bangla) shared:

> *"When I wanted to teach about historical places, I collected pictures from google and showed them in class. The students' responses were positive"*

The theme highlights the importance of continuous professional development in strengthening digital teaching capacity.

Theme 3: Perception and Attitudes towards Digital Technology

Teachers' perceptions strongly influence their use of digital technology. while most teachers acknowledge that digital learning platform can enhanced students' engagement and understanding, some expressed negative views. For example, one teacher believed that digital devices distract students more than they benefit them.

One teacher explained,

> *"We do not give assignment that need the use of digital devices, so we prefer traditional methods for assignments."*

Similarly, parental concern about misuse of digital devices -particularly for gaming-also influence students' access to technology at home. However rote memorization remains common in both public and private schools. Both teachers and students reported that preparing digital assignments or creating digital content is time consuming Despite this example from classroom practice showed that students responded positively when digital images and multimedia materials were used.

The theme suggested that attitude and belief play a crucial role in shaping the integration of digital technology.

Theme 4: Institutional and infrastructural challenges.

Several structural barriers hinder the effectiveness of digital integration. These include:

- Irregular electric supply
- Slow or unstable internet connectivity
- Lack of technical support
- Limited access to multimedia classrooms
- Insufficient updated software and hard ware

Teachers emphasized that access to more technology labs and updated resources would significantly improve students' learning experiences.

A private school head teacher mentioned:

> "*There is only one multimedia classroom in our school. All students do not have access to devices at school. Students would benefit if government provide more technology with updated software and hard ware".*

In a summary the findings indicate that while teachers recognize the potential benefits of digital learning, infrastructure limitations, insufficient training, and negative perceptions hinder effective integration of digital technology in secondary schools.

Observation

1) Physical environment:

Observations from both public and private schools show that classes are generally teacher-oriented with little student participation. The multimedia classroom is rarely used for content creation or presentation, being mostly limited to PowerPoint slides or showing pictures. In public school classrooms, equipment maintenance is better than in private schools, although some equipment like outdated projectors and support services are still insufficient. The seating arrangement was adequate and comfortable for approximately 20 students allowing clear visibility of the digital screen for all students.

2) Availability of Digital Devices:

The observed multimedia classroom was equipped with a projector, laptop, smart TV, and WIFI connection. The internet speed appeared to be stable during the observation period as no buffering or major technical interruption were noted.

3) Teachers Use of Digital Technology:

During the observation teachers did not carry any personal digital devices except for smart phone. In the classroom they used the laptop provided by the school. The primary use of technology was limited to accessing content through google. Teachers did not use any digital tools to create original instructional materials such as presentations or interactive content.

I also observed teachers faced difficulties navigating digital devices and solving minor technical problems. Even simple tasks, such as retrieving images from saved files, required additional time and effort. This suggested limited digital proficiency and lack of confidence in handling classroom technology.

4) Students Engagement:

Students appeared to be enthusiastic and attentive when the teacher displayed online content. Since students did not have personal devices in the classroom their participation was mainly passive. they followed instruction and observed the content displayed on the screen but had limited opportunities for hand on interaction. Despite the limitation students remained focused during technology assisted lesson.

5) Challenges Observed:

- Lack of sufficient digital devices for students
- Limited technical support within the school
- Insufficient teacher digital skills
- Limited availability of educational software

CHAPTER 5: DISCUSSION & CONCLUSION

5.1 Discussion

This chapter discusses the major finding of the study in relation to the research question and existing literature on digital learning platform in secondary education. The discussion addresses the analysis of the findings based on the literature review and conceptual frame work like students' access to digital technology, challenges faced in using digital learning platform with teachers' perception towards digital learning in both public and private secondary school on Bangladesh.

The findings of the study can be better understood when viewed within the broader national context of Bangladesh's initiatives to integrate information and communication Technology (ICT) into secondary education. The ICT curriculum in secondary school includes core components such as basic computer skills, uses safety and security, use internet, multimedia and graphics and data base management. These curricular areas are designed to equip students with fundamental digital literacy that support both academic learning and participation in a digitally connected society.

Over the past decades the government of Bangladesh in collaboration with the United Nations Development Program (UNDP) has taken major efforts to expand access to digital resources across the country. As part of the Digital Bangladesh initiatives. multimedia classrooms have been introduced to 1000 schools in Dhaka within an additional 22000 schools planned to be brought online within two years and 60,000 primary schools within five years (Ministry of Education, [Moe] 6th November 2025,). UNDP, (2021) also reports that the government has established multimedia classrooms in over fifty thousand institutions nationwide.

However, the results of this study indicate gaps between national level efforts and students' actual experiences at the school level. Although digital tools and infrastructure are being

expands many students still rely primarily on smart phones with limited access to computer or school-based devices. While the curriculum emphasizes computer-based skills students' dependence on mobile phone may restrict their ability to practice tasks related to multimedia, graphics and data base management. Similarly, although digital safety is included in the ICT curriculum, students 'awareness and protective practice remain low as shown by the small percentage using strong passwords or setting clear digital boundaries.

Teacher's training is crucial factors in the successful implementation of digital learning in secondary schools. According to UNESCO institute of statistics (2025). the proportion of trained teachers in secondary education was reported at 65.014% in 2023. a figure consistent with the 65% reported in 2024 by the world bank. Although all ICT teachers in secondary schools receive basic ICT training including fundamental classroom use and preparing PowerPoint presentations – most training program remain limited in scope, the majority focus primarily on internet browsing and using e mail, offering minimal guidance on pedagogical integration of technology. Evidence suggest that ICT is rarely used for teaching and learning activities in the classroom. Head teachers reportedly use computers only administrative purpose. while classroom base digital instruction is infrequent. Unreliable internet access and insufficient technological devices further hinder teachers' ability to integrate digital resources effectively. Despite these constrain some teacher's expressed willingness to adopt digital tools in their teaching practices. However, the lack of comprehensive training remains a significant barrier. Many educators struggle to develop necessary digital competencies which ultimately affect the quality of digital instruction students receive. The challenge is intensified by the facts that 80% of ICT teachers in secondary school graduated from the discipline unrelated to ICT (Shaha, 2022). Consequently, insufficient training and limited subject expertise restrict teachers' capacity

to use digital tools confidently and effectively in the classroom. Teachers attitude as well as skill is a crucial factor for the digital learning implementation. While many teachers expressed positive attitude towards digital learning platform, several reports limited technical skill and inadequate professional training. This gap affects their confidence and ability to integrate technology effectively into classroom instruction. Similar findings were reported by Considine, Horton and Moorman (2009). Without proper training digital tools would be underutilized despite their availability.

The finding reveals that digital learning platform creates opportunities for enhance teaching and learning processes. Students reported that digital tools, such as multimedia classroom smartphones and internet-based resources helped to understanding the lessons, increased engagement and learning become more interactive. These findings is aligned with previous studies (Brand -Gruwell &Van Strien , 2018) which emphasize that digital learning can promote active learning, improve access to educational resources and support diverse learning styles.

However, the study also identified several barriers that limited the utilization of digital learning platforms. Power supply interruption, poor internet connectivity, lack of software resources and insufficient training were reported as a major challenges. These findings also show similarity of earlier research conducted in developing countries include Bangladesh, which high light the infrastructure limitations and digital divine as key obstruction to implantation of technology in education sector. (UNESCO Institute for Statistics 2025; UNDP 2021).

The study further found that recent political instability and changes in the national curriculum resulted in the temporary discontinuity of multimedia classroom use. This abruption significantly affected both teachers' practices and students learning experiences.

As a result, the potential benefits of digital learning platforms could not be fully reflected during data collection procedure.

Lack of training and limited understanding of digital tools seems a important obstacles, especially among students who have minimal prior exposer of technology. This affects their confidence and ability to use digital platform effectively for learning process.to integrate digital tools for educational purpose, a large number of students reported they do not create digital content themselves. Instead, most of the student primarily rely on communication -based tools such as Zoom and What's App for educational activities. This indicate that digital learning is largely limited to information sharing and virtual communication rather than active content creation or higher order digital engagement. In terms of inquiry based learning many students struggle to identify reliable sources of information due to information overloaded on the internet.

The study also highlighted health related concerns associated with technology use, a notable number of students reported experiences health issues such as eye strain fatigue, sleep disturbance. resulting from long use of technology. At the same time the findings suggest that although most students regularly engaged with digital devices, their extended or intensive use of digital learning platform remains limited. This may be due to infrastructure constraint, academic schedules and concern about health impact.

A comparison between public and private school students shows that both groups face similar challenges including power supply disruptions, poor internet connection, limited software availability and lack of adequate training. However, the nature and the intensify of these challenges vary between the two types of institutions. Interestingly the finding indicates that public schools generally have better digital infrastructure than private schools. In addition, teachers in public schools were found to be more trained in the use of digital technologies compared to their counterpart in private school. Despite these

advantages effective implementation remains inconsistent across both sectors, suggesting that access alone is insufficient without sustained support and pedagogical integration.

The government's investment in infrastructure, particularly the widespread installation of multimedia classrooms, has created opportunities for digital learning. However, the effectiveness of these initiatives depends on students' access, utilization, guidance, and digital skills. The study findings suggest that while national policies have laid the foundation for digital transformation, schools and families still play a critical role in ensuring that students can benefit fully from these resources. Gaps in training, internet connectivity, devices, tools, and practical knowledge continue to affect students' ability to engage meaningfully with the digital learning environment. The rapid expansion of ICT infrastructure in Bangladesh provides a strong framework for digital learning, but more attention is needed at the micro level—such as student access, digital literacy, safety awareness, and ongoing support. To translate national investments into effective classroom practice, we need support from families and community

5.2 Conclusion

This study examined the use of digital learning platforms in secondary schools in Bangladesh, with a particular focus on the barriers faced by students and the level accessibility in public and private schools. The findings indicate that while digital learning platforms hold significant potentials to enhance teaching and learning processes, their effective implementation remain uneven and limited by several contextual challenges.

In response to the reperch question, the study shows that while students and teachers in both government and private schools have some access to digital devices (mostly smart phones), their patterns of use remain limited, dependent on basic tools such as videos, zoom, what's app, and MS word. The level of daily engagement with digital devices is moderate, indicate that digital learning. has not yet become fully integrated part of everyday academic practice. The findings also reveal that the challenges identified such

as power shortage, unstable internet connectivity. Lack of software, limited understanding, insufficient training and difficulties in identifying reliable online information due to information overloaded, directly affect the effectiveness of digital platforms.as a result digital tools are often used primarily for communication purpose rather than for content creation, inquiry based learning or higher order cognitive activities. Additionally, health related concern arising from prolong screen use further restrict students s engagement with digital learning platform. These challenges vary between government and private schools but collectively highlighted gaps that obstruct the successful implementation of digital learning platform.

In terms of accessibility the study reveals disparities between public and private schools. Although public school generally demonstrate better digital infrastructure and more trained teachers, both sectors' experiences similar challenges that affect consistence access to digital learning platform. the nature and intensity of these challenges vary across the institutions, highlighting the digital divine that influenced not only by device availability but also institutional support, teacher competence and policy stability.

Overall, the study concludes that the successful integration of digital learning platform in Bangladesh secondary education requires more than technological provision alone. Addressing infrastructure limitations strengthening teachers training, ensuring equitable access, and promoting effective pedagogical use of digital tools are essential for utilizing the full potential of digital learning, despite its limitations, this study provides valuable insight into current state of digital education in Bangladesh and offers a foundation for future research and policy development.

5.3 Recommendation

Based on the findings of the study and the identified challenges in use of digital learning platforms in secondary education in Bangladesh, the following recommendation are proposed

1. Improve digital infrastructure

The government relevant education authority should prioritize improving basic digital infrastructure in schools particularly ensuring a reliable power supply and stable internet connectivity. Special attention to be given in public schools located in resource constrain area to reduce disruption in digital learning activities.

2. Enhance teacher's training and professional development

Regular and structured training programs should be provided to teachers to improve their digital competence and pedagogical skills. Training should focus not only on technical operation but also on effective instructional integration of digital learning platform. Content creation and inquiry-based learning strategies

3. **Ensure equitable access across public and private schools**

Policy initiatives should aim to minimize the digital dividend between public and private schools by ensuring equitable access to devices, software and technical support. Monitoring mechanism should be established to ensure consistent implementation of digital education policies across all the institutions.

4. Promote students' digital literacy and content creation

Schools should encourage students to move beyond using digital tools solely for communication purposes. Instructional activities should include digital content creation, information evaluation skills, and responsible use of online resources to enhance students critical thinking and search activities.

5. Address health and wellbeing concern

Guild line should be developed to promote healthy and balanced use of digital devices among students. Schools should raise awareness about potential health issues such as eye strain and physical discomfort and encourage appropriate screen time, regular brakes and outdoor activities.

6. Strengthen institutional and policy support

Consistent and stable education policies are necessary to support the sustainable use of digital learning platforms. Educational authorities should ensure continuity in digital educational initiatives despite political or circular changes and provide schools with clear operational guidelines.

7. Encourage Further Research

Further studies should involve larger sample and extending data collection periods to enhance generalization. Comparative studies in different region and longitudinal research design would provide deeper insight into the long-term impact of digital learning platforms in Bangladeshi secondary education

8.Strenghthening Community Involvement

Community involvement is essential for the successful implementation of digital learning platforms in secondary schools. The findings of this study indicate that parental concerns, limited awareness and lack of local support significantly influence students access to and use of digital technology. Therefore, strengthening collaboration between schools. families and the wider community is strongly recommended.

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REFERENCES

Ahmed, I., Ahmad, M., Rodrigues, J. J. P. C., Jeon, G., & Din, S. (2021). A deep learning-based social distance monitoring framework for covid-19. *Sustainable Cities and Society*, *65*, 102571. https://doi.org/10.1016/j.scs.2020.102571

Afshari, M, Bakar, K. A., & Su Luan. (2009). Factors affecting teachers' use of information and communication technology. *International Journal of Instruction*, *2*(1), 77–104.

Akter, S., Davies, K., Rich, J. L., & Inder, K. J. (2020). Barriers to accessing maternal health care services in the Chittagong Hill Tracts, Bangladesh: A qualitative descriptive study of indigenous women's experiences. *PLOS ONE*, *15*(8). https://doi.org/10.1371/journal.pone.0237002

Almusalam, S. N. (2001). *Factors related to the use of computer technologies for professional tasks by business and administration teachers at Saudi technical colleges.* (Doctoral Dissertation, the Ohio State University, 2001). ProQuest Digital

Akter, S. (2024). Digitalization of education in rural schools: A study of access, utilization, and impact toward digitalization in Bangladesh. *American International Journal of Multidisciplinary Scientific Research*, 1–9. https://doi.org/10.46281/aijmsr.v15i1.2205

Al-Zaman, Md. S. (2020). Digitalization and transformation of teaching and learning in Bangladesh. *Advances in Early Childhood and K-12 Education*, 56–77. https://doi.org/10.4018/978-1-5225-9775-9.ch004

Babu, B., & Kumar, P. Saravana M. (2021). Role of Digital Technology in Teaching Learning Process-A Review. *Sadbhavna- Research Journal of Human Development*, *11*(1). https://www.researchgate.net/publication/361698735_ROLE_OF_DIGITAL_TECHNOLOGY_IN_TEACHING-LEARNING_PROCESS_-A_REVIEW

Bhuiyan, S. (2011, January 1). Modernizing bangladesh public administration through e-governance: Benefits and challenges. *Government Information Quarterly.* https://www.academia.edu/7566638/Modernizing_Bangladesh_public_administration_through_e_governance_Benefits_and_challenges

Brand-Gruwell, S., & van Strien, J. L. H. (2018). Instruction to promote information problem solving on the internet in primary and Secondary Education. *Handbook of Multiple Source Use*, 401–422. https://doi.org/10.4324/9781315627496-23

Bryman, A. (2008). *Social Research Methods (3rd ed.)* Oxford university press https://www.scirp.org/reference/referencespapers?referenceid=2135299

Burnett, C. (n.d.). Review of the digital age and its implications for learning and teaching in the primary school. https://cprtrust.org.uk/wp-content/uploads/2016/07/Burnett-report-20160720.pdf

Carbonaro, M., & Bainbridge, J. (2000). *Design and development of a process for web-based Survey Research*. Alberta Journal of Educational Research. https://journalhosting.ucalgary.ca/index.php/ajer/article/view/54834

Christians, C. G. (2008). *"Ethics and Politics in Qualitative Research".* The Landscape of Qualitative Research. https://us.sagepub.com/en-us/nam/the-landscape-of-qualitative-research/book237869

Considine, D., Horton, J., & Moorman, G. (2009). Teaching and reaching the Millennial Generation Through Media Literacy. *Journal of Adolescent & Adult Literacy*, *52*(6), 471–481. https://doi.org/10.1598/jaal.52.6.2

Denzin, N. K., & Lincoln, Y. S. (1998). Collecting and Interpreting Qualitative Materials. *Thousand Oaks, California: Sage.*

Digital Transformation A Framework for ICT Literacy. (2007). *A Report of the International ICT Literacy Panel*.

Ehrmann. S. C. (1994). *Responding to the Triple Challenge Facing Post Secondary Education: Access, Quality, Costs, Report Prepared for the OECD, International Conference, December 14-16, Paris.*

European Union. (2021). Digital education action plan 2021-2027: *Resetting education and training for the digital age*

Gouseti, A., Lakkala, M., Raffaghelli, J., Ranieri, M., Roffi, A., & Ilomäki, L. (2023). Exploring teachers' perceptions of critical digital literacies and how these are manifested in their teaching practices. *Educational Review*, *76*(7), 1751–1785. https://doi.org/10.1080/00131911.2022.2159933

Hattie, J. (2009) *Visible learning: A synthesis of over 800 meta -analysis relating to achievement. Routledge*

Harrison, A. W., & Rainer, R. K. (1992). The influence of individual differences on skill in end-user computing. *Journal of Management Information Systems*, *9*(1), 93–111. https://doi.org/10.1080/07421222.1992.11517949

International Telecommunication Union. (2020). Measuring digital development: Facts and figures 2020. The ICT development index. Geneva, Switzerland: International Telecommunication Union.

Ihmeideh, F. M. (2009). Barriers to the use of technology in Jordanian pre-school settings. *Technology, Pedagogy and Education*, *18*(3), 325–341. https://doi.org/10.1080/14759390903255619

Islam, T., & Salim, A. S. (2006). Current status and prospects for E-learning in the promotion of distance education in Bangladesh. 7 (1), 114-123. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.112.4888&rep=rep1&ty

Khan, M. S. H., Hasan, M., & Clement, C. K. (2012). Barriers to the introduction of ICT into education in developing countries: The example of Bangladesh. International Journal of instruction, 5(2). https://files.eric.ed.gov/fulltext/ED533790.pdf

Kayyali, M. (2024). Digital Literacy in higher education: Preparing students for the workforce of the future. *International Journal of Information Science and Computing*, *11*(1). https://doi.org/10.30954/2348-7437.1.2024.6

Kiili, C., Laurinen, L., & Marttunen, M. (2008a). Students evaluating internet sources: From versatile evaluators to uncritical readers. *Journal of Educational Computing Research*, *39*(1), 75–95. https://doi.org/10.2190/ec.39.1.e

Livingstone, S., Stoilova, M., & Kelly, A. (2020b). (rep.). *The outcomes of online risks for children and young people*. EU Kids Online.

Ministry of education. Bangladesh. (2025, November 6). https://moedu.portal.gov.bd/

Ministry of Education. (2021). Digital education strategy for Bangladesh. Government of Bangladesh

Morgan, T. (1996). Using technology to enhance learning: Changing the chunks. *Learning and Leading with Technology*, *5*(23), 49–51.

Opoku, A., Ahmed, V., & Akotia, J. (2016). *Choosing an appropriate research methodology and method: 4: Research*. Taylor & Francis. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315725529-4/choosing-appropriate-research-methodology-method-alex-opoku-vian-ahmed-julius-akotia

Punch, K. F. (1998). Introduction to social research quantitative and qualitative approaches. sage, London. - references - scientific research publishing. https://www.scirp.org/reference/referencespapers?referenceid=1631096

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: Results from A worldwide educational assessment. *Computers & Education*, *37*(2), 163–178. https://doi.org/10.1016/s0360-1315(01)00045-8

Perovic, J. (2020, November 19). *Media and information literacy among children on three continents: Insights into the measurement and mediation of well-being*. Media and information literacy in critical times: Re-imagining learning and information environments. https://www.academia.edu/44538831/Media_and_Information_Literacy_among_Children_on_Three_Continents_Insights_into_the_Measurement_and_Mediation_of_Well_being

Ranieri, M., Bruni, I., & de Xivry, A.-C. O. (2017). Teachers' professional development on digital and media literacy. findings and recommendations from a European

project. *Research on Education and Media*, *9*(2), 10–19. https://doi.org/10.1515/rem-2017-0009

Shelly, G. B., & Cashman, T.& et al (2004). Integrating Computer in the Classroom. *(3rd Ed.). Australia: Thomson Course Technology*.

Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Olafsson, K., Livingstone, S., & Hase brink, U. (n.d.). EU Kids Online 2020: Survey results from 19 countries. https://www.researchgate.net/publication/339177682_EU_Kids_Online_2020_Survey_results_from_19_countries

Seufert, S., Guggemos, J., & Sailer, M. (2021). Technology-related knowledge, skills, and attitudes of pre- and in-service teachers: The current situation and emerging trends. *Computers in Human Behavior*, *115*, 106552. https://doi.org/10.1016/j.chb.2020.106552

Uddin, A. (2020). Local response to the global pandemic (Covid-19) in Bangladesh. *Social Anthropology*, *28*(2), 369–370. https://doi.org/10.1111/1469-8676.12888

United nations development programme. (2022). *UNDP annual report 2021.United nations development Programme*. Retrieved from www.undp.org/publications/undp-annual-report-2021.

UNESCO Institute for Statistics (2025). *World education statistics 2025*. Retrieved from www.uis.unesco.org/en/publication/world-education-statistics2025.

Voogt, J., Erstad, O., Dede, C., & Mishra, P. (2013a). Challenges to learning and schooling in the Digital Networked World of the 21st Century. *Journal of Computer Assisted Learning*, *29*(5), 403–413. https://doi.org/10.1111/jcal.12029

Williams, B. (1995). *Factors contributing to successful implementation of computer technology in schools.* (dissertation).

Wood, D. (1995). Theory, training and technology: Part I. *Education + Training*, *37*(1), 12–16. https://doi.org/10.1108/00400919510079555

World Bank (2024). *World Bank Annual Report 2024: A Better Bank for a Better World (English). Washington, D.C.: World Bank Group.* http://documents.worldbank.org/curated/en/099101824180532047.

Yanli, X., & Danni, L. (2021). Prospect of vocational education under the background of Digital Age: Analysis of European Union's "Digital Education Action Plan (2021-2027)." *2021 International Conference on Internet, Education and Information Technology (IEIT)*, 164–167. https://doi.org/10.1109/ieit53597.2021.00042

Yeasmin, S., & Rahman. (2013). A study on e-Learning for Bangladesh: Challenges and Opportunities. *Classroom Teaching a Classroom Practice Based Quarterly Journal.21-25.*

APPENDICES

Appendix -A

Consent Form

Unique ID _____

DATE_____

NAME OF PARTICIPANT_____

I am BRATATI SARKER, a student of Master's in educational Leadership and School improvement in Brac University. I am conducting research on "Challenge and opportunity of digital learning for students in secondary school in Bangladesh "as part of my Master.

I am inviting you to be a part of my research study. I will ask you some questions related to socio- demographic, school and class room environment, overall, your experience in digital learning platform. The interview will take almost 30 minutes to complete. I shall be grateful for your assistance to complete my questionnaire. You can answer the question in your convenience and you have right to leave the question un answered if any of the question you do not want to answer and leave the interview any time. I guarantee you the information whatever you provide me, will be kept secret and your privacy will be protected. This information will use only my research purpose.

I am thankful for your cooperation. If you willing to participate in the study. please sign below.

Investigator signature/ date

volunteer signature/ date

Witness signature/ date

Appendix B

Question (for teachers)

1)what type of technology do you use in your lecture preparation?

2) do you use any device to your class room activity?

3) do you feel digital tools help your lesson plan delivery?

4)can you share with me some of your successful teaching experience you had using digital platform?

5) what tools or application do you frequently use for teaching?

6)Is digital technology help your teaching goals?

7) what challenges do you face when you using digital platform to deliver lessons?

8) how your institution supports your digital literacy development?

9)what improvement would need to be focus on?

10) how do you address the digital literacy gap among the students during your lessons.?

11) what challenges do you face to ensuing all the students have equal access to digital learning resources.?

12) In your opinion how has the use the digital platform affected the quality of teaching and learning?

13) how prepare do you feel to adopt to future technological advances?

Appendix C

Check list for observation:

1. Digital environment
   - Availability of devices (computer, projector)
   - Internet connection available
   - Device function properly
2) teachers' use of technology
- Teachers uses digital tools in lessons
- Gives clear instruction for digital tasks

3) students 'engagement

- students use devices when instructed
- Students' interaction with digital content.

Appendix D

Survey questionnaire: demographic information.

Name of student	Unique ID

Question:

S/l no	Question	Response	Code
1	Age of the participant		
2	What is your mother occupation?		
3	What is your father occupation?		
4	what is your mother educational level		1-below primary 2-primary 3-secondary 4-bechalor 5-masters
5	what is your father's educational level		1-below primary 2-Secondary 3-Bachelor 4- masters
6	What is your house hold income		1-below taka 30.00 2- 30,000-50000 3-Above 50000
7	What is your gender		1- Male 2- female
Part B: accessibility And infrastructure			
1)	What type of device do you primarily use		1- Smart phone 2- Laptop 3- -desktop computer 4-tablet 5- no device at all
2)	Where do you get regular access to internet?		1-home only 2-school only 3-home and school both 4-other places 5- no access

3)	How often you get power outrage that disturb learning		1-never 2-rarely 3-frequently
Part c: technology use			
1)	How comfortable are you with digital platform for learning?		1- Not comfortable 2- Comfortable with difficulty 3- comfortable 4-very comfortable 5- I do not use at all
2)	Have you received any training in using digital tools for education		1-yes 2-no
3)	Can you perform following task confidently? (you can check more than one)		1- log in to apps 2- upload /down load assignment 3- participate in online discussion 4- trouble shoot minor technical issues
4)	What digital tools are using in your school or your studies		1-=learning management system googles classroom) 2—commutation tools (e.g. zoom, what's up) Content creation tools (e.g. power point, adobe, google workspace etc.) 3 – micro soft word. Google doc.
5)	What is the main barrier to using technology effectively for education (you can choose more than one)		1-lack of training 2-limited access to devices or tools 3-Internet issues 4-Cost of software or tools
Part D: Learning			1-

experien ce and content creation			
1)	Do you find difficulties to understand lesson digital platform than traditional methods		1-Yes 2-No
3)	How often you face technical difficulties while using digital platform		1- never 2-Rarely 3-frequently
4)	Have you ever created digital content (presentations, videos, blogs) for educational purpose		1-Yes 2-no
5)	What type of digital content do you use or create most frequently		1-videos 2-infographics 3-presentation 4-not use at all
6)	How often do you create or use digital content for learning?		1-daily 2-weekly 3-Monthly 4-Rarely
7)	Do you face challenge in creating digital content?		1-yes 2-no
8)	If previous answer is yes, then answer why		1--lack of skills/ knowledge about tools 2--limited access to required software or hardware 3--time constrains 4—lack of guidance or support
Part E: Digital inquiry			
1)	How often do you use digital		1—daily 2—weekly

	platforms to search for answers to academic questions		3—monthly 4—rarely
2)	Which digital resources do you use most frequently for academic inquires?		1—search engines (e.g. Google, Bing) 2- educational platforms (e.g. khan academy, ten minutes school) 3-social media or forum (e.g. face book, what's up) 4-other
3)	How confident are you in evaluating the credibility of online resources?		1—not confident 2— confident 3- highly confident
4)	what challenges do you face while conducting digital inquiries (you can select more than one)		1-difficulty to finding credible sources 2— information overload 3—lack of search skills 4—time constraints
Part F:Digital wellbeing and safety			
1)	On average, how many years do you spend online daily for educational purpose?		1—less than 1 hour 2- 1-3 hours

			3—4-6 hours 4—more than 6 hours
2)	How often do you feel physically or mentally tired after extended use of digital devices		1—never 2—rarely 3—sometimes 4—often
3)	Do you believe using online negatively impact your sleep patterns		1==yes 2—no
4)	Do you practice any of them to maintain digital wellbeing?		1=taking break between screen time 2—using screen filters or blue light glasses 3—setting boundaries for digital device uses 4—engaging offline activities to balancing online time
5)	Do you feel safe while using the internet for educational purpose		1-yes 2-no
6)	Have you face any of the online safety issues. (you can select more than one)		1-Cyberbullying or harassment 2-online scam 3-data branches or hacking of account 4-exposer to inappropriate content 5-other
7)	Are you aware of the following digital safety		1- using strong password

	practice (you can select more than one)		2- enabling two factor authentication 3- avoiding suspicious link or downloads 4- reporting inappropriate behaviour or content
8)	Who provide you guiidence on digital safety?		1- School teacher 2- 2-parents 3- Friends 4- Online resources 5- No one