

Teacher Training on ‘ICT in Education’ for the Government  
Primary School Teachers: Training Practices and Its Classroom  
Implementation in the Teaching-Learning Process

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

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Brac University  
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## **Declaration**

It is hereby declared that

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

**Student's Full Name & Signature:**



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## Approval

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## **Ethics Statement**

This thesis has followed and maintained proper ethical protocols. An ethics application form was submitted along with the thesis proposal for review by the Ethics Committee. This thesis is my original work, and all sources utilized have been appropriately acknowledged.

Before data collection, all participants were thoroughly briefed about the research. They were provided with a consent letter that included details about the researcher's identity, the research purpose, and a clear commitment to maintaining confidentiality.

Throughout the research process, participants' names, choices, and affiliations were strictly protected. No names have been mentioned in this report; instead, participants have been referred to using numbers to ensure anonymity. This approach ensured the ethical integrity of the research and safeguarded participants' privacy.

## **Abstract**

This study examines the "ICT in Education" training program for government primary school teachers in Bangladesh, focusing on the gaps between the training and its classroom integration. Using a qualitative approach, it explores training practices, teachers' perceptions, and the challenges in applying the training knowledge at schools. Data from in-depth interviews reveal that, while teachers hold positive attitudes toward the beginner-friendly program, its effectiveness is hindered by inadequate participant selection, insufficient follow-up support, weak supervision, and a lack of infrastructure and resources. The findings emphasize the need for policy revisions and improvements in training design, availability of resources at school, and a more proactive teacher mindset. Addressing these issues can enhance the program's effectiveness and support the successful integration of ICT in primary education.

**Keywords:** ICT in Education; Government Primary School (GPS)

## **Dedication**

To my sister, for always believing in me and supporting me unconditionally.

## **Acknowledgement**

I would like to express my deepest gratitude to my thesis supervisor, Mamunur Rashid, Senior Lecturer at BRAC Institute of Educational Development, for his insightful guidance and constructive feedback throughout the research. His expertise and thoughtful advice have helped me in shaping this study and ensuring its successful completion.

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## List of Acronyms

|       |                                          |
|-------|------------------------------------------|
| GPS   | Government Primary School                |
| ICT   | Information and Communication Technology |
| RQ    | Research Question                        |
| DPE   | Department of Primary Education          |
| MoPME | Ministry of Primary and Mass Education   |
| MoE   | Ministry of Education                    |
| a2i   | Access to Information                    |
| UNDP  | United Nations Development Programme     |
| DPED  | Diploma in Primary Education             |
| HT    | Head Teacher                             |
| AT    | Assistant Teacher                        |
| PTI   | Primary Teachers Training Institute      |
| URC   | Upazila Resource Center                  |
| 4IR   | Fourth Industrial Revolution             |
| FGD   | Focused Group Discussion                 |

# **Chapter 1**

## **Introduction and Background**

### **1.1 Introduction**

Information and Communication Technology (ICT) has been an integral part of the education system globally, and it has been integrated into primary education all around the world to raise global citizens to thrive with the technological advancement of today's world (Kalas et al., 2012). According to the study, UNESCO refers to ICT in primary education as the use of technology and multimedia in the teaching-learning process, tools for creative self-expression, and support for children's learning and thinking processes. Integrating ICT tools into teaching can help students develop essential skills related to digital literacy themselves. Digital literacy involves the capacity to utilize digital technologies for accessing, comprehending, organizing, communicating, assessing, and generating information safely and responsibly (UNESCO, 2023 & USAID, 2022). However, enhancing the teaching-learning experience with the use of ICT requires the support of education and school policies, along with professional development opportunities for teachers (Kalas et al., 2012). In order to facilitate students' learning, teachers must keep developing their own ICT competence. Hence, governments across the globe emphasize effective teacher training programs to equip educators with the necessary skills and competencies to integrate ICT seamlessly into classroom instruction as the quality of teachers highly affects the quality of education, particularly primary education (Kulshrestha, & Pandey, 2013). Bangladesh, in alignment with its vision for a Digital Bangladesh and the Fourth Industrial Revolution (4IR), emphasizes integrating ICT in primary education (Obaydullah & Rahim, 2019). Recognizing teachers as key change-makers, and ensuring their competence in ICT is of utmost importance to integrate ICT in the classroom successfully (Mia & Haque, 2013). However, there's a high shortage of skilled teachers at the primary and secondary levels

of education in Bangladesh (Roy et al., 2020). Training teachers on the use of ICT in education can empower them to seamlessly incorporate ICT tools, such as multimedia presentations, interactive simulations, and online collaboration tools (Rahaman & Akter, 2017). ICT-competent teachers can better prepare students for future careers by instilling critical thinking, problem-solving, and technological proficiency (Mia and Haque, 2013). Since primary school teachers play an important role in shaping the educational foundation of children's education, this research intends to delve into the critical domain of teacher training for Government Primary School (GPS) teachers with a specific focus on the 'ICT in Education' training. There have been many studies that have investigated professional development training for primary school teachers and ICT training initiatives for educators on a global scale. However, very little research has been conducted to analyze the specific ICT training programs tailored for Government Primary School (GPS) teachers in Bangladesh. This study will concentrate on this specific area, aiming to investigate the training practices of the 'ICT in Education' training, encompassing aspects such as training content, teaching-learning strategies employed during the sessions, assessment criteria, and more. The objective is to comprehensively understand the implementation practices of the trainee teachers in their classrooms, along with the challenges they face.

## **1.2 Research Topic and Title**

The topic of this study is the teacher training on ‘ICT in Education’ for the GPS teachers in Bangladesh. GPS teachers receive professional development training on integrating ICT into their teaching practices, arranged by the Department of Primary Education (DPE) and the Ministry of Primary and Mass Education (MoPME) (Department of Primary Education [DPE] & a2i Program, 2018). This initiative intends to equip primary school teachers with the skills and knowledge needed to effectively use digital resources and integrate ICT into their teaching practices, to improve the learning experience for primary school students. This study conducts a thorough investigation into this training program, including its content, delivery, participants and implementation in classroom settings.

The title of this study is, “Teacher Training on ‘ICT in Education’ for the Government Primary School Teachers: Training Practices and Its Classroom Implementation in the Teaching-Learning Process”.

## **1.3 Statement of the Problem**

Teachers of GPSs receive training on the use of digital resources in their classrooms (Haque et al., 2017). Yet, the implementation of ICT in the regular teaching-learning processes is significantly low as teachers are not fully ICT literate (Imon, 2017). The general IT knowledge of teachers is considered to be below average; their use of technologies is mostly limited to using social media and visiting news portals. Addressing the gap between acquired skills and their classroom application is crucial for the effectiveness of training programs, allowing teachers to diversify their pedagogy and stay updated with educational trends (Al-Zaman, 2020). This study aims to look into the practices of the ‘ICT in Education’ training and its implementation into the teaching-learning process to identify the underlying factors that hinder achieving the desired outcome of ICT in Education training in the primary education sector.

## **1.4 Research Questions**

This research was conducted based on the following questions-

1. What are the nature and practices of the training on 'ICT in Education'?
2. What is the perception of GPS teachers about the training on 'ICT in Education'?
3. How do teachers use the skills learned from the 'ICT in Education' training in their teaching-learning practices and what challenges do they face to implement their learning?

## **1.5 Purpose of the Study**

This exploratory study aims to explore what has been delivered in the ICT training and how those are delivered to the teachers as well as how teachers are perceiving the ICT training. This research will investigate the content, methodologies, and structure of 'ICT in Education' training for GPS teachers. It focuses on the training's implementation practices in enhancing teachers' knowledge of ICT integration, how teachers apply their learning in the classroom, and identifying challenges faced during implementation. Given that teachers are both primary beneficiaries and key implementers of the training, their perspectives are crucial for understanding factors influencing learning and practical application. The findings can be used to address the essential adjustments in the training curriculum, which may aid in a more precise deployment of technology-based teaching approaches in the classroom, thus benefiting students.

## **1.6 Significance of the Study**

The study will contribute to a comprehensive understanding of the 'ICT in Education' training practices for the GPS teachers in Bangladesh, including their perspectives on the training's significance and challenges faced in classroom implementation. The insights gained from the

study can help the training instructors and policymakers. They can improve the training curriculum and contents to be more suitable for the teachers. Instructors can also adjust their training strategy by addressing the needs and challenges faced by the teachers. If teachers' reflections get proper attention, they can overcome their challenges, and they can contribute to a better education for their students.

## **Chapter 2**

### **Literature Review and Conceptual Framework**

In this chapter, I have presented different opinions and previous findings related to extensive sources, including journal articles, research papers, books, and reports, to gain a comprehensive understanding of my research topic from different lenses. I have organized this literature review into the following themes or categories.

#### **2.1 Analysis of the Training Manual**

A training manual has been developed to provide methodological support to the instructors and facilitators of the training program. Originally developed in 2009, the manual has been revised through three editions (2012, 2018, 2023) to reflect advancements in technology and the evolving landscape of the country's primary education system. It was initially developed by the Access to Information (a2i) Program under the Prime Minister's Office with financial and technical support from UNDP, Bangladesh (a2i Program, 2012). In subsequent editions, DPE, MoPME, joined a2i (DPE & a2i Program, 2018), and took full responsibility for the latest edition in 2023 (Department of Primary Education [DPE], (2023). The training, initially a 12-day program, was extended to 14 days in the most recent revision (DPE, 2023).

This manual serves as a comprehensive guide for integrating ICT into primary education. It provides detailed instructions for training instructors on how to conduct ICT training sessions for primary school teachers. It includes a comprehensive lesson plan for each day of the program, outlining specific activities, methodologies, and time allocations. Each session is designed to enhance participants' skills in creating digital teaching materials, operating multimedia classrooms, and integrating ICT tools into their lessons.

The manual also features step-by-step activity descriptions, group work guidelines, hands-on exercises, and resources to facilitate interactive learning. Additionally, it includes

recommendations for maintaining participant engagement and tips for troubleshooting common technical challenges during the sessions.

According to Kulshrestha, & Pandey (2013), the proficiency of the trained teachers depends on the quality of the training curriculum and its execution. The training manual on 'ICT in Education' training for teachers is considered to be helpful to many participants while a high percentage of participants deemed the manual insufficient for preparing digital content in the research findings of Haque et al. (2017). Findings from this research indicates that dissatisfied teachers suggest adding relevant pictures, videos, demonstration sessions, and pre and post-tests. The participants of the research suggested that to improve the training manual, the ICT training and materials should be provided to everyone, updated regularly, and include additional content on the use of the internet, trouble-shooting, videos related to lessons, extra exercises for trainee teachers, animation design, MS Office program use, and session-relevant pictures, etc. According to Syahid et al., (2019), improving ICT competence for primary school teachers can be achieved through suitable training, with training materials selected based on their requirements. A needs analysis can guide the direction of an effective training design (Vatanartiran & Karadeniz, 2015), while an ICT training should account for the diversity among teachers, including factors such as age (Ghavifekr & Rosdy, 2015).

## **2.2 Professional Development Training on Technology for GPS Teachers in Bangladesh**

Pre-service training is considered the most commonly used approach to enhance the instructional quality of teachers (Chapman, et al., 1997, as cited in Kulshrestha, & Pandey, 2013). However, in Bangladesh, GPS teachers can start their teaching practices, with no pre-service training or school experience (Siddik, & Kawai, 2020). After obtaining teaching positions, they undergo a mandatory 18-month long-term training program, named Diploma in

Primary Education (DPED); they can attend this training within three years of their recruitment due to heavy workloads. However, this training is not sufficient to specialize in any particular subject (Ahsan et al., 2016, as cited in Siddik, & Kawai, 2020). In the true sense, teachers do not receive any mandatory training in education before joining school.

Furthermore, regular in-service training of teachers is necessary to train them with new knowledge and skills and re-orient them to new teaching-learning methods to strengthen their capacity and elevate their level of productivity and development (Hervie, & Winful, 2018). The DPE, MoPME, Bangladesh arranges the 'ICT in Education' in-service training for the GPS teachers that train teachers on the use of ICT to prepare digital content for their teaching practices. There's a new blended approach in the teacher training initiative introduced by the Ministry of Education (MoE) for all levels of teachers. Considering the inefficiency of cascaded training, they launched the Muktopaath e-learning platform and introduced the "New Curriculum Framework 2021 Online Training " there (Hasan & Khan, 2023).

### **2.3 ICT integration in Primary Education**

Young students need essential life skills like communication, problem-solving, and creativity to thrive in the fast-paced world of the 21st century (Kalas et al., 2012). Acknowledging this, primary education systems globally are gradually integrating ICT into their curricula (Vanderlinde, 2014). Throughout 2012 and 2013, a comprehensive Master Plan for ICT in Education in Bangladesh, spanning from 2012 to 2021, was developed under the guidance of the MoE. The MoPME confirmed contributions to ICT interventions in primary and secondary education, collaborating closely with the MoE to jointly implement the Master Plan in a unified manner (Ministry of Education [MoE], 2019).

Moniruzzaman and Natarajan (2020) have identified the transformative potential of ICT in reshaping livelihoods and educational systems through their research that explores

Bangladesh's initiatives like "Digital Bangladesh" and "Vision 2021." Assessing the current status of ICT access in primary education also identifies challenges such as political commitment, infrastructure, staff development, curriculum, and skills. The study highlights the importance of government attention to content development, inclusive recruitment, equal facilities, electricity, internet access, and systematic monitoring for successful ICT integration in primary education.

### **2.3.1 Practices of ICT in Classrooms**

The study (Vanderlinde, 2014) suggests that the implementation of ICT in classrooms, referred to as "institutionalized ICT use," should focus on schools rather than individual teachers. Additionally, it emphasizes that it is schools that play the major role in achieving teachers' ICT competence through professional development activities. To describe the practices in Bangladesh, participants of the study (Zaman et al., 2019) indicated that ICT facilities, such as laptops and multimedia projectors, are present in their schools. However, if they wish to utilize these resources, they must first transport them to the classroom, as these amenities are not readily available in the teaching spaces. This process is time-consuming, leading to a lack of enthusiasm among teachers for incorporating ICT tools into their teaching practices.

The findings of (Haque et al., 2017) reveal discrepancies between teachers' self-assessment and observed skills, with challenges in software usage and digital content preparation. A notable percentage of trained teachers lack essential skills, and a majority find the supplied ICT equipment insufficient. Stakeholders express dissatisfaction with equipment adequacy, indicating a need for improved ICT integration in primary education.

### **2.3.2 Teacher Perceptions Toward ICT in Bangladesh**

All the participating teachers in the findings of Zaman et al. (2019) believe ICT improves teaching, with most of them stating it enhances the learning experience and motivates students.

However, teachers are also found to be reluctant to adapt and integrate ICT tools during teaching and learning (Obaydullah and Rahim, 2019). In addition, Al-Zaman (2020) notes the resistant attitude of certain senior teachers who hinder the progress of ICT in education as they tend to prevent EdTech from getting employed in academia. This resistance is attributed to factors such as traditional intellectual orthodoxy, societal stigma, and a reluctance to embrace change among these teachers.

### **2.3.3 Challenges to ICT Integration in the Classroom**

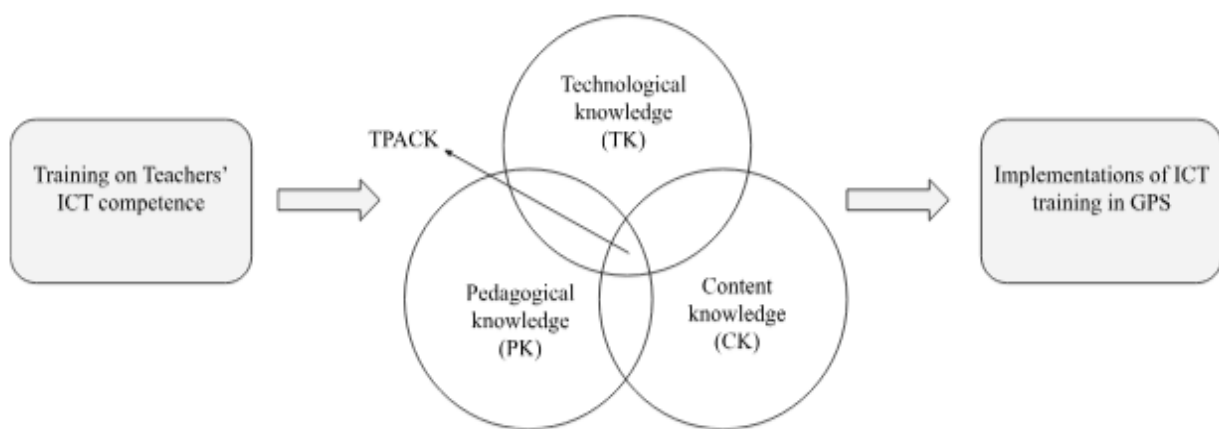
Moniruzzaman and Natarajan (2020) have found from their analysis that the lack of ICT Infrastructure is the major problem for ICT integration in primary education in Bangladesh. Key obstacles found in the study of Obaydullah and Rahim (2019) include the unavailability of essential infrastructure, equipment, and online resources. Teachers also emphasize the deficiency in skills and inadequacy of in-service training initiatives for the effective integration of ICT into primary science instruction. Similar challenges are also found in the study by Razak et al. (2019): inadequate schools' ICT tools, failure to commit to school regulations, and failure to comply with school regulations.

A study by Bamrara (2020) states that ICT in education has proved its effectiveness in imparting knowledge in the classroom, and it has the potential to improve the teaching processes. However, its implementation will face continuous obstacles, hence, the potential challenges to the inclusion of ICT in education need to be researched to improve the quality of teaching and learning.

## **2.4 Conceptual Framework**

The Technological Pedagogical Content Knowledge (TPACK) framework, highlighting teacher knowledge to integrate technology in their classroom, proposed by Koehler & Mishra (2009) has guided me throughout this study. The TPACK framework highlights the interaction

of three fundamental categories of knowledge: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). TPACK can help teachers integrate their technological knowledge (ICT skills) with their pedagogical and content knowledge to effectively use technology in the teaching practices in the context of this research. It provides a lens for understanding how the specific training teachers receive influences their capacity to integrate ICT tools into their teaching practices.



*Figure 1: Conceptual Framework*

## **Chapter 3**

### **Methodology**

#### **3.1 Research Approach**

This study adopts a qualitative research approach, which is well-suited for comprehending concepts, thoughts, opinions, or experiences by providing insights into the problem (Ussif et al., 2020). The research focuses on investigating the content and nature of the ICT training received by GPS teachers, how they apply the skills acquired during training in their classrooms, their perceptions of the training, and the challenges they face in implementing their learning. Gaining reflections from participants' firsthand experiences was crucial to understanding these aspects. Their responses offered valuable insights into their beliefs, perceptions, values, and emotions. As the study delved deeply into the lived experiences of the participants, a qualitative research approach was the most suitable choice.

#### **3.2 Research Site**

The study focused on GPSs within Chandgaon Thana in Chattogram city, as well as the Primary Teachers Training Institute (PTI) in Chattogram. I have familiarity with a few schools in the Chandgaon thana as I have experience working as a guest teacher there. This familiarity facilitates easy access to the GPSs and effective communication with the teachers. Chandgaon Thana encompasses 45 schools, out of which this study covered 5 GPSs for data collection. These schools have a very high number of students compared to the number of teachers. Students of these schools mostly come from low socio-economic backgrounds; hence all students cannot afford to have digital devices at home. Each school has at least one teacher who has received the 'ICT in Education' training.

The PTI Chattogram and URC provide professional development training on different subjects and topics to the primary school teachers of Chattogram all throughout the year. Similarly, PTI Chattogram arranges the “ICT in Education” training for the GPS teachers of Chattogram, and hence this worked as a research site for this study.

### **3.3 Research Participants**

Research participants for this study are chosen purposefully. Purposive sampling is the best strategy for selecting small groups of participants who are likely to be competent and have a level of expertise in the area of study interest (McMillan & Schumacher, 2001). The research requires the perception of the teachers who have received the ICT training arranged by the education offices. To investigate teacher perspectives on the training and the implementation of the training knowledge in their classroom, 6 Assistant Teachers (AT) from 4 different GPSs of Chandgaon thana who have received the “ICT in Education” training was interviewed.

4 Head Teachers (HT) from the 4 GPSs and 2 instructors from PTI were also interviewed in the study to gain understanding of their observation and beliefs, and cross-check with the ATs’ perspectives. 2 of the HTs have received the training themselves. The PTI instructors have 11 and 6 years of experience as training instructors of this training.

Among the participants, 8 were female while 4 were male. Complete confidentiality and anonymity have been maintained throughout the study- names of the participants, or the names of the schools have not been mentioned in any part of the study.

Table 1: Distribution of Participants by Designation and Gender

| Designation       | Male | Female | Total |
|-------------------|------|--------|-------|
| Assistant Teacher | 1    | 5      | 6     |
| Head Teacher      | 1    | 3      | 4     |
| PTI Instructor    | 2    | -      | 2     |
| Total             | 4    | 8      | 12    |

**Note:** A dash (-) indicates zero participants in that category.

### 3.4 Data Collection Methods

I have collected data through the following method.

#### 3.4.1 Semi-structured Interview

Interviews are used to collect non-numeric data that provides insights into people's behavior as well as the meaning of that behavior (Bolderston, 2012). I have followed Semi-structured interviews as the method of data collection as it can be effective to gather open-ended qualitative data (DeJonckheere & Vaughn, 2019). The ATs have participated in the interviews and shared their personal experience both in the training program and in the classrooms as well, which give me a holistic overview of the role of the training that is impacting the classroom implementations. HTs have participated in this research by reflecting on their observation on the practices, effectiveness, and struggles in incorporating ICT in the classrooms, while the instructors have participated in the interviews by sharing their experiences and observations from the training which has given clear idea on the nature of the training, behavior of the teachers in the training, their scope, use and challenges in using ICT in classrooms.

Three separate interview guidelines were prepared for three different groups of participants. I have taken notes of 3 interviews and audio recorded 9 with the participants' permission which

I have later transcribed. For each interview, I have provided consent forms, and explained the purpose and process of the research for creating a clear understanding of their role.

### **3.5 Data Analysis**

This study used “Thematic Analysis” to analyze the collected data. Thematic Analysis is a widely used method for examining qualitative data by identifying and interpreting recurring patterns or "themes" within the data (Clarke & Braun, 2017). It enables researchers to establish connections between various concepts and opinions with the data gathered during the research process (Alhojailan, 2012).

In this study, all collected data were first transcribed from the notes and audio recordings, which were obtained with the participants' permission. Following this, I conducted a thorough review of the transcriptions to familiarize myself with the content and systematically code the data. The coding process involved identifying patterns and categorizing the data based on its relevance to the research questions. To ensure clarity, I meticulously organized the data, using color-coded annotations in the transcripts to distinguish between different codes. The codes were then grouped into overarching sub-themes, which were subsequently integrated into broader themes that directly addressed the research questions. This iterative process ensured that the analysis was both rigorous and aligned with the objectives of the study, allowing for a comprehensive understanding of the participants' experiences and perspectives.

### **3.6 Ethical Issues and Concerns**

I have tried to uphold the highest ethical standards throughout my research. As part of this commitment, participants in the study received a consent letter which included the topic of my research, its purpose, significance, and the declaration that their identities would be completely confidential in the entire study. Upon providing their signature, the participants volunteered for

the data collection process. Any information they had provided has been kept anonymous, with no mention of their names or affiliations in the study.

Out of the 12 participants in the research, 3 did not grant permission for audio recording. Their choice was fully respected, and their interviews were conducted without being recorded.

### **3.7 Role of the Researcher**

I have explored individual experiences, observations, and perspectives of the ATs, HTs, and PTI instructors on the training and its implementation by the teachers in their teaching practices, and what factors influence them. I had some experience as a teacher at GPS. Throughout the research process, I was mindful to not let my own experience and judgement not play any role, and maintained an unbiased and empathetic attitude towards the participants. I have tried to act as an active researcher and regular Master's student. I have implemented systematic procedures for data collection, recording, and analysis to enhance the credibility and dependability of my findings. Through building rapport, establishing comfortable interactions, and taking clear consent, I tried to ensure my interviewees and participants feel comfortable in the data collection process. Additionally, I have maintained transparency and ethical integrity throughout the research process.

### **3.8 Credibility and Rigor**

I have experience of working at a GPS. As an educator at a GPS, I have firsthand experience with the challenges and limitations of ICT integration in pedagogy within primary education. This direct exposure provided me with valuable insights into the underlying issues and motivated me to explore this area in greater depth. My goal was to present a comprehensive understanding of the factors influencing ICT integration and offer practical recommendations for improvement.

My academic journey at BRAC Institute of Educational Development (BIED) has been instrumental in equipping me with the skills required to conduct this research. As a graduate student, I received training in research methodologies, study design, data collection, analysis, and reporting. This foundational knowledge, combined with the experienced guidance of my supervisor, significantly shaped the direction and execution of this research.

The research problem was influenced by my professional background at GPS. My prior experiences highlighted the gap between ICT training and its classroom implementation, inspiring me to delve into this issue. To ensure credibility and rigor in this study, I adopted a systematic approach to data collection and analysis. This involved conducting a thorough review of relevant literature, which helped refine my research focus and identify the need for a qualitative research approach. This approach was chosen to gain a deeper understanding of the topic and to explore the perspectives and lived experiences of teachers.

To further enhance the trustworthiness of the research, I incorporated data triangulation as a core strategy. Data were collected from three distinct participant groups: teachers, who were the direct participants of the ICT training and implementers of the training in classrooms; head teachers, who manage these teachers and observe their ICT practices in schools; and instructors, who were responsible for delivering the ICT training. By engaging these diverse perspectives, I aimed to cross-verify and validate findings, minimize subjectivity, and reduce potential biases. This approach ensured the trustworthiness and rigor of the research.

### **3.9 Limitations of the Study**

This study encountered several limitations during the research process.

Firstly, I was unable to conduct a focused group discussion (FGD) among the Ats as initially planned due to their unwillingness participate. When approached, they shared concerns about expressing their opinions in a group setting. They feared that their names and opinions might

be exposed, which could harm their reputation and potentially affect their careers if this information reached the Thana Education Officers. Additionally, they were apprehensive about being judged by teachers from other schools, which further discouraged their participation.

Secondly, a significant challenge that I faced during data collection was the refusal of some participants to allow their interviews to be recorded. These participants were also hesitant in their responses, often providing simple "yes" or "no" answers. This lack of elaboration limited the depth of insights they could contribute, which added minimal value to the research.

Lastly, I was unable to observe any training sessions because no training was conducted at the research site during the time of my study. This limited my ability to directly assess the training process and its immediate impact on participants.

## Chapter 4

### Results

#### 4.1 Introduction

Through ten in-depth interviews, I aimed to explore the practices of the training program, teachers' perceptions of this training, and how they are applying the skills they learned in the training into their daily classroom teaching. This chapter presents the findings from these interviews with the research participants. To gain a comprehensive understanding, I thematically analyzed the data, organizing it into five main themes, each further divided into sub-themes.

#### 4.2 Training on “ICT in Education”

##### 4.2.1 Training Content

The findings from the interviews highlights that the training program on "ICT in Education" initially focuses on equipping teachers with essential skills to use digital tools and devices in their classrooms. The training content emphasizes foundational ICT skills, multimedia content creation, pedagogical integration, and more recently, programming basics.

The program begins with the basics, such as operating laptops, typing in Bangla, and using basic software. As Teacher 2 noted,

*“They started from the basics, like how to open and shut down a laptop. It was very beginner-friendly. I hadn’t worked much with laptops before, so it was a completely new experience.”* (Interview# 4, 18-09-2024)

Once the basics are covered, the training moves on to train teachers to prepare and integrate digital contents in their teaching practices. To achieve this, teachers are introduced to key

software tools like Microsoft Word, Excel, and PowerPoint, with a primary focus on PowerPoint due to its application in creating multimedia teaching content. As Training Instructor 1 said,

*“We primarily focus on MS PowerPoint, which means, we emphasize on enhancing teachers' skills in creating and using digital content. We spend around 8-9 days only on the use of PowerPoint.”* (Interview# 11, 19-09-2024)

In this training, teachers are trained to design visually engaging slides that incorporate textbook contents, colorful animations, and embedded videos to make lessons more interactive and appealing. Teacher 1 explained:

*“I learned using PowerPoint, including animations, inserting images, and editing videos. I learned techniques to enhance multimedia content for classroom presentations.”* (Interview# 2, 17-09-2024)

In addition to multimedia content creation, the training includes an introduction to virtual teaching tools, which became particularly relevant during the COVID-19 pandemic. Teachers also learn practical skills for virtual communication, and using remote sharing apps for collaboration and troubleshooting. Additionally, the program has recently expanded to address the changing curriculum by introducing sessions on programming. Training Instructor 1 summarized this aspect, saying,

*“We train teachers in the effective use of tools like Excel, email communication, handling email attachments, and conducting virtual classes using Zoom and Meet. And as the curriculum now includes programming in the primary schools as well, we are including sessions on Scratch Programming.”* (Interview# 11, 19-09-2024)

Spanning 12–14 days, the training program provides a progression from basic ICT skills to more advanced applications, focusing heavily on content creation for multimedia classrooms.

Teachers were encouraged to create subject-specific digital materials tailored to their lessons.

As Teacher 3 shared,

*“I knew how to use a laptop beforehand and had worked a bit with PowerPoint, but I never made teaching content before. Learning to create subject-wise digital content was a major takeaway.”* (Interview# 5, 18-09-2024)

#### **4.2.2 Training Methodology**

The training program on ICT in Education is designed to facilitate both collaborative and individual learning through a step-by-step, interactive approach. Initially, the trainers introduced foundational topics such as developing content and creating slides, combining lectures with hands-on practice. As Teacher 1 shared,

*“The training approach was—first they taught us about some topics related to developing contents and slides. Then the training involved group activities, dividing participants into small groups.”* (Interview# 2, 17-09-2024)

The program actually adopts a phased approach to content creation. In the first phase, participants work in groups to prepare lesson plans and multimedia contents, which they present to their peers and trainers. Feedback sessions follow, where both trainers and other trainees provide constructive input. After incorporating the feedback, participants moved to the second phase, where they work individually on assigned topics and go for individual presentations. As Teacher 3 noted,

*“The instructors monitored what we were doing. They used to check the lessons that we had planned using ICT. We used to discuss our work after completing it; they provided immediate feedback and corrected us. In the end, they assigned us each with subject-wise topics, we prepared contents on those topics and then we demonstrated that lesson individually.”* (Interview# 5, 18-09-2024)

Additionally, the program incorporated pre-tests and post-tests to evaluate participants' progress and the effectiveness of the training. As Training Instructor 2 explained,

*“We evaluate them on the same set of survey questions before and after their training. While we evaluate their learning during the training, the lack of follow-up opportunities limits our ability to ensure long-term effectiveness.”* (Interview# 12, 19-09-2024)

Through this teaching-learning approach, the training aims to develop participants' confidence in creating subject-specific digital content, while fostering collaborative and independent learning. Feedback is considered to be a critical component throughout the program, enabling participants to refine their work and gain practical skills for integrating ICT into their teaching practices.

#### **4.2.3 Training Limitations and Challenges**

Efficient practice is essential for effective learning, particularly when training teachers to develop digital content for multimedia classrooms. While the training introduces participants to creating content and implementing multimedia tools, one significant limitation is the lack of resources for revisiting learned topics. In the past, trainee teachers were provided with recorded videos of the training sessions, enabling them to review and practice at their own pace. However, this is no longer the case. Instead, participants are now given printed instruction manuals, which are less effective for practical learning. As Training Instructor 2 pointed out,

*“Earlier, teachers had access to offline materials, that is recorded videos, which they could review later. Now, they only have this training, where they get live training, and go back home with the scanned copy of a resource book. Thus, they do not have any option of revisiting the training.”* (Interview# 12, 19-09-2024)

Another critical limitation of the training, as identified by trainee teachers, head teachers, and trainers alike, is its duration of 10–14 days. While the training effectively introduces basic ICT

skills, this timeframe is insufficient for deeper understanding or for addressing the diverse needs of participants. Teachers new to computers found the duration too short to familiarize themselves with the technology and then create their own content. Head Teacher 3 shared,

*“Most of the teachers who receive this training, learn the basic use of computers from this training. They are trained to use PowerPoint, present the slides, many of the teachers learn these for the first time in their life. You cannot expect them to develop content on their own after receiving this twelve- to fourteen-day-long training only.”*

(Interview# 6, 18-09-2024)

Additionally, the program introduces a wide range of diverse topics within a limited timeframe, which may not provide participants enough opportunity to fully grasp or become comfortable with them. Training Instructor 1 comments,

*“In reality, 14 days is not enough to process so many topics for participants who do not have prior knowledge on these topics.”* (Interview# 11, 19-09-2024)

The diversity of experience levels among participants also poses challenges. The same batch often includes teachers completely new to ICT and those with prior expertise, creating a gap in learning needs. Teacher 3 shared, *“I have first learnt using laptops and preparing contents in this training only.”* (Interview# 5, 18-09-2024)

Meanwhile, Teacher 1 observed,

*“In some cases, there were some trainee teachers who were experts in this field from before this training, sometimes, they were even more expert than our trainers were.”*

(Interview# 2, 17-09-2024)

This disparity highlights inefficiencies in planning and participant selection, which can hinder the overall effectiveness of the program. As a result, the training struggles to ensure uniform

relevance and achievement for all participants, limiting its potential to fully equip teachers with the skills needed to implement multimedia classrooms successfully.

### **4.3 Teachers' Perception**

#### **4.3.1 Teachers' attitude towards the training program**

Teachers have described this training as a highly effective professional development experience, and for many, it is also a completely new one. Being introduced to digital tools and learning new technologies sparks enthusiasm among participants throughout the program. Moreover, they demonstrate a commitment to understanding the concepts and actively engage in efforts to master the skills being taught. Training Instructor 1 noted,

*“All of them give their efforts, and it is visible that they are trying to grasp the concepts and try to present good works.”* (Interview# 2, 17-09-2024)

Teachers' interest in the training is partly driven by its impact on students. Students generally enjoy multimedia classrooms, as the vibrant and colorful images, engaging songs, and the unique class environment capture their attention. This approach not only keeps students focused but also enhances their learning experience, making it an effective teaching method for educators. Consequently, teachers are motivated to participate in this training program, recognizing its value in improving their classroom practices. Head Teacher 2 highlights this enthusiasm,

*“Teachers appreciate the multimedia classes at school because students enjoy these classes, so they learn more there. That is why teachers are interested in conducting these classes. Teachers who did not receive the training are even very interested to receive it.”* (Interview# 3, 18-09-2024)

#### **4.3.2 Conceptualization of the Training**

A key question that arises is how well teachers are grasping the topics introduced in the training. It is natural for teachers already familiar with digital devices to feel more comfortable with the content, and this has been the case for many participants. These teachers are understanding the topics and performing well, often assisting those who are struggling during group and individual tasks. However, the training experience has not been smooth for everyone, particularly for those new to the subject matter. Teacher 1, who participated in an early batch, reflected,

*“As I was in one of the first batches of this ICT training, at that time, the program did not seem to be very attractive initially. The training topics were somewhat very out of our thinking. However, over time, as we practiced and collaborated, we learned ultimately at the end of the training program.”* (Interview# 2, 17-09-2024)

In some cases, older teachers appear to face more challenges. Training Instructor 1 commented,

*“I have been training teachers since 2013, back in that time, teachers were not this much familiar with the basic ICT uses. So, they were not very prompt in understanding the concepts or delivering assignments. Also, the elderly teachers seem to have some kind of difficulty in getting the hang of the topics.”* (Interview# 11, 19-09-2024)

However, Training Instructor 2 had a different perspective on age, noting,

*“Participants range from recent HSC graduates to senior teachers aged 45 and above. While younger teachers are often more accustomed to digital tools, older teachers show significant interest in learning new techniques. So, I do not think age is an issue here.”* (Interview# 12, 19-09-2024)

Despite the selection criteria for the training, which include prior ICT knowledge, teachers with limited or no prior experience are still selected. Participants feel these teachers struggle more

with understanding the concepts and implementing the training knowledge. Head Teacher 3 stated,

*“From my observation, I can tell you that, teachers who do not have any prior knowledge about computers and all, the training cannot help them much to be able to conduct ICT-based classes.”* (Interview# 6, 18-09-2024)

## **4.4 Implementation of ICT in Classroom**

### **4.4.1 School Readiness for Multimedia Classes**

The interviews reveal a varied picture of technological and infrastructural readiness across different schools, with some schools having basic ICT resources in place, while others are in the process of setting up the necessary infrastructure for effective ICT integration.

#### **4.4.1.a Technological Readiness**

The government has provided ICT equipment, such as laptops, projectors, and projector screens, to every GPS in the country. However, the availability, maintenance, and usage of these resources vary across schools. For example, two schools have a set of equipment that includes a laptop, projector, soundbox, and screen, all of which are available for use in the classroom. Another school reports having two sets of the same equipment, although one laptop is temporarily out of order. Similarly, another school has had a malfunctioning projector since the COVID-19 pandemic. In both cases, the issues remain unresolved by the Thana Education Office. Head Teacher 2 confirms,

*“One of the projectors is malfunctioning. We have communicated with the thana education office about it, but it is not yet fixed.”* (Interview# 3, 18-09-2024)

As for usage, the devices serve a variety of purposes, ranging from teaching to administrative tasks. One school mentions that their laptop is primarily used for administrative purposes only, while other schools utilize mobile devices, laptops, and projectors for both. Teacher 3 said,

*“We have 2 laptops in the school. One is damaged. So, we are working on one only. And that one is mostly expected to be used for processing students’ stipend (upo-britti) and Unique-ID tasks.”* (Interview# 5, 18-09-2024)

#### **4.4.1.b Infrastructural Readiness**

In terms of infrastructure, only one school is working on constructing an ICT room, the room is still under construction. In the interim, their ICT equipment has been set up in the pre-primary classroom while waiting for the multimedia classroom to be completed. Head Teacher 2 informed,

*“We have managed to book one room to make it a multimedia classroom, it is still under construction. Currently we have set the equipment in the pre-primary room.”*  
(Interview# 3, 18-09-2024)

No other school has a dedicated room or space for setting up a multimedia classroom. Additionally, the power shortage in most areas significantly affects the implementation of multimedia-based teaching.

#### **4.4.2 Contents for Classroom Practices**

Only one school is found to practice regular ICT classes, while other schools do not maintain any schedule. However, it is found that schools tend to emphasize the use of multimedia classes for the pre-primary section mainly. Head teacher 2 mentioned,

*“We are primarily conducting multimedia classes in the pre-primary section. It is very important for these students.”* (Interview# 3, 18-09-2024)

The preparation of content for ICT-based classes appears to be a combination of teacher-generated materials and resources sourced from external platforms. Teachers are required to create their own content, aligning the materials with specific learning objectives. Teacher 1 noted,

*“I have to make the contents. For example, in English classes, I prepare slides on word meanings, students see the word, its meaning and a picture of the word with it. It helps them learn easily.”* (Interview# 2, 17-09-2024)

The use of videos and songs from YouTube is common, with teachers searching for relevant clips to supplement their lessons and engage students. This approach helps make the lessons more interactive and visually appealing, as many teachers believe that multimedia content enhances the learning experience. Head Teacher 1 shared her opinion,

*“In science classes, practical demonstrations using images from the internet or YouTube videos significantly enhance learning outcomes.”* (Interview# 1, 17-09-2024)

In addition to personal content creation, teachers often rely on platforms like Shikkhok Batayon and Muktopaath, which provide ready-made presentation slides, videos, and other educational materials. These platforms serve as valuable tools for teachers who may not have the time or expertise to develop their own content. In some schools, teachers with ICT training are able to create their own materials, while others depend more heavily on these external resources. Head Teacher 2 shared,

*“We have 2 trained teachers in this school. They can prepare their contents for the IT-based classes. Other teachers rely on the contents found in Muktopaath and Shikkhok Batayon.”* (Interview# 3, 18-09-2024)

Teachers have considerable autonomy in deciding what content to use in their classes. This flexibility allows teachers to tailor lessons to their specific needs and student interests, but also

places the responsibility of content selection squarely on their shoulders. The ability to source materials from platforms like YouTube, Shikhhok Batayon, and Muktopaath provides teachers with a wide range of options, though the quality and relevance of the content may vary.

## **4.5 Challenges in Implementations**

### **4.5.1 Policy Gap**

The interviews highlighted several policy-related challenges in the effective implementation of ICT in the classroom teaching-learning practices. Participants have mentioned one common challenge, which is the lack of readily available digital content. While platforms like Shikhhok Batayon and Muktopaath provide some support, the absence of ready contents means teachers must invest considerable time and effort to produce materials tailored to their specific subjects. As Teacher 3 mentioned,

*"Creating new content is a time-consuming matter. Right now, we need to create our own content."* (Interview# 5, 18-09-2024)

Participants find the lack of consistent, subject-specific digital content impedes their ability to seamlessly integrate ICT into all subjects.

Another challenge is the frequent changes in the curriculum and textbooks, which complicate the development of sustainable digital content. Teachers pointed out that changes to the curriculum and textbooks often make previously prepared content outdated, leading to a continuous need for redevelopment. Teacher 6 noted,

*"As you know our textbooks keep changing frequently and very recently the curriculum was revamped for some grades. So, the contents that I prepared previously are useless now."* (Interview# 9, 18-09-2024)

Lastly, the lack of proper monitoring and supervision is a significant policy gap. When a system is properly monitored, it fosters a sense of accountability and motivates individuals to achieve their goals. Without such oversight, the application of the learned topics from the training is not being effectively realized. Training Instructor 2 highlighted this issue,

*“Due to the lack of proper monitoring and mentoring, teachers are yet to transform their acquired knowledge from the training into practice in their classrooms.”*

(Interview# 12, 19-09-2024)

In combination, these policy gaps—insufficient digital content, frequent curriculum changes, and inadequate monitoring—pose challenges to the successful implementation of ICT in education.

#### **4.5.2 Infrastructural and Logistic Limitations**

Some infrastructural and logistical challenges hinder the implementation of ICT-based teaching at GPSs. A key issue is the absence of a dedicated multimedia classroom setup. Teachers have to manually set up and pack away equipment for each class, which is time-consuming and disruptive. Teacher 6 shared,

*“There is no dedicated ICT room. So, every time we want to show something in class, we have to make the setup first, and that consumes a lot of time.”* (Interview# 9, 18-09-2024)

This lack of dedicated space for ICT classes not only affects the efficiency of lesson preparation but also hampers the flow of the school schedule, as the setup and takedown process often disrupts the classes before and after the ICT lesson.

Furthermore, schools often have very limited equipment, with some only having a single set of devices, including a laptop, projector, soundbox, and screen. This insufficiency means that

teachers have to share resources, which is especially problematic when multiple tasks need to be completed on the same device. Teacher 3 mentioned:

*“We need to share the laptop for all tasks. Teachers are supposed to complete their Upo-britti tasks in this laptop, at the same time, we are expected to use it for preparing the ICT class contents and conduct the classes also with it. This process is obviously not working.”* (Interview# 5, 18-09-2024)

In addition, the frequent lack of functional equipment, such as damaged projectors or broken laptops, further complicates the ability to conduct ICT-based classes. In schools where only one functional laptop is available, teachers are forced to share it, often leading to delays and inefficiencies in content preparation and class delivery. This resource scarcity creates a perception that ICT classes are a luxury, rather than a regular part of the curriculum, contributing to an inconsistent implementation of ICT.

Another major challenge is the unpredictability of electricity. Power outages, particularly during periods of high demand, disrupt lessons and make it difficult for teachers to conduct ICT-based classes as planned. Training Instructor 1 shared,

*“There is a national crisis of power shortage, especially during hot weather. Power cut is unpredictable and unplanned. So, suppose a teacher has set up the classroom for a multimedia class, and suddenly electricity goes out. In such a situation, the teacher cannot proceed with the planned ICT-based class.”* (Interview# 11, 19-09-2024)

The lack of reliable electricity also affects schools that rely on solar power, which may not be effective in some areas, further limiting the feasibility of consistent ICT integration in classrooms.

#### **4.5.3 School Level Limitations**

There are several school-level limitations that hinder the effective implementation of ICT in classrooms. One significant challenge is the limited number of trained teachers. In many schools, only a small proportion of the teaching staff has received ICT training, making it difficult to conduct multimedia lessons across all grades. As a result, a few trained teachers often have to shoulder the responsibility of preparing ICT content, conducting classes, and managing ICT-related office work, leading to overwhelming workloads. Teacher 3 said,

*“The three of us, who have received training, often have to take on additional responsibilities related to ICT office work, alongside preparing ICT teaching content and conducting classes. It would be beneficial if more teachers were trained in ICT to share these responsibilities.”* (Interview# 5, 18-09-2024)

Additionally, untrained teachers struggle to create content independently, requiring assistance in using available resources, which further burdens the trained teachers.

Classroom management also proves to be a major challenge due to high teacher-student ratios. In some schools, the ratio is as high as 1:100, far exceeding the recommended 1:40, making it difficult for teachers to effectively manage classrooms during ICT lessons. Head Teacher 1 shared,

*“Our student numbers are very high. And we cannot manage proper sitting arrangements for all of them because of the small classrooms. They need to sit in a congested manner. Overcrowding in classrooms makes it difficult for young students to focus.”* (Interview# 1, 17-09-2024)

This overcrowding leads to issues like poor sitting arrangements, sound pollution, and a lack of focus, especially in multimedia classes, where students are expected to engage with digital content. Despite the popularity of multimedia classes, the physical environment hinders the overall learning experience.

Moreover, teachers face time constraints due to their heavy workloads. With the need to conduct multiple classes each day, many teachers struggle to find time for lesson preparation, content development, or self-improvement. Training Instructor 1 emphasized,

*“Primary school teachers have a high workload. They need to conduct 5-6 classes a day, in some cases it goes up to 8 classes a day. With high work pressure, it becomes difficult for them to arrange a multimedia class.”* (Interview# 11, 19-09-2024)

Household responsibilities further limit their ability to work on new content at home. Additionally, the administrative work that falls on teachers—such as dealing with unplanned official interventions, filling in for absent colleagues, and attending to school-level tasks—leaves them with little opportunity to focus on ICT class preparation. This high workload and lack of time to prepare content or refine skills contribute to the challenges faced in implementing ICT effectively at the school level.

## **4.6 Suggestions for Improvement in the Implementation**

### **4.6.1 Infrastructural Development**

The participants highlighted the need for infrastructural improvements to enhance the effectiveness of ICT implementation in schools. One key area of improvement suggested is the establishment of permanent multimedia setups, such as dedicated multimedia classrooms. Participants noted that having a fixed arrangement would eliminate the recurring hassle of equipment setting, saving valuable time and effort for teachers. Teacher 1 said in this aspect,

*“Having permanent setups like multimedia rooms in schools would reduce the hassle of setting up and dismantling equipment repeatedly.”* (Interview# 2, 17-09-2024)

Another significant improvement recommended by the participants is the need for resources. Participants emphasized the importance of providing more laptops or computers to schools, as

the current practice of sharing a single laptop among multiple tasks—such as administrative work, content preparation, and class conduction—is inefficient and disruptive. Head Teacher 2 opined, *“Schools with fewer students and better resources can deliver much better outcomes.”* (Interview# 3, 18-09-2024)

Allocating individual laptops for teachers was suggested as a way to streamline their work and improve the overall quality of ICT-based lessons.

Additionally, the participants pointed out that schools with better resources, including functional devices and access to relevant digital content, are better positioned to deliver effective ICT-based education.

#### **4.6.2 Improving Support for Teachers**

Improving teacher support can significantly enhance the effective implementation of ICT in classrooms. One prominent recommendation from the participants is the availability of centrally prepared digital content. Teacher 3 justified,

*“As the topics in the whole country are the same, there could have been a common repository where contents are already created on all the topics. Teachers could just take that resource, use it directly in the classrooms or edit it as per their need. That would save a lot of our time. In this way ICT use in the classroom would be more ensured.”* (Interview# 5, 18-09-2024)

Such a system could allow teachers to directly access and use the content in their classrooms or modify it to suit their specific needs, saving significant preparation time and ensuring better consistency and quality in ICT-based lessons.

Another area of improvement emphasized was the need to balance the workload of teachers. Teacher 6 expressed,

*“We teachers need more office hours. If I had fewer classes per day, I would get some time at school to prepare for multimedia classes.”* (Interview# 9, 18-09-2024)

Furthermore, addressing the high teacher-student ratio was identified as critical for improving classroom management, making it easier to conduct effective ICT-based classes.

The participants also stressed the importance of having more trained teachers in schools. Expanding ICT training programs to include more educators would help distribute responsibilities more evenly, reduce the burden on a few trained teachers, and ensure that all teachers are equipped to integrate ICT into their teaching. Teacher 3 noted,

*“It would be better if more teachers were trained in ICT as they will reduce the burden of overworking.”* (Interview# 5, 18-09-2024)

#### **4.6.3 Teachers' Growth Mindset**

The interview data reflects a strong belief in the importance of fostering a growth mindset among teachers for mitigating the challenges and ensuring successful implementation of ICT in classrooms. Teacher 6 emphasized the need to take individual responsibility,

*“We teachers need to be serious about conducting multimedia classes. If we can set a proper goal for this on an individual level, I guess, we would be able to solve the obstacles to some extent.”* (Interview# 9, 18-09-2024)

Participants also highlighted the importance of proactive planning at the school level. Training Instructor 1 shared,

*“There will always be problems, so teachers should be solution oriented as well. They can make solid workable plans in school.”* (Interview# 11, 19-09-2024)

Encouraging a mindset of ownership and problem-solving, rather than relying solely on higher authorities to resolve issues, was seen as critical for advancing ICT practices in schools. By

being proactive, resourceful, and committed to growth, teachers can play a transformative role in overcoming barriers and enriching the learning experience through ICT.

## **Chapter 5**

### **Discussion and Conclusion**

#### **5.1 Discussion**

This chapter provides a discussion on the findings of this study based on the research questions. The results reveal the nature, strengths and limitations of the “ICT in Education” training program, providing insights into teachers’ perceptions of the program and its impact on classroom teaching practices. This chapter delves into the implications of the findings within the context of the training and its implementation, and explores opportunities for improving the program’s effectiveness.

##### **5.1.1. Training Content and Practices**

The training program’s structure—starting from basic computer operations like turning a computer on and off and progressing to the creation of digital content using tools such as PowerPoint—is effectively designed to address the needs of novice learners. Teachers have particularly appreciated this beginner-friendly approach, as it ensures that those with little to no prior exposure to digital tools can transition smoothly into the training. If the training were to begin with more complex topics, less experienced teachers might have struggled to keep up. by gradually engaging with increasingly complex issues that align with their developmental stage (Persky & Robinson, 2017). However, while this approach establishes a solid foundation for novices, it may feel too basic for participants who already possess digital literacy skills. As a result, all the participants of the training might not be equally engaged or interested throughout the training. Research suggests that teachers often simplify the course to support students who lack prior knowledge, but this can demotivate others, while focusing on more prepared students can make the course too difficult for those with less knowledge (Oliver, 2006, as cited in Fitzgerald & Lentmaier, 2016).

Participants have shared that the main objective of this training is to equip them with the skills to create subject-specific digital content. The training effectively supports its goal through its emphasis on PowerPoint. Spending eight to nine days teaching how to create slides, integrate textbook content, embed animations, etc. is a logical decision given the importance of these skills in multimedia classrooms. Furthermore, the phased approach of moving from group activities to individual presentations can be considered a notable strength of the program. As Singh, Kaur, & Kaur (2023) highlights that combining group and individual learning creates a more balanced and enriched learning experience. This methodology can foster both collaborative and independent learning, enabling teachers to engage in hands-on learning, which is key for retaining new skills.

The inclusion of essential digital skills like conducting virtual classes via Zoom or Google Meet and using email, reflects the practical tools educators need. However, allocating limited time and providing only a brief introduction to Scratch programming to keep alignment with the updated primary education curriculum, might feel overwhelming for teachers still learning basic digital tools and may not add significant value.

As mentioned by the participants of the study, there are pre- and post-training surveys to evaluate the progress of the trainees throughout the training. These assessments can provide an idea of participants' progress but cannot measure how well skills are retained or applied in the long run. As suggested by research, follow-up is essential for ensuring the transfer of training to real-world applications and for providing participants with ongoing support and opportunities for skill development (Martin, 2010). Without proper follow-up support, which is not in place as mentioned by the training instructors, the program's lasting effectiveness and impact cannot be ensured.

The findings of this study point to a key challenge that weakens the program's effectiveness. It is the lack of supplementary resources to revisit what was taught. Switching from recorded videos to printed manuals represents a step backward in terms of accessibility and practical utility. This can make it harder for teachers to review and practice, which can be contributing to mastering new skills. Besides, the duration of this training program has been criticized by the participants of this study as being too short. One participant has noted that this duration cannot equip teachers with limited prior knowledge to independently create contents. However, it can raise the question of whether eight-nine days dedicated to only PowerPoint can truly be insufficient to manage tasks like creating simple slides, inserting images, and adding videos from YouTube. The challenge, as one training instructor mentioned, may lie in the wide variety of topics being introduced in one single training program. This broad scope may overwhelm participants to understand everything effectively. So, instead of extending the duration, a more focused approach or follow-up resources might better address these challenges.

### **5.1.2 Teachers' Perception Towards the Training Program**

The results of this study highlights that the teachers consider this training as an effective step for their professional development. They have shared significant enthusiasm about this training mainly due to the introduction of digital tools and new technologies. Their commitment to learn new concepts and tools, as praised by a training instructor, is an encouraging sign of their dedication to improving teaching practices. This has also been mentioned in a study where teacher enthusiasm is highlighted as a crucial factor for effective, high-quality instruction in the classroom (Kunter et al., 2011, as cited in Kim et al., 2022).

The findings of this study points that the positive impact of ICT-based teaching on students' learning and engagement motivates teachers to participate in the "ICT in Education". Teachers recognize that the dynamic teaching approach of integrating ICT and contents are highly

effective in enhancing students' learning experience. As noted by the participants of this study, even untrained teachers express interest in participating in the program, further underscoring the perceived value of the training.

Although the training is generally well-received, the findings indicate variations in how teachers conceptualize and internalize the contents. These variations are influenced by their prior experiences and familiarity with using digital tools. Teachers with limited or no prior experience face significant challenges in understanding the new concepts, while those with more prior knowledge benefit from a deeper understanding of the material (Fitzgerald & Lentmaier, 2016). This disparity creates a gap among participants and highlights potential shortcomings in the selection criteria for the training program. While inclusivity is important, the lack of foundational ICT skills among some participants limits their ability to fully benefit from the training. As a result, one participant described the training as "useless" for teachers in this group. To address this, a differentiated teaching approach (Edouard, 2022) or a more selective method that groups teachers with similar experiences or knowledge in each batch may be more effective.

### **5.1.3 Implementation of Training Skills in Classroom and Challenges**

The first requirement for effectively implementing training skills in the classroom is the school's technological and infrastructural readiness. Although the government has provided at least one set of ICT equipment including a laptop, projector, screen, etc. to every GPS, the functionality and maintenance of this equipment are often questionable, as all the teachers need to share those limited resources and some schools have even reported in this study that their equipment is out of order. This study has found that only one school mentioned having a dedicated multimedia classroom, which is still under construction. This indicates that most GPSs lack a proper setup for multimedia classrooms. The absence of such facilities negatively

impacts classroom management. Specifically, the findings reveal that the lack of permanent setups forces teachers to spend additional time manually setting up and taking down equipment, disrupting the flow of lessons. It is found in other studies as well that school conditions for conducting multimedia classes are not well arranged with limited equipment and infrastructural condition in the GPSs of Bangladesh (Obaydullah & Rahim, 2019). In addition, unreliable electricity supply is a significant barrier to effective ICT integration. Frequent power outages or inconsistent electricity access make it difficult to use ICT tools consistently, further limiting the potential of ICT in classroom teaching.

Another factor influencing the implementation of ICT in the classroom is the preparation of digital teaching content. The findings suggest that teachers have the autonomy to decide what content to use in their classes. Their options include ready-to-use content from platforms like *Shikhhok Batayon* and *Muktopaath*, external sources such as YouTube, and self-prepared materials created using suitable software and tools.

However, the findings reveal that many teachers, including those who have received ICT training, primarily rely on resources from external platforms instead of creating their own content. Teachers also indicated that the lack of readily available resources makes it challenging to conduct regular ICT-based classes effectively. This indicates that, despite completing the training, these teachers are not applying what they have learned or implementing the skills acquired. As a result, the effectiveness of the training comes into question, casting doubt on its overall success in fostering meaningful changes in teaching practices.

With revisions in curriculum and textbooks, teaching contents often become outdated, necessitating redevelopment. Imon (2024) also identifies curriculum changes as a significant challenge, as these changes can make the existing contents useless in many cases. Moreover,

the absence of a monitoring and supervision system to ensure that ICT training is effectively applied in classrooms further exacerbates the issue. Imon (2017) highlights in his study that the lack of supervision significantly discourages teachers from incorporating ICT into their teaching practices. He recommends that headteachers and monitoring cells within the Ministry of Education (MOE) take an active role in overseeing the implementation of ICT in classrooms, emphasizing that proper monitoring is essential for the successful integration of ICT into teaching (Imon, 2017). This situation implies that there is a need for policy revision in the primary education sector as well to implement monitoring systems through the education offices.

The successful implementation of ICT in schools depends heavily on having adequate support and resources, including trained personnel. However, all the schools in this study reported a limited number of trained ICT teachers. This shortage places an extra burden on these teachers, as they are responsible for handling most ICT classes in addition to administrative tasks that involve digital devices. Obaydullah and Rahim (2019) explain elaborately that primary school teachers in Bangladesh have busy schedules due to factors like a high teacher-student ratio, long distances to school, and a lack of breaks between classes. Their day, running from 9 AM to 4:30 PM, is often filled with additional duties such as training, meetings, and administrative tasks (Obaydullah and Rahim, 2019). Moreover, the high teacher-student ratio, a well-known and persistent issue in government primary schools, significantly hampers the focus on ICT-related activities. This widespread problem is further highlighted by research; Obaydullah and Rahim (2019) found that overcrowded classrooms make the effective use of multimedia nearly impossible. With class sizes frequently exceeding the recommended 46 students per teacher (Bangladesh Primary Education, ASPR 2014), it becomes extremely difficult to create an engaging and effective learning environment.

#### **5.1.4 Suggestions for Mitigating the Challenges**

Based on the challenges identified, several suggestions have emerged from the finding of this study to improve the implementation of ICT in classrooms.

Establishing permanent multimedia classrooms in each school, along with providing the necessary equipment and maintenance services, would alleviate some of the infrastructural and logistical issues identified. This recommendation aligns with the findings of Khan & Rahaman (2020), who addresses infrastructural challenges in the way to effective ICT integration and emphasizes the importance of ensuring that all ICT infrastructure is available before implementing ICT initiatives. By having dedicated spaces and sufficient resources, schools can ensure that ICT is not seen as a luxury but as an integral part of teaching.

In addition, as Kim et al. (2022) suggest, regular training is necessary to ensure a greater number of trained teachers which can distribute the workload in a balanced way. The study emphasizes that continuous follow-up training sessions are crucial for significantly improving ICT usage in classrooms. To achieve this, it is recommended that training be conducted regularly through external agencies or institutions, as ongoing support and hands-on experience are vital for success (Kim et al., 2022).

Primary school teachers in Bangladesh lack motivation and encouragement for using technology in classrooms (Zaman et al., 2023). On the other hand, according to Day's discussion on teachers' passion (Day, 2009, and Day et al., 2007 as cited in Kim et al., 2022), teachers who are enthusiastic about technology integration demonstrate commitment and interest in using technology in their practices. These teachers can create an effective learning environment and enhance student learning through technology.

The findings of this study reveal that many teachers rely on government initiatives or other authorities to address the challenges they face. However, teachers themselves have the potential to take the lead in solving these issues. Hence, a teacher's mindset is crucial for overcoming

the challenges faced in ICT implementation. Teachers must be proactive in problem-solving and resourceful in finding solutions to challenges. By fostering a culture of continuous professional development and self-reflection, teachers can be better equipped to navigate the barriers to ICT integration.

## **5.2 Conclusion**

The “ICT in Education” training program represents a significant step toward integrating digital tools into classroom teaching. This study explored the effectiveness of this training program for primary school teachers in Bangladesh, highlighting its strengths and limitations. The program was appreciated for its beginner-friendly approach and focus on creating digital content. However, its effectiveness was limited by challenges such as lack of supplementary resources, inclusion of too many diverse topics, insufficient follow-up support, and shortcomings in participant selection criteria. While the training was generally well-received by teachers, variations in participants' prior experience with ICT led to differing levels of understanding and internalization of the concepts. This resulted in unequal learning experiences among participants, ultimately hindering the program's overall success.

The transfer of training knowledge into classroom implementation does not give us a satisfactory picture. Challenges such as inadequate infrastructure, limited resources, and the absence of effective monitoring have hindered the integration of ICT in classrooms. Many teachers rely on external resources rather than applying the skills they acquired during training. Additionally, a limited number of trained teachers and high teacher-student ratios present significant barriers. To improve the program, the study suggests establishing permanent multimedia classrooms, providing regular training to the teachers, encouraging a proactive teacher mindset to overcome these obstacles and revising policies to improve monitoring and

supervision. Addressing these issues will help maximize the impact of ICT training and enhance teaching practices in primary schools.

### 5.3 Recommendation

The results of this study suggest several actionable recommendations for enhancing the “ICT in Education” training program:

- **Participant Selection:** Implementing a more rigorous selection process, including assessments of participants' prior ICT knowledge, could help ensure that teachers are grouped according to their skill levels. This approach would enable trainers to customize the training content to meet the specific needs of each group, fostering a more inclusive and effective learning experience.
- **Introducing Specific Topics:** Limiting the training content to align with the specific goals of the program can help maintain focus and ensure that participants gain a deeper understanding of the key concepts. This targeted approach would likely result in better learning outcomes and greater applicability of the skills acquired during the training.
- **Post-Training Support:** Reintroducing recorded videos as supplementary resources could provide teachers with an opportunity to revisit and reinforce their learning at their own pace. Additionally, follow-up sessions could be arranged for trained teachers to provide ongoing support, address challenges, and ensure the effective transfer of training knowledge into classroom practices.
- **Monitoring the Implementation of ICT in Classrooms:** Revising existing policies to make monitoring and supervision more structured and frequent. The policy framework should include clear guidelines for headteachers and education officials to actively oversee ICT usage in teaching practices. Strict accountability measures should be

enforced to ensure that teachers are consistently applying their training and integrating ICT tools into their lessons.

- **Reducing Student-Teacher Ratios and Balancing Teacher Workload:** Recruiting more teachers to meet recommended ratios and redistributing administrative tasks can allow teachers to focus more on lesson preparation, ICT use, and classroom delivery, improving teaching quality and student outcomes.

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## Appendix A. Consent Letter

**Research Title:** Teacher Training on 'ICT in Education' for the Government Primary School Teachers: Training Practices and its Classroom Implementation in the Teaching-Learning Process.

Dear Sir/Madam,

I am a student of BRAC University, conducting research for my thesis for my Master's in Education. I am reaching out to invite your participation in this study. The study aims to learn about the content, methodologies, and structure of 'ICT in Education' training for GPS teachers. It focuses on assessing the training's effectiveness in enhancing teachers' knowledge of ICT integration, how teachers apply their learning in the classroom, and identifying challenges faced during implementation.

If you choose to participate, I will conduct a one-hour remote, online interview to gather your insights on your experiences. Your participation involves no risk, and the findings may contribute to improving teacher training quality. Rest assured, all information provided will be kept confidential. You can withdraw your involvement at any point without hesitation.

By signing this letter, you will confirm your participation in the study. Thank you for your time and support.

---

Signature of the Participant

Name:

Date: .

## **Appendix B. Interview Guide (PTI and URC instructors)**

|                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------|
| 1. What contents do you train the teachers on in the ‘ICT in Education’ training?                                           |
| 2. How do you train them? What methods do you follow?                                                                       |
| 3. How do the teachers participate in the training?                                                                         |
| 4. What strategy do you follow to ensure the participants’ learning?                                                        |
| 5. What are the shortcomings of this training facility? (i.e, the content of the training, infrastructure, resources, etc.) |
| 6. How can the teachers learn better from this training?                                                                    |

## Appendix C. Interview Guide (Head Teachers)

|                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. What resources are available in your school for ICT integration? What are their conditions?                                                              |
| 2. How often do teachers use ICT in the classroom? In which subjects do teachers use ICT more and in which do they use it less?                             |
| 3. How do teachers use ICT in their teaching practices in your school?                                                                                      |
| 4. How do teachers prepare themselves for using ICT in the classroom?                                                                                       |
| 5. Are there sufficient digital contents (both in Bangla and English) that can guide the teachers to use ICT in their classrooms? Can you provide examples? |
| 5. What are the teachers' attitudes and beliefs towards using ICT in teaching?                                                                              |
| 6. How do students react to ICT integration in their lessons?                                                                                               |
| 7. What support do you provide for the proper implementation of ICT in your school?                                                                         |
| 8. What are the struggles that your teachers and students face for properly implementing ICT in the classroom?                                              |

## Appendix D. Interview Guide (Assistant Teachers)

|                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------|
| When did you participate in the ‘ICT in Education’ training?                                                                         |
| What were the contents of the training?                                                                                              |
| What was the delivery approach of the instructions in the training?                                                                  |
| How did the instructors help you to learn during the training?                                                                       |
| What were your takeaways from the training sessions?                                                                                 |
| What were the appreciable practices during the training?                                                                             |
| What training practices can be improved to ensure a better learning of the teachers?                                                 |
| How often do you use ICT in the classroom?                                                                                           |
| How do you use the training knowledge in the teaching process?                                                                       |
| Is there any digital content available (both in Bangla and English) that can be used as a resource for using ICT in your classrooms? |
| What challenges do you face when integrating ICT in the classroom?                                                                   |
| What can be done to mitigate the challenges? What resources do you need?                                                             |
| What can be done to mitigate the challenges?                                                                                         |
| How would you like to improve your ICT skills?                                                                                       |
| What do you think is the significance of integrating ICT in education?                                                               |