ROLE OF THE CURRENT E-LEARNING PLATFORMS IN URBAN PRIMARY TEACHERS' PROFESSIONAL DEVELOPMENT: OPPORTUNITIES AND CHALLENGES

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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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Declaration

It is hereby declared that

1. The thesis submitted is my original work while completing my 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 complete and accurate referencing.
3. The thesis does not contain material 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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Ethics Statement

In this study, I have consciously tried to maintain objectivity, neutrality, and ethical standards throughout the research process. I have been vigilant of potential prejudices, biases, and perceptions that could impact the authenticity and accuracy of the data. I have avoided upholding any particular values or ideas that could bias the results and ensured that no data was omitted that could affect the interpretation of the findings.

I have maintained the highest possible ethical and professional research code of conduct, including respecting the right to non-participation, the right to remain anonymous, and the confidentiality of the research participants. I obtained the necessary ethical clearances from the BRAC Institute of Educational Development's review boards. I informed the participants about the study's purpose, the procedures, the potential risks and benefits, and the right to withdraw at any time without penalty.

I ensured that the participants provided informed consent before participating in the study. I also took all necessary measures to protect the participant's privacy and confidentiality. I stored the data securely and ensured that only authorized personnel had access to the data. I was committed to upholding these ethical principles in all stages of the research process and recognising their importance in maintaining the integrity of the research.

Abstract

The demand for teachers' professional development has shifted towards e-learning platforms due to their flexibility, convenience, and cost-effectiveness, especially during and after the COVID-19 pandemic. With the rise in accessibility and availability of e-learning platforms in urban areas, the role of these platforms in the professional development of urban primary school teachers has become increasingly important. This qualitative research investigated the opportunities and challenges of using e-learning platforms for the professional development of urban primary school teachers in Bangladesh. The research questions focused on how teachers use e-learning platforms for their professional development and the problems they face when using them. The study used convenience-sampled participants for interviews and focus group discussions and analyzed the data thematically. The study explored that e-learning platforms help teachers learn new skills and share knowledge. The online learning environments further foster collaboration and community, allowing them to share their professional identities. Teachers have greatly benefited from using e-learning platforms in their professional fields and implementing the learned knowledge in the classroom. However, some major challenges in using e-learning platforms include network issues, lack of compatible devices, technological incompetence of the users, excessive workload, and lack of recognition from e-learning platforms. This study suggests that providing teachers' training on the applications of e-learning platforms and acknowledging e-learning certificates can positively enhance teachers' motivation levels. Additionally, creating user-friendly and accessible e-learning systems with increased government support and attention is also recommended.

Keywords: Teachers' Professional Development (TPD); Urban Teachers' Development; E-learning Platforms; Online Training; Online Learning Environments

Dedication

I dedicate this thesis to the thousands of hardworking teachers of Bangladesh. They are the unsung heroes who have dedicated their lives to building the next generation of Bangladesh and beyond. Furthermore, I would like to dedicate this thesis to my own teachers who have instilled in me a passion for learning and a desire to make a difference in the world.

Acknowledgement

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List of Acronyms

AI	Artificial Intelligence
ATEO	Assistant Thana Education Officer
AUEO	Assistant Upazila Education Officer
BANBEIS	Bangladesh Bureau of Educational Information and Statistics
CAI	Computer Aided Instruction
CBT	Computer Based Training
CMS	Content Management System
CPD	Continuous Professional Development
DPE	Directorate of Primary Education
DPED	Directorate of Primary Education Development
DPP	Directorate of Primary Education Policy
ESL	English as a Second Language
HCI	Human-Computer Interaction
ICT	Information and Communication Technology
KYC	Know Your Customer
LMIC	Low- and Middle-Income Country
LMS	Learning Management System
MOOC	Massive Open Online Course
NAPE	National Academy for Primary Education
NGO	Non-Governmental Organization
PEDP	Primary Education Development Program
PTI	Primary Teachers' Training Institute
RNGPS	Revenue Non-Government Primary School
TEO	Thana Education Officer
TPACK	Technological Pedagogical and Content Knowledge
TPD	Teacher Professional Development
URC	Upazila Resource Centre

Chapter 1: Introduction & Background

1.1 Introduction

In Bangladesh, 1 in 5 teachers have no teaching qualification (UIS, 2006). In 2017, about half of the primary teachers received the minimum professional training, before or on the job, necessary to teach in primary school (UNESCO, 2005). According to Ahmed et al. (2005), teachers knew very little about what they were teaching and how to do basic teaching techniques. Even the best-trained Government Primary School teachers are mechanical and do not perform their jobs with much passion and energy. According to Hasan (2020), every year, most aspiring teachers graduate from teaching education institutions with an extensive skill gap to manage learners' diverse needs and backgrounds in their classrooms.

Professional development for teachers is a lifelong endeavor that entails a significant adjustment. In 1997, Moon described that teachers' school and professional standards are intrinsically intertwined and that a flexible teaching force that is flexible and responsive to the influence of constantly changing patterns of work and leisure is required. Millions of unqualified teachers who already work in schools and need professional training to improve their skills and knowledge. In addition, there is a pressing need for professional development for teachers who are already qualified.

There is an urgent need to provide continuous professional development to teachers through e-learning platforms, with pedagogically sound and contextually relevant content. This will help support their effectiveness in classrooms and should be provided in their local languages, with relevant examples. With the increased use of ICT in education, concerns about teachers' professional development have arisen "inadequately trained instructors who are not supported by professional development (PD) cannot be expected to be effective in their teaching practice" (Onguko, 2012).

The government of Bangladesh has made e-learning platforms such as Shikkhok Batayon (teachers.gov.bd), MuktoPaath (muktopaath.gov.bd), to connect teachers from all levels of education. This is because there is no greater need in society today than for teachers to be able to keep learning and improving their skills throughout their lives (Borko, 2004). Increasing the use of technology in education systems may have positive implications for teachers' professional development (TPD). Educational technology has the potential to enable effective TPD delivery, especially in remote areas and for teacher peer support, one-to-one coaching, and reflection. This can be achieved by utilizing affordances such as two-way communication, audiovisual media capacity, and the convenience of mobile devices (Gaible, 2005).

1.2 Research Topic

The topic of this research is, “Role of the current e-learning platforms in urban primary teachers’ professional development: Opportunities and Challenges.”

Online professional development has been promoted as a "anytime, anyplace" option that enables flexibility by allowing individuals to balance educational pursuits with job and personal duties regardless of location (Davis, 2009; Stanford-Bowers, 2008). Online professional development grew out of the need for instructors to be able to fit professional development into their busy schedules. It gives teachers access to and ongoing help with important resources that would otherwise be too expensive or not available in their area (Dede, Breit, Ketelhut, McCloskey, & Whitehouse, 2005).

With the introduction of online courses, teachers can now be connected across schools, districts, and even states, building professional learning communities and increasing the professional learning options accessible to teachers (Russell, Carey, Kleiman, & Venable, 2009). Furthermore, online professional growth can take several forms: Distance learning

classrooms allow individuals to participate in a class via video conferencing, with the goal of making the online experience as close to an in-class experience as possible; an online course can be conducted entirely through asynchronous interactions, negating the need for all course participants to be available at the same time and allowing participants to complete course requirements on their own time; and self-paced (Russell et al., 2009). Finally, online professional development has the ability to satisfy teacher quality goals by providing high-quality training in mathematics content and methodology to a wide number of teachers (Ginsburg, Gray, & Levin, 2004).

1.3 Statement of the Problem

According to World Bank (2018), Children and young people in low- and middle-income countries (LMICs) do not learn as much as they should. Interventions in teacher education are linked to better learning outcomes in primary schools in LMICs (EC, 2020). Teachers in LMICs do not always have access to opportunities for continuing professional development (CPD) while they are working, and like in high-income countries (HICs), the effectiveness of programs for both teacher and student learning has varied a lot (Evans & Popova, 2015). A study from Major and Francis (2020) stated that educational technology (EdTech) can make TPD more effective, especially in remote areas and for teacher peer support, one-on-one coaching, and reflection, by taking advantage of affordances like two-way communication, audiovisual media capabilities, and easy access to mobile devices. Integration of technology increases the requirement for teacher professional development. For example, using personalized, adaptable technology to learn is more effective when an experienced teacher is around to give input and feedback that is relevant to the situation (Major & Francis, 2020).

Bangladesh has more than 30 million learners and nearly 1 million teachers in over 120,000 primary and secondary schools (Hasan, 2020). Due to the high cost of traditional face-to-face

teacher training methods, limited resources, and budget, it will take at least 5 to 6 years to improve every teacher's knowledge and skills in this system (A. Khan, 2007). Whereas, the horizon of new knowledge and teaching-learning methodology is expanding, and the window to the horizon constantly shifts and changes (Thomas & Brown, 2009). Under the PEDP3, Diploma in Primary Education (DPED) program (one and half years) was introduced, and primary school teachers are getting this diploma by turn , and besides, sub-cluster and special subject-based training are arranged in Upazila Resources Centers (URCs).

Primary teachers are commonly utilized to teach numerous subjects in classes, however, only 27% of GPS teachers and 30% of RNGPS teachers got subject-specific training (BANBEIS, 2007). A sub-cluster training structure is also used for instructors' continual professional development, and it has been in place for about two decades. Many modules have been created to improve the effectiveness of sub-cluster training (DPE, 2006). At the primary level, approximately two-thirds of school teachers receive training through various means and are promptly introduced to different e-learning platforms, e.g., Shikkhok Batayon and Muktopaath (Alamgir, 2019).

According to Muktopaath, more than 69% of the teachers registered from rural schools (muktopaath.gov.bd) and 90% of the teachers who have won the best content award to date have been from rural areas reported by Shikkhok Batayon (teachers.gov.bd). Where 67% of urban primary schools are facilitated with modern digital equipment and facilities, our urban primary teachers fail to meet the highest position. At the same time, most rural primary teachers are achieving their utmost without or are less equipped with digital equipment and facilities. This study explored the viewpoints about e-learning platforms for professional development among the teachers of urban primary schools in Dhaka.

1.4 Research Questions

The research questions derived from the overall objective are as follows:

1. How are teachers using e-learning platforms in their professional development?
2. What challenges do teachers encounter in obtaining professional development through e-learning platforms?

1.5 Purpose of the Study

This study seeks to gain insights into the role of e-learning platforms in supporting the professional development of urban primary school teachers. This research also wants to explore the urban teacher's perspectives on the current e-learning platform in their professional development. Importantly, it will also investigate how e-learning platforms can be utilized to tackle the distinctive challenges urban primary school teachers face in Dhaka, particularly in demanding environments characterized by high workloads, diverse student populations, limited resources, and inadequate professional development opportunities. Furthermore, it will provide insights to inform the development and execution of e-learning programs that meet urban primary school teachers' unique needs and challenges. By doing so, the study seeks to identify opportunities for enhancing the quality of professional development opportunities available to teachers in urban areas.

1.6 Significance of the Study

The study will look at online professional development from the end-users i.e., teachers' viewpoint in Bangladesh. Moreover, the results will shed more light on what makes or breaks the use of e-learning platforms for professional development among teachers. Therefore, the results and recommendations of the study can be used in the future to find ways to deal with

problems and find new ways to use and promote e-learning to help teachers' professional development in low-income countries like Bangladesh.

In addition, this study can assist policymakers and strategy specialists in rethinking the conventional approach to teachers' training, monitoring, and mentoring by utilizing online platforms. This can be achieved by examining the factors that could restrict access to inclusive and accessible learning resources.

Chapter 2: Literature Review and Conceptual Framework

This study wants to explore urban primary school teachers' perspectives, practice and challenges in using current e-learning platforms in Bangladesh. This chapter contains the existing knowledge relevant to this study. Reviewing local and international findings literature on the following topics related to this study is presented in this section:

- Teachers' Professional development (TPD)
- E-Learning
- Types of E-learning
- Delivery Methods of E-learning
- Teachers' Professional Development (TPD) and E-Learning
- Advantages and Disadvantages of E-Learning
- Teachers' Professional development (TPD) in Bangladesh
- TPD and E-Learning in the Context of Bangladesh
- Conceptual Framework

2.1 Teachers Professional Development (TPD)

According to Avalos (2011), professional development involves the knowledge teachers acquire, the methods they use to learn, and the application of that knowledge to assist their students in learning. Teachers can learn by taking different courses, reflecting on their classroom teaching, and witnessing and reflecting on how other teachers teach with their colleagues. Teachers can benefit from accidental interactions with other teachers before or after school, as well as meetings with parents and organized reflection meetings. As a result, there are numerous ways to learn, both formally and informally.

Continuous Professional Development (CPD) is an essential aspect of a teacher's career. The Organization for Economic Cooperation and Development (OECD) defines CPD as activities that enhance a teacher's skills, knowledge, expertise, and

other traits. CPD involves measuring and documenting a teacher's acquired skills, information, and experience, including their initial training. This ongoing process includes diverse activities such as formal, non-formal, and informal methods aimed at improving a teacher's cognitive, affective, and psychomotor domains. The goal of CPD is to develop a teacher's intellectual abilities, self-confidence, attitudes, values, and interests to improve their personality and carry out their responsibilities as a teacher effectively. This approach ensures that teachers are continuously evolving and adapting to changing times, providing students with the best possible education.

In addition, according to DPE (2018), continuing professional development (CPD) is defined as an intentional, ongoing, and lifelong process of growing professional skills and improving professional practice. According to Sachs and Day (2005), effective professional development activities assist teachers in learning new ways to think about learning and how individuals learn. These exercises expand teachers' topic knowledge and provide a solid foundation for them to teach their pupils in more effective and relevant ways. As a result, the most crucial thing for teachers to master is how to fully engage pupils in learning to improve results. Campbell and Elliot (2013) concur with this assessment. According to them, CPD provides instructors targeted development opportunities that help them grow as people, improve their professionalism, and capitalize on their skills. The primary purpose is to increase teachers' learning quality and assist students in doing their best.

Furthermore, according to Bubb (2006), there is substantial evidence that good CPD helps teachers execute their jobs better, enhancing student accomplishment standards. According to Pedder and Opfer (2010), there needs to be more evidence that CPD helps raise standards or close the achievement gap. They reached this conclusion after reviewing the survey results given to a random sample of elementary and middle schools in England. The findings indicated that CPD was most effective in assisting instructors in improving their professional skills and knowledge in 77% of the examples. The setting settings must have policies that support CPD in order to provide an effective atmosphere for learning that improves the learning of teachers and students. As a result, it is concerning that more needs to be known about what students learn due to CPD and the changes in practices that it seeks to affect (Fishman et al., 2003). Helen (1998) believes that teachers ought to have the option of

expanding their expertise, abilities, and skills in order to help all students in their classrooms grow as learners. CPD, or continuing professional development, is essential for teachers during and after their initial preparation for the classroom.

The European Commission (2010) has noted a significant shift in the approach to teaching and learning, particularly in the time it takes for an experienced teacher to receive initial training. In response, the Department of Education provides TPD programs to enhance the skills of teachers across the nation. These programs employ both formal (such as courses and workshops) and informal (such as partnerships with other educators or participation in extracurricular activities) methods (OECD, 2013). The OECD policy framework identifies four TPD activities: school-based, employer-based, qualification-based, and other activities offered by approved organizations.

Accordance to the OECD (2008), Teacher Professional Development (TPD) programs consist of multiple components, one of which is seminars and conferences on the topic matter, techniques, or other curriculum-related topics. These programs also involve teachers and researchers at meetings or workshops to discuss education-related issues and share their research findings. TPD may also include a qualification program, including a degree program if deemed appropriate. In addition, excursions to other educational facilities might be planned if participants so desire as part of the program.

The fact that teachers in some schools need access to the majority of these programs is concerning. Some say the TPD only covers some aspects of the programs (OECD, 2008).

To increase teachers' professional development, instructors must learn new skills that will set them on a path to becoming lifelong learners, allowing them to manage students' different needs and backgrounds in their classrooms (Hassan, 2018). Suppose instructors are to be effective in the classroom. In that case, there is an urgent need to equip them with pedagogically sound and contextualized knowledge delivered in their native languages and contextualized examples that ensure teaching quality (Haq, 2006).

Recent research, such as that conducted by Waite (2004), has shown that although teachers at educational institutions are incredibly enthusiastic and driven to gain an

understanding of Information and Communication Technology (ICT), the actual use of ICT in practice is confined and centered around a narrow range of applications, with word processing being the most commonly used application. This is even though teachers are highly interested and motivated to learn about the potential of ICT. The use of video/network conferencing, emailing, and the Internet could be more frequent. International studies conducted by Cox (2013), Pelgrum (2001), and Zhao & Cziko (2001) have indicated that teachers need to widely utilize ICT as a tool for promoting learning in their teaching practices. The ineffective use of information technology in the classroom has also been documented in previous research (Jules Van Belle & Soetaert, 2001, p.38). Similar findings have been observed in the Scottish setting (S. Khan, 2019) and Williams et al.'s (1998) research.

2.2 E-Learning

Gutierrez (2014) says that Elliot Masie first used the term "e-learning" at the TechLearn Conference in 1999. This was the first time the term was used in a professional setting. Using computers and other digital technologies goes back about 30 years before this statement. In the mid-1960s, Stanford psychology professors looked into how computers and teleprinters could teach math and spelling to kids in elementary school (Suppes, 1971).

Maltz et al. (2005) define e-learning as distant, internet-based, and blended learning. OECD (2005) says that e-learning is when higher education institutions use information and communication technologies in different ways to make learning easier and better. Research shows that combining information and communication technologies can help with traditional and online classroom learning. Wentling et al. (2000) say that e-learning is using electronic methods to help people learn and use what they have learned. Wentling et al. (2000) say that computers and networks are crucial to e-learning. However, it is expected to get better and include more channels like satellite and wireless, as well as technologies like cell phones. This is about a study that Wentling and his colleagues did in 2000.

Liu and Wang researched what e-learning meant in 2009. They discovered that leveraging the Internet, sharing global learning resources, conveying knowledge and information through network courses, and being able to alter how you study in a

computer-created environment to get around distance and time constraints are the most crucial aspects of the e-learning process. Gotschall's (2000) research shows that e-learning comes from distance learning, which involves sending video presentations of lectures to places far away. Liu and Wang's (2009) research shows that the development of communication technologies, especially the Internet, made e-learning possible.

Previous research (Jennex, 2005; Twigg, 2002) has shown that e-learning is an innovative way to give employees the knowledge and skills they need to turn change into an advantage (Jennex, 2005). According to Twigg (2002), the e-learning strategy is designed with the learner in mind and comprises an interactive, repetitious, self-paced, and configurable system. Welsh et al. (2003) say that the term means using computer network technology to give people information and education, mainly through the Internet. According to Liaw and Huang (2003), e-learning can be defined by the things it does. As a first step, a multi-media environment has been suggested. There are many different kinds of information. E-learning systems allow users to communicate with each other and give them complete control over how they learn. The fact that e-learning support networks are fourth indicates that they are a source of information. Fifth, using e-learning makes it possible to set up systems on computers with different operating systems.

Research has shown that e-learning is a valuable way to teach, and it is interesting to look into how it affects how students learn and how teachers teach. The use of technology and the Internet in schools has been shown to increase the standard of learning (Simmons, 2002; Sahin & Thompson, 2007; Selim, 2007). A large number of businesses now teach their personnel through the use of e-learning. Siragusa (2002) says that the rise of e-learning puts pressure on schools to offer online courses. Siragusa (2002) says that teachers and students face different problems when teaching and learning online. Given the challenges and lack of experience with this new technology, research needs to be done immediately to determine how e-learning affects education and how well it works.

2.2.1 Types of e-learning

Collaborative e-Learning: Collaborative e-learning is a modern approach to learning that involves two or more learners working together to achieve their learning goals. According to Tamm (2019), the concept that knowledge is most effectively formed in a group context, where individuals can interact with each other, learn from each other, and exploit each other's strengths and limitations, underpins this technique. Compared to solo e-learning, collaborative e-learning is a relatively recent concept that emphasizes the benefits of collective learning.

Computer-Managed Learning (CML): Day and Payne (1987) have found that instructors set learning objectives in a computer-managed educational environment and use computers to evaluate students' performance. Sly and Rennie (1999) state that computer-managed learning systems performs various functions, including generating tests, assessing test results, and monitoring learners' progress records.

Computer-Assisted Instruction (CAI): Computer-assisted learning, also known as CAI, is a form of online education that combines conventional instructional strategies with computer use. According to Cotton (1991), this methodology involves various activities such as drill-and-practice, tutorials, and simulation exercises. The delivery of these exercises can be independent or used as a supplement to traditional teacher-led instruction.

Synchronous Online Learning: Research has shown that synchronous online learning allows for real-time participation in simultaneous activities by a group of learners from anywhere in the world (Hrastinksi, 2008). Online chat and videoconferencing enable real-time engagement, facilitating communication between learners and teachers without delay.

Asynchronous Online Learning: Studies indicate that asynchronous e-learning enables self-paced and independent learning without real-time interaction. This flexible learning mode provides instant access to learning materials through various technologies like email, blogs, and discussion forums. Asynchronous e-learning supports self-directed, independent, and student-centred learning, allowing students to apply their higher-order cognitive abilities and generate innovative ideas. It also enhances students' knowledge by presenting novel ideas, making it a widely preferred

learning method (Hrastinski, 2008; Parsad & Lewis, 2008; Murphy et al., 2011; Lin, Hong, & Lawrenz, 2012).

Adaptive e-learning: The field of e-learning has witnessed a shift towards adaptive systems that tailor instruction to students' individual needs. Research by Akbulut and Cardak (2012) indicates that adaptive e-learning improves learning outcomes by personalizing education based on student performance, abilities, and aspirations. Such systems use artificial intelligence (AI) to organize and retrieve knowledge and adapt to users' changing needs without requiring user input, as defined by Feigh, Dorneich, and Hayes (2012). Jameson (2009) characterizes an adaptive system as an interactive one that adapts to user model acquisition and application processes, including learning, inference, and decision-making. According to Brusilovsky (2001) and Hauger and Kock (2007), adaptivity in Human-Computer Interaction (HCI) refers to the process of adapting a system, graphical user interface, or information in order to meet the requirements of a user. Adaptive e-learning systems (AESs), including adaptive hypermedia, web-based instructional systems, and Intelligent Tutoring Systems (ITSs), have emerged as preferable alternatives to designing and developing homogeneous e-learning systems. ITSs, in particular, use AI to provide tailored training like an instructor (Self, 1999).

Linear e-learning: Studies have categorized e-learning based on the communication model employed, and one of these categories is linear e-learning. In this approach, the transmission of information from the sender to the receiver is the central focus. E-Learning Models explain that the sender controls the timing, order, and rate of information reception and that there is no feedback from the recipient to the sender. Linear e-learning is commonly seen in transmitting instruction through television, radio, and newspapers, as observed by Jabar et al. (2020).

Interactive e-learning: Research shows that interactive e-learning allows for bi-directional communication between participants, unlike linear e-learning. This approach enables the exchange of roles between the sender and the recipient. Jabar et al. (2020) identified instant messaging and discussion boards or forums as contemporary technologies.

Individual e-learning: In individual e-learning, learners are responsible for studying the content independently and achieving their learning goals. The teaching methods used in traditional schools are similar to this (Akbulut & Cardak, 2012). Various ways exist during the research process to assess or gauge learners' performance concerning the set learning objectives. Automated or peer evaluations are commonly used to evaluate coursework and exams in massive open online courses (MOOCs) like Coursera. Research can classify E-Learning based on how it works with groups. Individual eLearning has students study the course material independently, and it is up to them to meet their learning goals. This mirrors the instructional approaches employed in traditional educational institutions. Various methods exist during the research process to assess or gauge students' performance concerning the set learning goals. Automated or peer evaluations are commonly used to evaluate coursework and tests in massive open online courses, such as Coursera (Layton, 2013).

2.2.2 E-learning Delivery Methods

Computer-Based Training: Computer-Based Training (CBT) enables learners to access learning materials through CDs and DVDs, typically installed on the learner's system. On the other hand, Web-Based Training (WBT) uses the Internet as its primary delivery method, often incorporating learning management systems. CBT and WBT are self-paced and do not require direct interaction between instructors and learners. These modalities are particularly beneficial for adult learners who want to acquire new skills, according to Soni (2020).

Blended e-learning: Blended e-learning is an approach that combines traditional classroom training with computer-based instruction, as stated by Bonk and Graham (2012). This technique leverages technology such as communication software, web-based software, and collaboration software to enhance face-to-face training. According to Oye et al. (2012), blended e-learning enables learners to review educational and informational materials beyond the classroom setting. Littlejohn and Pegler (2007) suggest that blended e-learning encourages the integration of different learning environments and provides learners with the convenience of flexible scheduling.

Mobile e-learning: Sharples (2000) says that the rise of highly sophisticated mobile technologies like wireless communications and high-bandwidth networks has made it easier for e-learning to become mobile e-learning. This approach uses mobile computing devices to access instructional content and information resources. While the affordability and widespread availability of mobile devices can improve e-learning's accessibility, Soni (2020) highlights that this strategy needs to consider mobile devices' disk capacity, screen size, and Internet connectivity features.

Social e-learning: Social e-learning is the application of social learning principles to the e-learning methodology. Social learning involves learning from and with others, which is facilitated through direct and indirect contact, such as face-to-face interactions and interactions on social media and discussion forums. As Chetia (2019) suggests, social learning takes place when individuals observe the behavior of others or the consequences of their actions.

2.3 E-Learning and Teachers Professional Development

Due to the growing use of ICT, or information and communication technology, in education and changing job conditions, Hennessy (2022) believes instructors must engage in professional development. ICT and online learning settings can alter teachers' professional development. These technologies enable new interactions and professional development by allowing access to knowledge and experiences. Teachers' careers and family lives, especially for women that occupy most of the teaching industry, necessitate online professional development. The research of Clark (2000) and Vrasidas & Glass (2004) found that combining face-to-face seminars with online participation can establish a sustainable framework for teacher development.

According to Vrasidas and Glass (2004) and Wenger (1999), the significance of communication practices is at the forefront of online professional development. This is a sentiment that Wenger shares. It is essential to have a solid understanding of the idea of the community if one wants to comprehend how individuals acquire knowledge and how professional development might occur online. Communities of practice are groups of persons connected via their ordinary activities, such as informal conversations and working together to solve problems, as well as by what they obtained from participating in these activities. Some examples of these activities are

informal conversations and collaborative problem-solving. According to Vrasidas and Zembylas (2004), communities of practice play an essential part in developing knowledge-dependent organizations and promoting mutually beneficial learning. These online communities provide possibilities for both formal and informal professional development for teachers in a context that is structured to support such endeavors.

According to Schlanger and Fusco (2003) and Schwen and Hara (2003), there has been an increasing interest over the past decade in the creation of e-learning environments that enhance communication practises. This was highlighted in both of these studies. Learning Management Systems (LMS) and Course Management Systems (CMS) are two examples of software that can provide an alternate means of building and managing teachers' communities for professional development. Dede, Whitehouse, and Brown L'Bahy (2002) show how information and communications technology can facilitate the growth of online communities that can be used to generate, share, and acquire knowledge.

E-Learning has the potential to empower learners by allowing them to participate in their education actively, engage with technology, and enjoy the learning experience. Therefore, the integration of ICT in learning is crucial, as learners are comfortable with technology and can learn more effectively in technology-based environments, as noted by Jamieson-Procter et al. (2013). Kandasamy and Shah (2013) also stressed the increasing importance of technology for educators. According to Lee (2000), internet technology can facilitate experiential learning, motivate students, enhance success rates, and personalize the learning experience. This demonstrates how ICT has transformed the educational process. Pilgrim (2001) noted that ICT is the foundation of the digital age and the means and tool for introducing educational innovations that can transform students into well-educated individuals.

The United States Department of Education presented the United Star Distance Learning Consortium (USDLC) with a five-year Star Schools grant in April of 2000. The funding was to fund the Assisting Teachers with Anywhere/ Anytime Resources (STAR)-Online initiative, which may be found at star.org. This initiative offers an exemplary model for ICT-related professional development and provides teachers with opportunities for continuing education and professional growth through the

concept of communities of practice. The STAR-Online initiative has been successful in supporting over 20,000 educators.

In education, a virtual community can be defined as a digital space where individuals gather to exchange knowledge or seek support, study, or socialize (Preece, 2001). Such a community is facilitated by an information technology platform that allows members to connect and collaborate on a shared purpose, objective, or problem (Leimeister et al., 2004). The Virtual Teaching and Learning Community (VTLC) system is an example of a web-based platform that enables teachers to access mentors, colleagues, and resources for interactive, self-paced, and collaborative growth. By utilizing this online model, known as the Virtual Teacher Learning Community (VTLC), instructors can acquire the necessary knowledge and skills related to the application of educational technology. Integrating information and communication technology (ICT) into contemporary curricula has been a highly debated topic in teacher professional development (Mumbi & Mesut, 2004). While access to high-quality digital content is essential, expecting educators to create their own digital curriculums is unreasonable. Nevertheless, more than merely aligning the curriculum with new technology is required.

Despite rapid technological advances, the educational curriculum has remained relatively unchanged for many decades (Davis, 2009). As Onguko (2012) pointed out, introducing new technology into outdated curricula can be challenging. It is crucial to re-evaluate the fundamental principles of teaching and learning in light of the possibilities ICT presents. While computers were initially designed to meet corporations' needs, technology integration in education should be driven by educational needs rather than by the business sector, which is often the source of technological innovations (Hayes, 2007).

It has been found that when teachers actively provide high-quality course planning and execution (Ally, 2008; Rovai, 2002; Wright & Lawson, 2005; Smith & Ragan, 1999; Wakefield, 2009), they carry out useful measurements (MacKnight, 2000; Leshowitz et al., 1999), and encourage collaborative learning (Cifuentes & Murphy, 2001; McIsaac & Tu, 2002), students learn more effectively in an online setting. (Haitham, 2009; Zhao, 2007) Educators receive support in the form of technical assistance so that they are better able to easily integrate educational activities into the

context of an online learning environment. (Cuban, 2001; Hayes, 2007). Learners are offered the opportunity to take charge of their own education, gain practical experience, communicate with one another, develop their capacity for critical thinking, and apply these skills to situations that are based in the real world. While they are mastering the course material, they are also gaining knowledge about themselves and the world around them (Filimban, 2008). When courses are made available online, students can study whenever and wherever they want, teachers are liberated from the tedium of classroom teaching, and the platform can increase the number of courses it provides to customers in different countries (Anderson, 2011).

2.4 Advantages and Disadvantages of E-Learning

E-learning has been extensively studied in education and corporate training, and its benefits are well-established. Pandey (2013) identified four main advantages of e-learning from the learners' perspective: learner control, accessibility, availability, and customization. E-learning allows learners to set their own pace and study from anywhere, and it uses technology such as games and social media to create a more immersive and interactive learning experience.

Moreover, e-learning offers faster delivery cycles, accelerating the learning process. Gupta (2017) noted that e-learning allows for the swift implementation of lessons and programs, making the learning process more efficient. Beldhuis (2012) identified several advantages of e-learning from a business standpoint, including cost reductions, as e-learning eliminates the need for staff training-related travel and meal expenses, and modularity, as employees can focus on the course sections most relevant to their needs. Online learning additionally provides flexibility and easy access, enabling students to select when and where they study and allowing businesses to conduct training outside regular business hours.

The environment is greatly benefited from online education. Traditional on-campus university classes use up to 90% less energy and generate 85% fewer carbon dioxide emissions than distance learning classes, according to a study carried out in 2005 by Roy et al. in collaboration with the Open University in the United Kingdom. According to the study's findings, a decrease in student travel and economies of scale

brought about by increased utilization of on-campus facilities are likely responsible for lower energy consumption and emissions.

Although e-learning presents students with many opportunities and businesses with many benefits, it also presents specific challenges that need to be addressed. According to Sirohi (2007), the primary disadvantage of e-learning methods is the absence of personal interaction. Face-to-face interaction has been shown to positively affect the development of individuals' personalities, whereas e-learning methods lack these benefits.

On the other hand, Hvoreck (2004) claims that less developed countries need more qualified teachers to create online courses for students. In addition, there is a need for high-bandwidth internet connections and high-resolution screens in these countries, which makes it challenging to implement e-learning effectively.

2.5 Teachers' Professional Development (TPD) in Bangladesh

Bangladesh has separate structures and institutions for teacher education in the primary and secondary education subsectors. In the primary education subsector, the Certificate in Education (C-in-Ed) is the prevalent form of in-service training for teachers. In contrast, the Bachelor of Education (B.Ed.) is the most common training for teachers in the secondary education subsector. Individuals who aspire to become teachers can also pursue B.Ed. Training is not restricted to in-service educators (BANBEIS, 2007). Primary Teacher Training Institutes, often known as PTIs, are the only institutions in Bangladesh that can offer in-service teacher development programs to primary school teachers. There are 54 public training institutes in the country, 53 of which are run by the government and one privately; together, these institutes can accept around 13,025 students each year (BANBEIS, 2007). At PTIs, the C-in-Ed Course is delivered in the traditional "face-to-face" format.

The National Academy of Primary Education (NAPE) has created instructional resources for the C-in-Ed courses, and textbooks serve as the primary instructional resource at PTIs. The C-in-Ed course did not have textbooks when the program was first launched, but NAPE developed them in 1986. The C-in-Ed curriculum and textbook modification committee has defined curriculum-wide and subject-specific learning goals based on the curriculum- and subject-level objectives. The C-in-Ed

program objectives are clearly defined. NAPE last revised and updated the curriculum in 2000 (NAPE, 2001). The C-in-Ed curriculum has 22 objectives covering a range of education-related topics. Participants are expected to gain an understanding of national and international principles, declarations, charters, and educational systems, as well as human and child rights. In addition to these, the curriculum covers child psychology, diverse teaching-learning processes, class management tactics, evaluation procedures, and other classroom practices and activities. The curriculum also aims to encourage students to engage in development activities and to instill in them values such as respect for the dignity of work, a scientific approach, creativity, aestheticism, and hygiene.

Additionally, the objectives for each subject are specified independently. The Upazila Resource Centre (URC) is a newly established organization that provides continuous professional development training for teachers at the Upazila level. Out of the 481 planned URCs, only 174 are operational, per the Directorate of Primary Education (2006). Each Upazila has a center located on the model school campus. The URCs provide subject-specific training to primary school teachers, focusing on English and mathematics, and have already trained 39,00 instructors (DPE, 2006). Another form of in-service training is sub-cluster training, which occurs once every two months. The training is conducted by a local Assistant Upazila Education Officer (AUEO) at a primary school. Teachers from various schools in the same sub-cluster attend the full-day training session. Teachers receive instruction on a specific subject, and a pamphlet is issued before the training day.

2.6 E-Learning and TPD in the Context of Bangladesh

In Bangladesh, there is a pressing need for professional training for teachers on the use of technology, as research indicates a disappointing state of affairs regarding technology integration in teaching. For example, the English in Action (EIA) study conducted in 2009 found that technology was hardly used in education (EIA, 2009b) (Islam, 2019). To address this issue, the Access to Information (A2I) Project will implement a training program to enhance the ICT teaching-learning process in classrooms, improve the ICT proficiency of secondary school teachers, and enhance their ICT skills.

Bonk (2005) observed that although most teachers recognize the benefits of using ICT for themselves and their students, they need help integrating it into their lessons. Instead, they tend to focus on teaching ICT rather than using it as a tool for teaching. According to Khan (2019), teachers of primary schools typically utilize information and communication technology (ICT) to enhance their classroom practice. However, instructors of secondary schools typically use ICT more for personal growth and private use rather than for educational purposes. It is critical to view ICT as a vital component of the twenty-first-century teaching toolkit that offers new and transformative learning models (Leach, 2005).

The government of Bangladesh has started a program to train teachers so that they can teach students how to create digital multimedia content. This program is aimed at the country's subject teachers. Initiatives such as "Shikkhok Batayon" and "Muktopaath" are part of the program that emphasizes pedagogical and technological knowledge (Kabir, 2008). According to Todorova and Osburg (2010) and Macknight (2000), the success of a professional development program and the adoption of new practices by teachers are mainly dependent on the design and implementation of the program as well as the level of user participation in the learning process. Integration of information and communications technology (ICT) in education, as demonstrated by platforms such as the Teacher's e-learning, is essential to the realization of the teaching and learning revolution of the 21st century (Jung, 2005; Kabir, 2018; Varis, 2011).

Under the Access to Information (a2i) program, the Bangladesh government has recently introduced e-learning platforms such as 'Shikkhok Batayon' and 'Muktopaath' to provide teachers with new skills and opportunities. The country also has an Information and Communication Technology (ICT) policy that includes teachers in its human resource development plan to prepare the nation to compete effectively in the global ICT arena (Khan, 2017; Khan, 2014). Asian governments recognize that e-learning can enable students to connect with knowledge beyond their immediate surroundings and encourage them to become active processors rather than passive recipients of information (Jung, 2005).

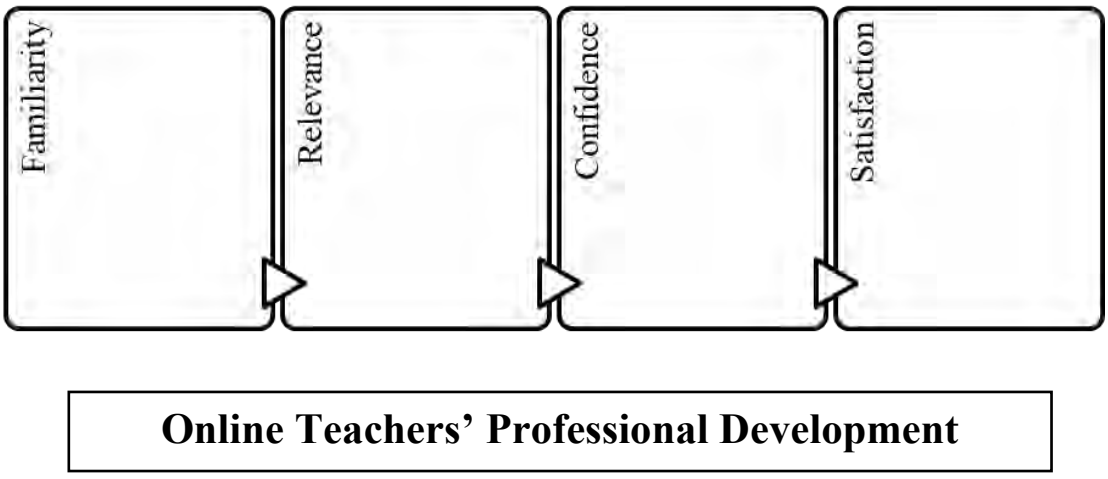
In contrast, other research, such as that conducted by Pelgrum (2001) and Alejandro & Richard (2016), has identified three major obstacles that teachers perceive as

obstacles in the use of ICT in education. These impediments include the need for additional resources, a shortage of expertise and abilities, and pedagogical challenges associated with integrating technology. Nevertheless, educators recognize the value of technology in education, both for themselves and for the students they teach, despite the difficulties presented by technological advancements.

Many educators find that utilizing online teacher portals effectively circumvents the time and infrastructure constraints inherent in traditional in-person teacher training. Some educators have an innate affinity for using information and communications technology (ICT) in their professional development, while other educators might not have the same affinity. Studies have found that teachers 'computer experience,' 'innovativeness,' and 'beliefs about education and professional development' are linked to educational ICT use (Chantal Bovée, Joke, & Martina, 2007; Van Braak, Tondeur, & Valcke, 2004; Ertmer, 2005). These characteristics are significant concerning constructivist learning approaches that foster student engagement and critical thinking.

2.7 Conceptual framework

The established theories, models, frameworks and prior research findings during the literature review, have influenced the development of the proposed conceptual framework for this study which serve as the basis for the study. This conceptual framework is centered around the motivation of adult learners (Keller, 1987) and showcases how different components of meaningful professional development are interconnected through e-learning platforms.



The conceptual framework for this study suggests that in order to make a meaningful online teachers' professional development, four key elements should be considered:

- Familiarity: This element pertains to the teachers' affinity and interest towards e-learning platforms for their professional development.
- Relevance: This element refers to the teachers' perception of how the e-learning content is relevant to their job and professional development needs.
- Confidence: This element pertains to the teachers' self-efficacy and confidence in learning and applying the e-learning content to their professional practice.
- Satisfaction: This element pertains to the teachers' overall satisfaction with the e-learning experience, including the ease of use, interactivity, support and recognition.

Chapter 3: Methodology

This qualitative study aims to provide a comprehensive understanding of how current e-learning platforms contribute to the professional development of urban primary teachers. The study seeks to uncover teachers' subjective experiences and reflections on this topic by exploring the research questions. Its goal is to gain an in-depth and holistic perspective on the role of e-learning platforms in supporting urban primary teachers' professional development.

3.1 Research Approach

In this investigation, a qualitative research approach was taken to investigate the perspectives of primary school educators regarding their utilization of e-learning platforms. A qualitative methodology was recommended for this piece of research because its purpose was to investigate modern e-learning platforms' role in the professional development of primary school teachers. As Strauss and Corbin (1998) stated, qualitative study is well suited to explore complicated phenomena such as feelings, thoughts, and feelings that are difficult to gather or understand using conventional methods of inquiry. This was because qualitative research focused on in-depth interviews and observation of participants rather than quantitative data collection and analysis. This was because qualitative research allowed researchers to investigate phenomena more naturally.

3.2 Research Site

For this study, primary schools in the urban areas of Dhaka city, particularly in Dhaka North and Dhaka South, were selected. These schools were selected because many of their teachers used contemporary e-learning platforms, such as Shikkhok Batayon and Muktopaath, for professional development. Furthermore, these schools had modern facilities, such as computers and high-speed internet, providing smooth logistical support for e-learning activities.

3.3 Research Participants

According to Creswell (2012), the term "sample" referred to the selected items, units, or elements that formed the basis for the researcher's conclusion in this study. The participants of this study were government primary school teachers who were actively teaching and registered on at least one e-learning platform.

Through convincing sampling, this research collected data from 13 participants, including nine (10) primary assistant teachers with user experience of using at least one e-learning platform, two (02) teacher trainers from two different organizations, and one (01) from Aspire to Innovate (a2i), who primarily managed the e-learning platforms, such as Muktopaath and Shikkhok Batayon.

All participants in this group had completed their graduation (59% had at least one Master's degree) and had extensive teaching experience ranging from 5 to 15 years. The participant from a2i was responsible for content development and monitoring of e-learning. This extensive range of experiences and knowledge made the data collection more rigorous.

The term "sample size" came from the definition provided by Kothari (2008), which stated that it referred to "the number of things to be selected from the universe to constitute a sample." This study included participants of both genders, of varying ages, and with various classroom experience levels. There was no discrimination based on gender, age, or level of experience.

3.4 Sampling Procedure

The non-probability sampling method of convenience sampling, also known as availability sampling, was utilized in this investigation, involving the selection of study participants who were easily accessible to participate in the research. According to Hoagwood (2013), the most important objective of this methodology was to collect data from people whom the researcher could quickly and easily reach. In this particular investigation, convenience sampling was chosen as the method of choice because it was suitable for the research objective. In particular, participants were chosen based on their experience with emerging technologies and their capacity to adjust to varying circumstances. In addition, participants were required to have prior

experience expressing their ideas online and be familiar with the communication platforms provided, which could have included Zoom, Google Hangouts, Facebook Messenger, or WhatsApp.

3.5 Data collection methods

In order to collect data from the selected participants, this research had to gain access and permission from the teachers of the school and government officials, which was carried out via phone or email depending on their availability. After receiving the participants' consent, the team scheduled online interviews at a mutually convenient date and time, using the technology preferred by each participant. Online focus group discussions (FGDs) and participant observation were used to collect data on naturally occurring behaviors to ensure ease of participation. Each one-on-one in-depth interview with four primary assistant teachers, two teacher trainers/ professionals, and one official from Aspire to Innovate (a2i) lasted one hour, while one FGD with five assistant teachers lasted one and a half hours. The researchers tried to keep detailed participation observation notes on actions, emotions, and settings.

According to Nunan (1988), open-ended questions enabled participants to express their thoughts and opinions freely, enabling researchers to garner more valuable insights from the collected data. As a result, open-ended questions were included in the questionnaire used for this research to investigate the participants' perceptions, beliefs, and opinions, as Burns (1999) had recommended.

Methods	**Tools**	**Participants**	**Themes/areas**
In-depth Interview	Interview guideline	4 Assistant Teachers	E-learning experience, Professional development, Current need and supportfrom govt. officials and school leaders
		2 Teacher Trainers	Teachers Professional Development, e-

			learning courses for primary teachers, Current practices and challenges for support for teachers
		1 Official from **a2i**	Challenges in introducing e-learning platform among teachers, Addressingthe different needs of the teachers
Focused Group Discussion (FGD)	FGD Guidelines	6 Assistant Teachers	Using e-learning platforms as aprofessional development tool

Table 1: List of Research Participants

3.6 Role of the Researcher

The researcher explored teachers', Government officials, and a2i official's perspectives on existing e-learning platforms' uses on teachers' professional development. The researcher was a teacher at a primary school and currently working with a leading educational development organization. This study helps the researcher to understand the existing practices of using e-learning platforms among primary school teachers.

The researcher maintained a neutral stance throughout the study, without preconceived hypotheses or expectations of the results. During the interview and data collection process, utmost care was taken to ensure that no thoughts or words of the researcher influenced the

participants' responses. Furthermore, the researcher approached the study with an open-minded, analytical, and structured perspective.

3.7 Data Analysis

This study utilized the thematic analysis method to make sense of the qualitative information gathered from interviews, focus group discussions, and observations. The research questions primarily focused on the "way of using" e-learning platforms among primary school teachers and the "challenges of using" these platforms. Throughout the investigation, each significant occurrence was considered a separate theme. According to Clarke and Braun (2013), thematic analysis is a widely used method for identifying and analyzing patterns of meaning or themes in qualitative data.

All the online interviews and focus group discussions were recorded with the participant’s permission, and they confirmed that their identities would be kept confidential and that the information they provided would only be used for research purposes. The researcher transcribed the recorded data, listened to it, and took notes with participant observations. After that, to identify prevailing trends and patterns, the transcribed data were coded, categorized, organized, and presented through tables and graphs based on the research questions.

3.8 Ethical Issues and Concerns

The participants in this study were fully informed about the research and provided their consent to participate voluntarily. The teachers were asked for permission, and measures were taken to ensure that the research did not disrupt the school's everyday activities or affect the students' learning. The researcher ensured that the participants' identities, including their names and designations, would not be revealed in the research findings. To protect the anonymity of participants, the researcher assigned numbers or pseudo-names to each

participant to use during the analysis and reporting of data, as stated by Creswell (2012). The teachers' names were kept confidential, and each participant was labeled with a number from 1 to 5, with the corresponding table saved in a separate document. The data collected was used only for this study and deleted after the data analysis. Access to electronic and hard copies of the data was restricted to the researcher and the thesis supervisor

3.9 Credibility and Rigor

As an educational development practitioner, the researcher was tasked with enhancing the professional development of elementary school teachers. To improve educational practices, various e-learning approaches were utilized by the researcher. However, despite the efforts, the researcher needed to gain first-hand experience in conducting research and had limited knowledge in the area.

While studying at the BRAC Institution of Educational Development (BIED), the researcher enrolled in research courses and conducted a mini-research project. This experience gave the researcher a solid understanding of research methods, designs, data collection, data analysis, report writing, and other related areas. As a result, the researcher gained enough confidence to undertake the research project. The researcher was grateful to the supervisor and faculty members, who were incredibly supportive and guided him through every step of the study.

The researcher's decision to focus on the issue of e-learning and its application was based on their prior knowledge and experience in the field. Through a thorough review of the relevant literature, the researcher selected the topic for their study. In order to gain a deep understanding of the issue, they chose to use a qualitative research approach. The research

was designed by first reviewing previously conducted studies to develop a comprehensive understanding of the subject matter.

3.10 Limitations of the study

The methods used in this study were subjected to the general limitations of qualitative research, such as more complex data collection and interpretation, lower data robustness, and certain constraints. This research, however, was subject to several limitations because most of the government's e-learning initiatives could limit participants' responses regarding their liaison with government authority, i.e., govt. and non-govt./ NGO-run school teachers.

Due to the modality of the tools, this study could have limited the observation of facial expressions to obtain non-verbal cues for low internet speed during interviewing, causing significant differences in terms of communication dynamics. The performance of online tools mainly depended on a facilitator's skills.

Chapter 4: Results

4.1 Introduction

The findings from in-depth interviews and focused group discussions with research participants are presented in this chapter. After categorizing the acquired information and examining its relationships, the data were classified into two themes. Each theme was divided into sub-themes, and data was analyzed following the inductive approach.

The first theme was divided into teachers' professional experiences, training, understanding of professional development, uses of online training for teachers' professional development, the usefulness of online training, and application of gained knowledge from online training in the classroom. The results for the second theme were constructed after analyzing the sub-themes like challenges of using e-learning sites for professional development and improving areas for the e-learning platforms developers and other stakeholders.

4.2 Theme: Uses of e-learning platforms

4.2.1 Professional experiences and trainings

All study participants possess extensive full-time teaching experience and are well familiar with various e-learning platforms. This study involved participants with experience ranging from 4 to 22 years, providing diverse perspectives on online learning. All the teachers had received several types of training, including foundational training (previously known as basic in-service training) and Diploma in Primary Education (DPEd) training. Additionally, they had undergone regular specialized subject-based sub-cluster training. Two of the participants had received training from the Upazila Resource Center (URC), while one participant had been trained by both Dhaka Ahsania Mission and BRAC.

The research participants think teaching requires continuous learning, and teachers must develop themselves with updated knowledge regarding content and pedagogy. Afzal Hossain, one of the educational experts interviewed for the study, said that

> Teaching requires technical expertise and is not limited to simply presenting content in class. A good teacher must possess content knowledge, pedagogical knowledge, management skills, and effective teaching strategies. Staying updated with current changes in the field of teaching is crucial. Continuous professional development and training effectively address these critical factors. (Interview #5, 05-09-22)

In this study, participants think adequate training experience also helped the teachers identify their gaps and understand the environment and settings of a proper teaching-learning environment. Participants in focus group discussions (FGD) also emphasized the importance of regular teacher training. One of the participants from FGD, Amina Khatun, mentioned that

> Since I didn't know much about teaching, I thought it would be easy at first, but it wasn't. I didn't know how to teach content or manage a classroom, so I underwent induction training that taught me valuable skills like lesson planning, which helped me teach well. (FGD # 1, 11-11-22)

The discussion above shows that teaching experience and training are essential for meaningful teaching-learning practices.

4.2.2 Knowledge of professional development

During interviews, participants were asked to share their understanding of professional development. Participants discussed the significance of continuous learning, improving one's skills, and making oneself effective in today's society. One Teacher, Shamima Akter, explained,

> Professional development means how I can teach my lessons so that students understand them better. I need to figure out how to simplify lessons for students to understand, make learning objectives more manageable, and make

> learning outcomes more durable. I believe that the needs of the students are at the forefront of everything we do. (Interview # 2, 05-09-22)

Poli Akter, a teacher interviewed, emphasized training as a step of professional development and said that

> In my opinion, practical training is more important than theoretical understanding. Teachers need guidance on implementing the methods in the classroom and guiding students through their learning. Since these are crucial to one's career development, training in them is essential. (Interview # 1, 05-09-22)

One teacher named Md. Islam mentioned the importance of developing master trainers for professional development and said,

> Now that teachers are trainers, there is an opportunity for their professional development. Many of our teachers fear public speaking. I encouraged my teachers to become trainers, so their interest in their respective subjects has increased. It also motivates them to develop their skills. (Interview # 4, 03-09-22)

Participants in the FGD shared similar insights, which aligned with the opinions of educational experts. During the interview, one of the educational experts, Afzal Hossain, stated that

> The government of Bangladesh offers 39 types of training for teachers, including subject-based, pedagogy-related, ICT-based, and cluster training, among others. These trainings are crucial for teachers' professional development as learning is an ongoing process, and teachers must update their knowledge to educate students continuously and effectively. (Interview # 5, 06-02-23)

The above discussion shows that the participants know enough about professional development and think teachers must keep learning and getting better at their jobs.

4.2.3 Use of online platforms for professional development

Participants have asked about using the e-learning platforms, and all participants have used the platforms before (Sikkhok Batayan and Muktopaath). One teacher, Selina Begum, has experience using Coursera, a U.S. open online course provider that participants used during the COVID-19 pandemic. Two teachers, Shamima Akter and Selina Begum, have taken multiple Muktopaath courses, and another two, Poli Akter and Md. Islam has just started. Two teachers, Poli Akter and Md. Islam wants to be district ambassadors at Muktopaath as leading content developers with ICT knowledge because they found the e-learning platforms helpful. One teacher, Md. Islam said that

> I first heard about Shikkhok Batayon in 2016 while participating in ICT training. Our PTI instructor introduced it. I uploaded content, then. I wanted to be a district ambassador and was excited to work with a2i and this platform. (Interview # 4, 03-09-22)

As part of the community of the e-learning platform, the participants also use the platform for content sharing to exchange knowledge. One teacher, Selina Begum, said that

> Most of the time, I download content from Shikkhok Batayon for the topic I want to teach. I find suitable lessons, download almost 8-10 pieces of content for that chapter, watch it to revise and edit it on my understanding, and show this to my students and use it when I teach. (Interview # 3, 07-09-22)

Teachers have also learned new techniques and skills as a result of the e-learning platforms that they have implemented in their classrooms. One teacher, Shamima Akter, said that

> I learned that preparing materials can be elementary in training. For instance, origami, Paper is the only learning material. We also have fun making them with the students, encouraging learning. (Interview # 2, 05-09-22)

The focus group discussed e-learning platforms. They network and learn on the platform: one teacher, Md. Nazmul said that

> I took many Muktopaath courses, including the Math Olympiad' Gonit Shikhon' course. Subject-based cluster training is unavailable to non-government teachers like me, so I learned by myself. Professional development helps me create an inclusive classroom. Muktopaath, especially in math courses, inspired me to learn. (FGD # 2, 11-11-22)

Teachers just starting their careers also hope to learn new things and grow professionally through the platforms. One Teacher, Sadhana Paul from FGD, said that I am a very new member of Muktopaath and enjoyed it a lot. It will help us to develop our professional skills. (FGD # 1, 11-11-22)

An interview was conducted with Mithun Saha, the respective person of a2i for developing e-learning platforms, and he shared an overall summary of the use of e-learning platforms (Sikkhok Batayan and Muktopaath). The interview found that over 70% of school teachers participate in Sikkhok Batayan or Muktopaath. Mr. Saha said that

A2i was founded in 2009 to achieve Bangladesh's vision for 2021. A2i works in many fields, including education. We have a team called 'the Future of Education' that aims to determine the prospects of educational development, which determines how teaching-learning, assessment, professional development, etc., should work. (Interview # 7, 29-01-23)

According to document analysis of e-learning platforms (*muktopaath.gov.bd*), Muktopaath launched in 2016 and offers affordable skill-based professional and academic courses to every citizen. It provides methods for teachers, students, lawyers, healthcare professionals, migrant workers, and more. With more than 208 online and offline courses, Muktopaath has taught millions, including poor and underserved people. Muktopaath initially sought to upskill teachers nationwide at a low cost to improve education. Participants who finish a course on the platform get a government-recognized certificate. They must complete online quizzes, assignments, and final exams to get this certificate. 1.19 million Muktopaath members have taken 1.98 million courses. One million Portal learners have graduated. Registration yields over 90% success. a2i aims to reach all teachers with its systems. The e-learning expert Mithun Saha said that the digital education transformation in Bangladesh has

been teacher-led, teacher-driven, and learner-focused. The Teacher's Portal is vital to this transformation. (Interview # 7, 29-01-23)

> Sikkhok Batayan is a teacher's Portal (*teachers.gov.bd*) and is a peer-to-peer capacity development hub for teachers to collaborate on high-quality educational content that meets their students' needs. It motivates teachers through intrinsic and extrinsic recognition. Teachers can showcase their work and create professional profiles like content, awards, or training. According to Mithun Saha, the e-learning platform expert, the platform is called 'Communities of Practice and is a one-stop service for teachers with 600,000 members. (Interview # 7, 29-01-23)

Interviews with teachers have shown that using e-learning platforms encourages teachers to improve their ICT skills. One teacher, Selina Begum, admitted that

> I am unfamiliar with technology and digitalization. Like me, many teachers struggled to collaborate with e-learning due to phobias. For us, it was a significant challenge. However, we are learning now, which is beneficial. (Interview # 3, 07-09-22)

However, the FGDs found that all teachers have experience using e-learning platforms, but there is room for improvement. Training arrangements are another area of focus for the participants. In FGD, one teacher named Amina Khatun stated

> Our teachers only have a basic understanding of ICT. Many of our teachers would prefer to avoid using the internet or networking. Therefore, training in information technology is required to convince them that it is a positive, enjoyable thing. (FGD # 1, 11-11-22)

The education experts agreed with the above discussion regarding using e-learning platforms. One expert, Md. Rasel said that

> The teachers use online platforms. According to my observations, most teachers used this platform during COVID-19. They have used it to create classes, share content, share knowledge, etc. (Interview # 6, 08-02-23)

On the contrary, educational expert Afzal Hossain shared a different opinion. Mr. Afzal stated,

> Learning through online platforms is uncommon in Bangladesh, and people typically need help understanding the concept. Well-designed e-learning platforms like Sikkhok Batayan or Muktapath are available, and A2i regularly updates the platforms. Educators can learn about a subject through the platform or share creative ideas they might use in their classrooms. (Interview # 5, 06-02-23)

The discussion above demonstrates how educators use online learning environments. Even though there are problems at different stages, teachers and developers of e-learning are working to solve them so that more teachers will use the platforms.

4.2.4 Importance of online platforms for professional development

The participants have mentioned the importance of e-learning platforms for professional development. Participants prioritized accessibility, availability, and time-saving. One teacher, Selina Begum, said in the interview,

> The best thing about e-learning platforms is that they are accessible anytime. You may be busy with classes and other tasks during the day, but you can access the platform at night or whenever you are free. It lets you study when you want and manage your time. Learn on vacation. (Interview # 3, 07-09-22)

Another teacher, Shamima Akter, said, that e-learning platforms have many courses with many contents. Compare and choose or merge contents according to your interest and convenience (Interview # 2, 05-09-22). Participants also mentioned the scope of different perspectives and knowledge sharing. One participant, Ms. Shamima Akter, said that you can choose the best when you can choose from multiple options. e-learning platforms allow teachers to discuss their perspectives. (Interview # 2, 05-09-22)

According to FGD participants, e-learning platforms are essential for accessibility, knowledge sharing, time savings, adaptability, and feedback. One FGD participant, Nurzahan Akter, said

> You will learn to adapt knowledge and feedback from e-learning platforms. You'll get additional feedback in a large group. Not all feedback is positive, so you must adapt to all types of feedback to help you develop professionally and personally. (FGD # 1, 11-11-22)

The e-learning platform expert Mithun Saha said we use Know Your Customer (KYC) surveys and course-based quantitative and qualitative questions to measure user satisfaction. After analyzing the teachers' feedback, our data shows that teachers improved after the training, and 70% of teachers think the platform fits their professional development. Mr. Saha added that the e-learning platforms (Sikkhok Batayan and Muktopaath) are time-saving and convenient; we noticed around 10,000 active teachers on the portal at 3 am. (Interview # 7, 29-01-23).

4.2.5 Application of gained knowledge from online platform in the classroom

During the study, the participants were questioned about whether they utilized their e-learning knowledge in their classrooms. The majority of participants integrated the knowledge gained from e-learning into their teaching methods, thereby establishing a connection between their learning and classroom practices.

One Teacher, Poli Akter, said that after seeing them in Muktopaath, I learned to use freely available and cheap materials as math teaching aids. (Interview # 1, 05-09-22). Another teacher, Md. Islam added that I'm using them and looking for more. I expanded my knowledge of the topic after attending several talks. (Interview # 4, 03-09-22).

The focus group and education experts agreed on using the new information in the classroom. An education expert, Md. Rasel said that teachers are using the information they've learned in their lessons, participating in online discussions, and asking for and giving suggestions online. These improve teaching and learning. (Interview # 6, 08-02-23)

4.3 Theme: Challenges of using e-learning platforms

4.3.1 Strengths of e-learning platforms

Participants were asked to mention the strengths of e-learning platforms (Muktopaath and Sikkhok Batayan). Participants mentioned accessibility, personalized learning, and digitalization. Shamima Akter, one teacher, said, Every physical training has a certain capacity of participants, but many teachers can be accommodated in online training. (Interview # 2, 05-09-22)

E-learning platform strengths were discussed in the focus group. One FGD participant, Shaila Islam, said,

> Teachers have many hidden talents, and a2i helps us express these via Shikkhok Batayon. Platform users are also helpful. It's a great way to unite Bangladeshi teachers. Online training lets us do chores while learning. (FGD # 1, 11-11-22)

Another teacher, Sadhana Paul, said at FGD,

> When we were briefed about online classes at the beginning of COVID-19, many teachers like me didn't know how to prepare a PowerPoint presentation. But now I have learned it and currently using it. Less travel is a great comfort of e-learning, and the platforms are convenient for practicing. (FGD # 1, 11-11-22)

During the interview with the a2i expert Mithun Saha, he mentioned that the platform is easy to use and added that

> We have noticed that teachers from remote areas like hill tracks are more engaging and faster than urban teachers. We also found that when a teacher posts about his accomplishments or training certificate on social media, other teachers want to do the same to keep up. The certificate is QR code-protected, and you cannot simply edit them. (Interview # 7, 29-01-23)

Mr. Saha again added,

> Teacher's Portal (e-learning platform) works as a peer-to-peer capacity development hub for teachers where they can collaborate to create more quality educational content that meets the specific needs of their classrooms. It recognizes teachers and motivates them both intrinsically and extrinsically. (Interview # 7, 29-01-23)

4.3.2 Challenges in using e-learning platforms

Participants discussed e-learning platform challenges. All participants mentioned network issues as the main challenge. e-learning platforms, smart devices, and internet costs are also issues. One teacher, Shamima Akter, said,

> The first major challenge is the Internet/ mobile network issues. Then, the financial issues. A free platform or website for teachers would be better. Another issue is teachers' ICT or self-development inefficiency. Most teachers are unaware of their professional development. (Interview # 2, 05-09-22)

Another Teacher, Md. Islam said,

> I don't know if the system is introduced anywhere; I am talking about the circumstances in Dhaka. Access would be easier if the Upazila Education Officer could provide a link and ensure every teacher joined Shikkhok Batayon. It can also be done by involving principals. I think that while 10% of teachers work willingly, the remaining 90% are not easily accessible and require active involvement as well. (Interview # 4, 03-09-22)

Another Interviewee, Selina Begum, added, To talk about Shikkhok Batayan, beginners like me have trouble using the platform. I did not know the user rules or where to upload videos. (Interview # 3, 07-09-22)

The FDG discusses teachers' workload, infrastructure, guidelines, and Portal content organization. One teacher from FGD, Farzana Islam, said that

> When I joined, I felt it would have been easier if a video tutorial showed how to do these things. I sent a tutorial video to a colleague from another Upazila who was having trouble opening an account. (FGD # 1, 11-11-22)

One teacher, Nurzahan Akter, focused on technical issues at FGD, saying,

> Sometimes we couldn't log in or register. There are also website breakdown issues. Also, in some courses, the answer is inaccurate, even though it is accurate due to a technical problem. It could be a server issue, but it is a major issue for some users. (FGD # 2, 11-11-22)

E-learning platform challenges included network and internet issues, according to educational experts. In the interview, they also mentioned learners' motivation. One educational expert, Afzal Hossain, said,

> Bangladesh has many challenges. Technology, slow network coverage, and device limitations are major obstacles. Network coverage may be an issue for Char teachers taking the course. Finding what's needed is also difficult. A teacher needs help with a topic but doesn't know where to look. Another issue is teacher motivation. (Interview # 5, 06-02-23)

The a2i expert Mithun Saha listed problems like network failure, a lack of devices, low teacher motivation, too much work, and users needing to learn technology. Mr. Saha said

> Major challenges include internet and device access; some people struggle with this mentality. They asked why I should train or what the benefits were. Some people think I will get 1,000 takas for face-to-face training, but there is no allowance. So why should anyone spend on the internet? (Interview # 7, 29-01-23)

Mr Saha also added that self-improvement is unimportant in Bangladesh and mentioned that recognition, like valuing online training, is another challenge. As the government issues certificates, government officials and others should value online training more. (Interview # 7, 29-01-23)

The a2i expert Mithun Saha acknowledges internal server issues. As mentioned, there are some challenges with the email or OTP on the phone, but we are working on that (Interview # 7, 29-01-23)

> Both educational and a2i experts say transparency is a significant challenge. The a2i expert Mithun Saha said that ensuring teachers complete the training by themselves is a major challenge. It is non-traceable. So, teachers' motivation is the main key. (Interview # 5, 06-02-23)

4.3.3 Expectations from the Government and other stakeholders regarding using e-learning platforms

Research participants were asked to discuss expectations from the government and stakeholders on e-learning platforms. All the participants agreed that the government should focus on e-learning platforms and give teachers time or room in their schedules to learn how to use them. One teacher, Shamima Akter, said in the interview,

> The government has to step forward. As Bangladesh is a small country, the government has many limitations, so some people from our society that are interested and financially rich can help here. Their involvement can increase the scope of teachers' professional development using e-learning platforms. (Interview # 2, 05-09-22)

Collaboration among the stakeholders was also mentioned. One teacher, Selina Begum, said that the Government, non-government, and principals must work together without blaming anyone. Actually, collaboration among ourselves is crucial. (Interview # 3, 07-09-22)

One teacher, Md. Islam suggested that the government may provide devices for teachers in the interview. Mr. Islam said,

> Two teachers in our school are invited for ICT training; they replied that they don't have laptops. If given a laptop or smartphone, they would have no excuse. Sixteen teachers use our two laptops. Who gets them if everyone wants them? The government can offer laptop discounts. (Interview # 4, 03-09-22)

The FGD participants mentioned government initiatives like technological support, device support, a professional development zone, and time. One FGD participant, Amina Khatun, said that

> Teachers are burdened with various workloads. Most primary school teachers had five classes per day, a high student-teacher ratio. In light of that, teachers' professional development is limited and time-consuming. Thus, the

> government should set aside time for teacher training. The headteacher or principal will coordinate and follow up. (FGD # 1, 11-11-22)

Educational experts also stressed government initiatives and said the government should prioritize e-learning since many teachers need professional development. Online training saves time and money. One educational expert, Afzal Hossain, suggested that,

> The government could allow device and internet access for school teachers and time from their service period to use those platforms. It will help teachers develop professionally, improving the teaching-learning process. (Interview # 5, 06-02-23)

Another expert Md. Rasel said that the Government could add online certifications as criteria for promotion, or they could rank teachers based on their online training. (Interview # 6, 08-02-23)

The a2i expert Mithun Saha mentioned government initiatives. Mr. Saha said that

> Muktopaath and Sikkhok Batayan are e-learning portals initiated by the government through a2i, and the certificates awarded to teachers after completing the training are also issued by the government. Thus, a2i is trying to partner with the education ministry to value e-learning certificates more. (Interview # 7, 29-01-23)

4.3.4 Recommendations for further development

In this study, the participants were requested to provide feedback on improving the e-learning platform. The participants highlighted two key suggestions: the e-learning platforms' contents and the government's mandate for e-learning courses. One teacher, Poli Akter, said that

> More teachers will join if the government makes training mandatory since all teachers must follow the rules. The TEO, ATEO, or anyone else cannot stop us from following a higher authority's orders. They will inspire us to do. (Interview # 1, 05-09-22)

E-learning platforms should offer more courses, according to other participants. One teacher, Md. Islam said I think more subjects should be included. There should be more courses like grammar, English presentation, or social science. Every subject should be included. (Interview # 4, 03-09-22)

Compatible devices and internet packages were FDG's main recommendations. One teacher Md. Nazmul said at FGD that

> A primary school teacher's salary is insufficient compared to today's lifestyle. Everyone needs a smartphone to join online platforms. It must be a good phone too. I have a phone, but it's old. The thing is, we should be provided with online training equipment. (FGD # 1, 11-11-22)

Self-motivation and duties were also mentioned in FGD. One teacher, Nurzahan Akter, said,

> We shouldn't limit ourselves to obstacles. I had to go to neighborhoods to get good network coverage. I wanted to learn, so I did that. We should now value online courses as much as offline training. (FGD # 2, 11-11-22)

One educational expert, Afzal Hossain, said,

> Not everything is related to money or accessibility. Some things can be done by self-motivation. We had few devices, poor connectivity, time constraints, and so on, but there are learning platforms, and people are using them. So, if we could motivate our teachers and convince them of the importance of professional development, e-learning platforms would increase and our education system would benefit. (Interview # 5, 06-02-23)

Another expert, Md. Rasel said that

> NGOs or other organizations should focus more on e-learning platforms. I know the British Council, 10 Minute School, Teach For Bangladesh, Muktopaath, and Sikkhok Batayan are helping. To improve education, we must collaborate. (Interview # 6, 08-02-23).

a2i expert Mithun Saha said they are working on more courses to accommodate accessibility and inclusivity for all teachers while ensuring the quality of the course contents. (Interview # 7, 29-01-23)

The challenges of online learning include poor internet connectivity, device issues, teachers' excessive workload, a lack of recognition, and e-learning server issues. Teachers also lack motivation. These issues can be resolved if the government provides devices and time for professional development. To get all teachers on the platform, the government could make e-learning courses mandatory. Content organization and quality are also critical considerations for e-learning platform developers. All of these will improve Bangladesh's education system and help teachers.

Chapter 5: Discussion & Conclusion

5.1 Discussion

This chapter is focused on the key findings from the study, including the understanding of professional development, its importance, the use of e-learning platforms for professional development, challenges of using e-learning platforms, and recommendations and implications of the study findings.

5.1.1 Uses of e-learning platforms for professional development

The study initiates with the teachers' professional experiences and training. In this study, all participants have adequate teaching experience with a range of training. According to Wayne and Youngs (2003), research suggests a link between teacher experience and student achievement. Using information from 4,000 teachers in North Carolina, for example, Clotfelter et al. (2006) found that teacher experience was linked to better student performance in reading and math. Wiswall (2013) and Gerritsen et al. (2014) did more research and found that teachers' experience had a cumulative effect on how well their students did. The teachers also know the importance of professional development and the use of different tools to support their professional development. The teacher's professional development is vital because teaching requires spontaneous learning and adaptation. Darling-Hammond et al. demonstrated in their 2009 research that educators need to develop skills in fostering higher-order thinking and performance to support students in acquiring the complex and analytical abilities required for the 21st century. In order to attain this objective, educational institutions need to provide teachers with more effective professional development opportunities than what was available before. The teachers in this study also shared similar perspectives.

Teachers are utilizing e-learning platforms for their professional development, most adopting them during the COVID-19 pandemic. However, they now regularly rely on e-learning

platforms for online training, acquiring new knowledge and skills, and exchanging their content with the community. Most teachers in this study have found the e-learning platforms helpful, especially in acquiring new skills. According to research published in the International Journal of Emerging Technologies in Learning, online courses can assist teachers in strengthening their abilities in pedagogy and classroom teaching (Chen et al., 2018). Also, research published in the Journal of Educational Computing Research (Xiong et al., 2019) says that online professional development courses can help teachers better use technology to help students learn. Another study from the Journal of Technology and Teacher Education (Dawson et al., 2017) found that teachers can learn new skills through e-learning, especially when combined with in-person professional development opportunities.

The teachers also found that e-learning platforms are a place for knowledge sharing and a collaborative community. As per An's (2018) study, online programs for professional development help teachers share their knowledge. The study found that online learning environments can help teachers connect and discuss their experiences, leading to more cooperation and knowledge sharing. In another research, Burns et al. (2017) discovered that online learning can help instructors form professional learning groups. The study found that online learning environments let instructors work together to learn and share knowledge, which helps teachers feel like they belong to a community of practice and have a shared professional identity.

The accessibility of e-learning platforms was also highlighted by teachers. According to research, e-learning is a flexible and accessible learning method for students with family or professional obligations and those who reside in rural places where traditional classroom settings are unavailable (Beard & Wilson, 2006). According to Ally (2004), e-learning gives persons who cannot attend traditional classroom settings due to various factors such as distance, time limits, and physical disability access to education. The participants also

indicate time-saving features of e-learning platforms, which help them access knowledge appropriately. These findings are also relevant to the research. The study showed that e-learning allows learners to take lessons anywhere and anytime. Research showed that using internet-based interactive information, e-learning supports several learning styles. Technology and the internet have made web-based learning and teaching more popular. The emerging trend of e-learning is continuously evolving, providing users with the flexibility to learn beyond time and location constraints. (Songkram, 2015).

The study finds that the teachers use their gained knowledge from the e-learning platform in their classroom, and it is helping them in their teaching. Haleem et al., (2022) showed that the Teachers who participated in e-learning programs reported being able to transmit their new knowledge and abilities to the classroom. Additionally, according to Cavanaugh et al. (2009), e-learning has the potential to be a successful tool for professional development, as it allows teachers to learn quickly, access various materials, and collaborate with other teachers.

5.1.2 Challenges of using e-learning platforms

The participants mentioned the challenges of using e-learning platforms and all mentioned network issues in their responses. Similar results have been found in several studies. According to Basar et al. (2020), the internet connection was the most important element influencing the efficiency of e-learning. Network connectivity was one of the biggest concerns, with 61% of respondents citing issues with internet access, according to research by Rosita Suhaimi and Norshidah Mohamed (2020) on the challenges students faced using e-learning platforms during the COVID-19 epidemic in Malaysia.

Teachers also mentioned the need for completable devices to use the e-learning platform. They have urged the management to arrange devices for more engagement in e-learning platforms. A common barrier to utilizing e-learning that has been identified in several studies

is the lack of appropriate devices. In 2020, during the COVID-19 pandemic, the United Nations Children's Fund (UNICEF) conducted research to evaluate the impediments faced by students and teachers in accessing remote schooling. According to the UNICEF report, just 34% of homes in low- and middle-income nations had an internet connection, and only 64% of children had access to a household device such as a computer or tablet. This lack of device and internet connectivity was a significant obstacle to teachers' and students' participation in e-learning platforms. In 2016, the World Bank examined the significance of digital technology in enhancing educational results in developing nations. The report says that even though many schools in these countries had computer labs, they were often not used because of insufficient qualified teachers, maintenance issues, and limited access to energy. This lack of digital device availability was a key impediment to educational success.

Furthermore, teachers mentioned that their technological incompetence was a major barrier to using e-learning platforms. They mentioned that they did not know how to operate email or e-learning platforms, which caused barriers for them in using the e-learning platforms. The digital skill gaps of teachers can act as a significant barrier to the adoption of e-learning. Suppose an instructor needs to gain the skills or knowledge to use educational technology correctly. In that case, they may need help creating interesting online learning experiences and fixing technical problems during online instruction. If teachers do not know much about technology, they might not be confident using it well in the classroom, making it harder to use e-learning. This lack of confidence could make people less likely to try out new tools and technologies, which would slow down the development of e-learning (Bao, 2020).

Teachers also mentioned their motivation for using e-learning platforms. Zhang et al. (2021) found that teachers need to be more motivated in professional development and engaged in self-learning. Teachers’ motivation is important to the success of e-learning. According to several studies, motivated instructors are more likely to utilize technology successfully in the

classroom and engage students in meaningful learning experiences. Tondeur, van Braak, and Valcke (2017) found that teachers' willingness to use technology in the classroom was linked to how useful they thought it was, how easy it was to use, and how confident they were in its use. The study also emphasized the need to provide teachers with proper training and support to boost their enthusiasm to use technology in the classroom.

In addition, teachers mentioned recognition from both the community and management about the achievements of e-learning. The lack of recognition hinders the motivation to learn. They have urged management to recognize certifications or learnings of e-learning platforms to motivate teachers. According to research by Lee and Choi (2011), rewards and incentives can enhance instructors' enthusiasm to employ technology in the classroom. According to Zhang et al. (2021), giving teachers benefits like praise, money, and chances to improve their skills can make them more likely to integrate technology.

The vast amount of information that needs to be presented is one of the biggest obstacles to content management in e-learning. The need for proper guidance in finding a course or content was a barrier for e-learning users. Huang and Liang's (2014) research shows that e-learning courses often have much content, which can overwhelm learners and make it hard for them to pick out the most important information.

Furthermore, there need to be uniform standards for arranging e-learning content. According to Kuo, Walker, Belland, and Schroder (2013), there are several ways to content arrangement in e-learning, making it challenging for consumers to move between courses and platforms. Therefore, developing uniform standards for organizing e-learning content is crucial to ensure a seamless transition for teachers between different courses and platforms. This would simplify the learning process for students and make it easier for teachers to structure their

materials in a consistent and coherent manner, ultimately leading to an enhanced e-learning experience.

Moreover, teachers have shared their expectations from the government to reduce workload, allowing them to use e-learning for professional development in workstations. Teachers are burdened with academic and government activities, and thus it constrains the time for their self-development. The teacher's workload can undoubtedly hinder their professional progress. If their workload is excessive, teachers may have less time and energy for professional development activities, such as attending conferences, engaging in peer observation and feedback, and seeking more education or training. According to research published in the Journal of Educational Administration and History, excessive teacher workload impedes professional development. The study questioned over 400 primary school teachers in the United Kingdom and discovered that those who reported higher workloads also indicated decreased engagement in professional development activities (Schweisfurth, 2011).

Similarly, according to a report by the National Council on Teaching and America's Future, teachers' excessive workloads were a significant barrier to their involvement in professional development programs. According to the survey, high student-to-teacher ratios and greater administrative tasks might worsen teachers' limited time and resources for professional development (Darling-Hammond et al., 2017). Moreover, according to research published in the Journal of Educational Transformation, teachers who reported a heavy workload were less likely to engage in instructional innovation, a crucial element of professional growth. The study examined more than 1,000 instructors in the United States and found that those with heavy workloads were less willing to experiment with novel educational strategies or technology (Hew & Brush, 2007).

5.2 Conclusion

The study discovered the opportunity and challenges of using the current e-learning platforms in Bangladesh for the professional development of urban primary teachers. The study involves teachers with adequate teaching experience and knowledge of professional development. Research suggests that teacher experience and professional development are vital to student achievement.

The teachers of this study often use e-learning platforms to train, learn new skills and knowledge, and share content with others in the community. E-learning platforms offer several benefits, such as flexibility, accessibility, and time-saving features. They also provide a collaborative community for knowledge sharing and professional learning groups. Teachers use the knowledge gained from the e-learning platform in their classroom, which helps their teaching. On the contrary, this study also highlights specific issues, such as the requirement of network connectivity and devices, coupled with the digital skills gap among teachers that impede effective e-learning.

Overall, the research suggests that e-learning platforms have the potential to serve as a critical resource for teachers' professional development. However, there is a necessity for improved infrastructure and the development of digital skills to address the challenges involved.

5.3 Recommendations

Based on the findings from the results, the following suggestions can enhance e-learning platforms in Bangladesh, positively impacting urban teachers' professional development.

- Teacher Trainers, Training Institutes, and URCs should provide training and promote the effective use of e-learning platforms for teachers' professional development. Furthermore, teachers should be urged to engage in online communities of practice to exchange their experiences and resources concerning e-learning platforms.
- To create effective e-learning platforms, it is essential to make the platforms easily accessible to everyone, regardless of their technical expertise or financial resources. Additionally, it is crucial to consider local cultural and linguistic contexts when designing platforms to cater to the needs of Bangladeshi teachers and students.
- E-learning platforms should be interactive and engaging, using movies, animations, and gamification to keep people interested. This will support maintaining student engagement and motivation, leading to improved learning results. E-learning platform providers should also collaborate with educational institutions to develop content aligned with teachers' curriculum and professional development needs.
- To ensure the best utilization of e-learning platforms in professional practices, teacher trainers and Upazila Education Officers should offer follow-up training and provide ICT support to teachers upon completion of e-learning courses. This will help bridge the gap between the acquired knowledge and its practical application, enabling teachers to apply their learnings in their professional practices effectively.
- Lastly, the government should invest more in e-learning infrastructure development; This includes giving schools the proper hardware and software so that teachers can learn online and ensuring that everyone has access to high-speed internet.

References

Adamu, & S., Awwalu, J. (2019). The Role of Artificial Intelligence (A.I.) in Adaptive eLearning System (AES) Content Formation: Risks and Opportunities Involved. eLearning Africa.

Ahmed, M., & Nath, S. R. (2004). Quality with equity: the primary education agenda. Research Reports (2004): Social Studies, Vol – XXXV, 116–170.

Akbulut, Y., & Cardak, C. (2012). Adaptive educational hypermedia accommodating learning styles: A content analysis of publications from 2000 to 2011. Computers & Education. https://doi.org/10.1016/j.compedu.2011.10.008.

Alamgir, M. (2019, December 24). Primary Education Quality: Long way to go. The Daily Star. Retrieved from https://www.thedailystar.net/frontpage/news/primary-education-quality-long-way-go-1844338

Al-Atabi, A. J., & Al-Noori, B. S. M. (2020). E-Learning In Teaching. ResearchGate. https://www.researchgate.net/publication/341684491_E-Learning_In_Teaching

Alejandro, J. G., & Richard, J. M. (2016). Improving Education in Developing Countries: Lessons from Rigorous Impact Evaluations. Retrieved February 8, 2020, from https://journals.sagepub.com/doi/abs/10.3102/0034654315627499

Allen, M. (2009). "What is Continuing Professional Development (CPD)?."

Ally, M. (2004). Foundations of educational theory for online learning. Theory and Practice of Online Learning.

Ally, M. (2008). Theory and practice of online learning: Foundations of educational theory for online learning, (2nd ed.). Edmonton: A.U. Press, Athabasca University.

An, Y. (2018). The effects of an online professional development course on teachers' perceptions, attitudes, self-efficacy, and behavioral intentions regarding digital game-

based learning. Educational Technology Research and Development, 66(6), 1505–1527. https://doi.org/10.2307/45018687

Anderson, T. (2011). Theory and practice of online learning (5th ed.). Edmonton, Canada: A.U. Press Athabasca University

Avalos, B. (2011). Teacher professional development in Teaching and Teacher Education over ten years. Teaching and Teacher Education 27, no. 1: pp. 10–20.

BANBEIS (2007). Bangladesh Educational Statistics-2006, Dhaka: BANBEIS. (2007)

Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. Human Behavior and Emerging Technologies. 2. 10.1002/hbe2.191.

Basar, M., Zulaikha, M., & Jamaludin, A. (2021). The Effectiveness and Challenges of Online Learning for Secondary Schools Students -A Case Study. Asian Journal of University Education. 17. 119-129. 10.24191/ajue.v17i3.14514.

Bates, C., & Morgan, D. (2018). Seven Elements of Effective Professional Development. The Reading Teacher. 71. 623–626. 10.1002/trtr.1674.

Beard, C., & Wilson, J. (2001). The Power of Experiential Learning: A Handbook for Trainers and Educators.

Bonk, C. J., & Graham, C. R. (2012). The handbook of blended learning: Global perspectives, local designs. John Wiley & Sons.

Borko, H. (2004). “Professional Development and Teacher Learning: Mapping the Terrain.” Educational Researcher, Vol. 33, No. 8, pp. 3–15. Available at: http://media.leidenuniv.nl/legacy/educ-researcher-33-%282004%29-3-15---borko---professional development-and-teacher-learning.pdf (Accessed: December 21, 2015).

Brown, A. L., & Palincsar, A. S. (2018). Guided, cooperative learning and individual knowledge acquisition. In Knowing, learning, and Instruction (pp. 393-451). Routledge.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated Cognition and the Culture of Learning. Educational Researcher, 18(1), 32–42. https://doi.org/10.3102/0013189X018001032

Brusilovsky, P. (2001). Adaptive hypermedia. User Modeling and User-Adapted Interaction, 11(1), 87–110. https://doi.org/10.1023/a:1011143116306

Bubb, S. (2005). Helping Teachers Develop. ERIC. https://doi.org/10.4135/9781446213070

Burns, A. (1999). Collaborative action research for English language teachers. Cambridge: Cambridge University Press.

Burns, M., Naughton, M., Preast, J., Wang, Z., Gordon, R., R., V., S., & Michelle. (2017). Factors of Professional Learning Community Implementation and Effect on Student Achievement. Journal of Educational and Psychological Consultation. 28. 1–19. 10.1080/10474412.2017.1385396.

Cappel, J. J., & Hayen, R.L. (2004). Evaluating E-learning: A case study. Journal of Computer Information Systems,44(4), 49-54.

Cavanaugh, C.S., Barbour, M.K., & Clark, T. (2009). "Research and practice in K-12 online learning: A review of open access literature," The International Review of Research in Open and Distributed Learning, 10(1). Available at: https://doi.org/10.19173/irrodl.v10i1.607.

Chalmers, L., & Keown, P. (2006). Communities of practice and professional development. International Journal of Lifelong Education, 25(2), 139–156. https://doi.org/10.1080/02601370500510793

Chantal, V., & Martina, M. (2007). Computer attitudes of primary and secondary learners in South Africa. Computers in Human Behavior 23, no. 4(1762–1776). https://doi.org/10.1016/j.chb.2005.10.004

Chen, C.M. (2008). Intelligent Web-based Learning System with Personalized Learning Path Guidance. Computers & Education 51(2), 787–814. Computers & Education. 51. 787–814. 10.1016/j.compedu.2007.08.004.

Chetia, B. (2019). Social learning in online learning – 4 ways to get it right. CommLab India.

Clark, T. (2000). Online professional development: Trends and issues. Macomb, IL: Center for the Application of Information Technologies.

Clarke, V., & Braun, V. (2013). Successful qualitative research: A practical guide for beginners. London: Sage. ISBN 9781847875815

Clotfelter, C, T., L., Helen, F., & Jacob, L. (2007). Teacher Credentials and Student Achievement in High School: A Cross-Subject Analysis with Student Fixed Effects. Journal of Human Resources. 45. 10.1353/jhr.2010.0023.

Connolly, T., & Stansfield, M. (2006). Using Games-Based eLearning Technologies in Overcoming Difficulties in Teaching Information Systems. Journal of Information Technology Education: Research, 5(1),

Cotton, K. (2008). Computer-Assisted Instruction. Encyclopedia of Special Education. https://doi.org/10.1002/9780470373699.speced0481.

Cox, M. J. (2013). Formal to informal learning with I.T.: Research challenges and issues for e-learning. Journal of Computer Assisted Learning, 29(1), 85–105.

Creswell, J. W. (2012). Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research. Boston, MA: Pearson Education.

Cuban, L. (2001). Oversold and underused: Computers in the classroom. USA: Harvard University Press.

Darling-Hammond, L., Wei, R. C., Andrée, A., Richardson, N., & Orphanos, S. (2009). Professional learning in the learning profession: A status report on teacher development in the United States and abroad. National Staff Development Council.

Davis, M. R. (2009). Creating value with online teacher learning. Education Week, 2(2). Retrieved from www.teachersourcebook.org/tsb/articles/2009/03/16/02onlinepd.h02.html

Dawson, P., Henderson, M. A., Mahoney, P., Phillips, M., Ryan, T., Boud, D., & Molloy, E. (2019). What makes for effective feedback: staff and student perspectives. Assessment & Evaluation in Higher Education, 44(1), 25–36. https://doi.org/10.1080/02602938.2018.1467877

Day, C., & Sachs, J. (2005). International Handbook on The Continuing Professional Development Of Teachers. Amsterdam University Press.

Day, R., & Payne, L. (1987). Computer-managed instruction: an alternative teaching strategy. Journal of Nursing Education, 26(1), 30-36. https://pubmed.ncbi.nlm.nih.gov/3029349/

Dede, C., Breit, L., Ketelhut, D. J., McCloskey, E., & Whitehouse, P. (2005). An overview of current findings from empirical research on online teacher professional development. Harvard Graduate School of Education

Dede, C., Whitehouse, P., & Brown L'Bahy, T. (2002). Designing and studying learning experiences using multiple interactive media bridge distance and time. In C. Vrasidas & G.V. Glass (Eds.), Distance education and distributed learning (pp. 1–29). Charlotte, NC: Information Age Publishing, Inc.

Dely, L. E., & Theresa, C. (2015). 'Really on the ball': exploring the implications of teachers' PE-CPD experience, Sport, Education and Society, 20:3, 381–397, DOI: 10.1080/13573322.2013.765400

Donnelly, R., & O'Farrell, C. (2006). Constructivist E-Learning for Continuous Professional Development of Academic Staff.

DPE (2006). Activities of DPE, Retrieved January 2008, from http://www.dpe.gov.bd/activities_dpe.php.

DPE (2007). Baseline report of Second Primary Education Development Programme (PEDP-II)-2006, Dhaka: Directorate of Primary Education.

DPE (2018). Development Project Proforma (DPP) of the Fourth Primary Education Development Program (PEDP4)

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? Educational Technology Research and Development, 53(4), 25–39. https://doi.org/10.1007/BF02504683

European Commission (2010). Thematic Report on Teachers' Professional Development: Europe in International Comparison. Luxembourg: Office for Official Publications of the European Communities.http://ec.europa.eu/education/school education/doc1962_en. Htm

Evans, D. K., & Popova, A. (2015). What Works to Improve Learning in Developing Countries? An Analysis of Divergent Findings in Systematic Reviews. Policy Research Working Papers. https://doi.org/10.1596/1813-9450-7203

Feigh, K. M., Dorneich, M. C., & Hayes, C. C. (2012). Toward a characterization of adaptive systems: A framework for researchers and system designers. Human Factors: The Journal of the Human Factors and Ergonomics Society, 54(6), 1008-1024. https://doi.org/10.1177/0018720812443983

Filimban, G. (2008). Factors that contribute to the effectiveness of online learning technology at Oregon State University (unpublished manuscript). Retrieved from Scholars Archive at Oregon State University Electronic Theses and Dissertations.

Fishman, B., Marx, R., Best, S., & Tal, T. (2003). Linking teacher and student learning to improve professional development in systemic reform. Teaching and Teacher Education. 19. 643–658. 10.1016/S0742-051X(03)00059-3.

Gaible E, Burns M. (2005). Using technology to train teachers: Appropriate uses of ICT for teacher professional development in developing countries. World Bank; 2005. https://www.infodev.org/infodevfiles/resource/InfodevDocuments_13.pdf.

Garrison, D.R., & Anderson, T. (2003). E-learning in the 21st century, New York: Routledge Falmer.

Ginsburg, A., Gray, T., & Levin, D. (2004). Online professional development for mathematics teachers: A strategic analysis. Washington DC: National Center for Technology Innovation, American Institutes for Research.

Gotschall, M. (2000). E-learning strategies for executive education and corporate training. Fortune 141(10): 5–59

Gutierrez, K. (2014, March 24). 10 great moments in eLearning history.

Haitham, (2009). E-learning and management information systems universities need both. eLearn Magazine, 52(20), 23-32. Retrieved from elearnmag.acm.org/archive.cfm?aid=1621693

Hasan, M. N. (2020). Factors Associated with Attrition of Girls Learners from School in Bangladesh. Journal of Scientific Research, 12(1), 29–38.

Hassan, M. S. (2018). Thinking School: A catalyst for transformational change in education. The Daily Star. Retrieved fromhttps://www.thedailystar.net/opinion/education/news/thinking- school-catalyst-transformational-change-education-1657018

Hauger, D., & Köck, M. (2007). State of the art of adaptivity in e-learning platforms. In Workshop on Adaptivity and User Modeling in Interactive Systems ABIS 2007.

Hayes, D.N.A. (2007). ICT and learning: Lessons from Australian classrooms. Computers & Education, 49(2), 385–395. Elsevier Ltd. Retrieved from https://www.learntechlib.org/p/67366/.

Helen J. Craig, Richard J., Kraft, & Du Plessis, J. (1998). Teacher Development- Making an Impact

Hennessy, S., D'Angelo, S., McIntyre, N., Koomar, S., Kreimeia, A., Cao, L., Brugha, M., & Zubairi, A. (2022). Technology Use for Teacher Professional Development in Low- and Middle-Income Countries: A systematic review. Computers and Education Open, p. 3, 100080. https://doi.org/10.1016/j.caeo.2022.100080

Hew, K. & Brush, T. (2006). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. Educational Technology Research and Development. 55. 223–252. 10.1007/s11423-006-9022-5.

Hoagwood. (2013). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Research Gate.

Hong, J., Liu, Y., Liu, Y., & Li, H. (2021). High School Students'Students' Online Learning Ineffectiveness in Experimental Courses During the COVID-19 Pandemic. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.738695

Hrastinski, S. (2008). Asynchronous and synchronous e-learning. Educause quarterly, 31(4), 51–55. Retrieved from https://net.educause.edu/ir/library/pdf/eqm0848.pdf

Huang, R., & Liang, Y. (2014). Investigating learners' satisfaction and learning performance in an e-learning environment. Journal of Educational Technology Development and Exchange, 7(1), 1-14.

Islam, M. Z. (2019, March 28). Training goes digital. The Daily Star. Retrieved from https://www.thedailystar.net/business/training-goes-digital-1554340

Jameson, A. (2009). Adaptive interfaces and agents. In A. Sears & J. A. Jacko (Eds.), Human-computer interaction: Design issues, solutions, and applications, (pp. 105–130). Boca Raton, FL: CRC Press. https://doi.org/10.1201/9781420088861.ch6

Jamieson-Proctor, R., Albion, P., Finger, G., Cavanagh, R., Fitzgerald, R., Bond, T., & Grimbeek, P. (2013). Development of the TTF TPACK Survey Instrument. Australian Educational Computing, 27(3),26–35.

Jennex, M.E. (2005). Case Studies in Knowledge Management. Idea Group Publishing: Hersley

Jonassen, D. H., Howland, J., Moore, J., & Marra, R. M. (2003). Learning to solve problems with technology: A constructivist perspective.

Jung, I. (2005). ICT-pedagogy integration in teacher training: Application cases worldwide.

Kabir, A. (2018, February 15). Reading Skills in Mother Tongue: Foundation of Quality Education. The Daily Star. Retrieved from https://www.thedailystar.net/round-tables/reading-skills-mother-tongue-foundation-quality-education-1534753

Kandasamy, M., & Shah, P. B. H. M. (2013). Knowledge, attitude, and use of ICT among ESL. GSE Journal of Education, 94(19), 185–199.

Keller, J. M. (1987). Development and use of the ARCS model of instructional design. Journal of instructional development, 10(3), 2-10.

Khan, A. (2007, October 31). State of PTIs in Bangladesh. The Daily Star. Retrieved from https://www.thedailystar.net/news-detail-9575

Khan, S. (2019). C-DELTA: Preparing learners as digital leaders in Bangladesh.

Kirby, D., Sharpe, D., & Barbour, M. (2007). Student perceptions and preferences for tertiary online course: Does prior high school distance learning make a difference? In Proceedings of Annual Conference on European Open and Distance Learning. Retrieved from European Distance and E-Learning Network database.

Kothari, C. R. (2008). Research Methodology, Methods and Techniques (2nd ed., pp. 109-110). New Delhi: New Age International (P) Limited.

Kuo, Y., Walker, A., Schroder, K. E. E., & Belland, B. R. (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. Internet and Higher Education, 20, 35–50. https://doi.org/10.1016/j.iheduc.2013.10.001.

Layton, J. (2013). How massive open online courses (MOOCs) work. HowStuffWorks.

Leach, J. (2005). Do new information and communication technologies have a role to play in achieving quality professional development for teachers in the global south? The Curriculum Journal, 16(3), 293–329. https://doi.org/10.1080/09585170500256495

Lee, J. (2000). Tasks and communicating in language classrooms. Boston: McGraw Hill.

Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. Educational Technology Research and Development. 59. 593-618. 10.1007/s11423-010-9177-y.

Leimeister, J., Sidiras, P., & Krcmar, H. (2004). Success factors of virtual communities from the perspective of members and operators: an empirical study. 37th Annual Hawaii International Conference on System Sciences, 2004. Proceedings of The. https://doi.org/10.1109/hicss.2004.1265459

Leshowitz, D., K.E., & Symington, S. (1999). Effective thinking: An ActivE-Learning Course in critical thinking. Current Issues in Education, 2(5). Retrieved from http://cie.asu.edu/ojs/index.php/cieatasu/article/view/831

Liaw, S.S., & Huang, H.M. (2003). Exploring the World Wide Web for online learning: a perspective from Taiwan. Educational Technology 40(3): 27–32.

Lin, H. S., Hong, Z. R., & Lawrenz, F. (2012). Promoting and scaffolding argumentation through reflective asynchronous discussions. Computers & Education, 59(2), 378–384. http://dx.doi. org/10.1016/j.compedu.2012.01.019

Littlejohn, A., & Pegler, C. (2007). Preparing for blended E-learning. Abingdon-On-Thames, England: Routledge. Google Books

Liu, Y., & Wang, H. (2009). A comparative study on e-learning technologies and products: from the East to the West. Systems Research & Behavioral Science, 26(2), 191–209.

MacKnight, C. (2000). Teaching critical thinking through online discussions. Educause Quarterly, 23(4), 38–41. Retrieved from ERIC database.

Major, L., & Francis, G. A. (2020). Technology-Supported Personalised Learning: A Rapid Evidence Review. CERN European Organization for Nuclear Research - Zenodo. https://doi.org/10.5281/zenodo.4556925

Maltz, L., Deblois, P., & The EDUCAUSE Current Issues Committee. (2005). Top Ten I.T. Issues. EDUCAUSE Review, 40 (1), 15-28.

McLaughlan, T. (2022). Chai Chats: An Online Teacher-Training Program of Observation and Social Connectedness Evaluated via Contribution Analysis. Educational Technology & Society, 25 (1), 92–107.

Moon, B. (1997). Open Learning and New Technologies in Teacher Education: New paradigms for development, European Journal of Teacher Education, Vol.20, No.1, pp.7–31.

Moon, B. (2003). A retrospective review of the national case studies on institutional approaches to teacher education, In: B. Moon, L. Vlasceau, and L. C. Barrows, (Ed.), Institutional approaches to teacher education within higher education in Europe: Current models and new developments. Bucharest, Hungery: UNESCO.

Mumbi, K., & Mesut, D. (2004). Using anchored instruction to teach preservice teachers to integrate technology in the curriculum. Journal of Technology and Teacher Education, 12(3), 431–445.

Murphy, E., Rodríguez-Manzanares, M. A., & Barbour, M. (2011). Asynchronous and synchronous online teaching: Perspectives of Canadian high school distance education teachers. British Journal of Educational Technology, 42(4), 583–591. http://dx.doi.org/10.1111/j.1467-8535. 2010.01112.x

Murphy, K. L., & Cifuentes, L. (2001). Using web tools: Collaborating and learning online. Distance Education, 22(2), 285-306.

NAPE (2001). Curriculum and Syllabus of C-in-Ed Course, Mymensingh: National Academy for Primary Education

Nunan, D (1988). The learner-centred curriculum. Cambridge: Cambridge university press.

OECD (2005). E-learning in tertiary education [Online]. Available at http://www.cumex.org. (Accessed 27 /02/ 2014).

Onguko, B.B.N. (2012). Teachers' Professional Development in a Challenging Educational Context – A Study of Actual Practice in Rural Western Kenya. A PhD Thesis. University of Calgary, Canada.

Organization for Economic Co-operation and Development (OECD). (2008). Teaching and Learning International Survey: The experience of new teachers - results from TALIS 2008. Paris: OECD Publications.

Organization for Economic Co-operation and Development (OECD). (2013). Teaching and Learning International Survey, TALIS 2013 - An international perspective on Teaching and Learning. Paris: OECD Publications.

Oye, N. D., Salleh, M., & Iahad, N. A. (2012). E-learning methodologies and tools. International Journal of Advanced Computer Science and Applications (IJACSA), 3 (2). ResearchGate

Panda, S. (2013). Unit-1, Reflection and continuing professional development: Implication for online distance learning. https://www.semanticscholar.org/paper Indian Journal of Open Learning, 13(1), 63–78.

Park, O., & Lee, J. (2003). Adaptive instructional systems. Educational Technology Research and Development, 25, 651– 684.

Pedder, D., & Opfer, V. D. (2011). Are we realising the full potential of teachers' professional learning in schools in England? Policy issues and recommendations from a national study. Professional Development in Education, 37(5), 741–758. https://doi.org/10.1080/19415257.2011.614812.

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. Computers & Education, 37(2), 163–178.

Picciano, A. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. Journal of Asynchronous Learning Networks, 6(1), 21–40.

Preece, J. (2001). Sociability and Usability in Online Communities: Determining and Measuring Success. Behaviour & I.T. 20. 347–356. 10.1080/01449290110084683.

Richards, J., & Islam, M. S. (2018). Assessing literacy and numeracy among primary school learners: A pilot survey in rural Bangladesh. International Journal of Educational Development, 61, 55–63.

Rovai, A. (2002). Building sense of community at a distance. International Review of Research in Open and Distance Learning (IRRODL), 3(1), 1–16.

Russell, M., Carey, R., Kleiman, G., & Venable, J. D. (2009). Face-to-face and online professional development for mathematics teachers: A comparative study. Journal of Asynchronous Learning Networks, 13(2), 71–87

Sahin, I., & Thompson, A. (2007). Analysis of predictive factors that influence faculty members technology adoption level. Journal of Technology and Teacher Education, 15(2), 167–190.

Schlanger, M.S., & Fusco, J. (2003). Teacher professional development, technology, and communities of practice: Are we putting the cart before the horse? Information Society, 19(3), 203–220.

Schwen, T.M., & Hara, N. (2003). Community of practice: A metaphor for online design? The Information Society, 19(3), 257–270.

Self, J. A. (1999). The defining characteristics of intelligent tutoring systems research: ITSs care, precisely. International Journal of Artificial Intelligence in Education, 10, 350–364.

Selim, H. M. (2007). Critical success factors for E-Learning acceptance: Confirmatory factor models. Computers & Education,49(2),396–413.

Sharples, M. (2000). The design of personal mobile technologies for lifelong learning. Computers & education, 34 (3-4), 177–193. https://doi.org/10.1016/S0360-1315(99)00044-5

Sly, L., & Rennie, L. J. (1999). Computer managed learning: Its use in formative as well as summative assessment. Leicestershire, U.K.: Loughborough University.

Smith, P. L., & Ragan, T. J. (1999). Instructional design (2nd ed.). New York: John Wiley & Sons, Inc.

Soni, A. (2020). Choosing the right eLearning methods: Factors and elements. eLearning Industry. elearningindustry.com/choosing-right-elearning-methods-factors-elements

Stanford-Bowers, D. E. (2008). Persistence in online classes: A study of perceptions among community college stakeholders. Journal of Online Learning and Teaching, 4(1), 37–50.

Strauss, A., & Corbin, J. (1998). Basics of qualitative research techniques. Thousand Oaks, CA: Sage Publications.

Stutchbury, K., Gallastegi, L., Woodward, C., & Gaved, M. (2022). School-based Continuing Professional Development: The Role of School Leaders. In Tenth Pan-Commonwealth Forum on Open Learning. https://doi.org/10.56059/pcf10.2256.

Suhaimi, R., & Mohamed, N. (2020). Students'Students' issues with e-learning at COVID-19 in Malaysia. Critical Reviews, 7(13), pp. 1396–1401, https://doi.org/10.31838/jcr.07.13.249

Suppes, P. (1971). Computer-assisted instruction at Stanford. Technical Report No. 174, Psychology and Education Series

TALIS (2009). Creating Effective Teaching and Learning Environment: First Result from TALIS.

Tamm, S. (2019). Types of e-learning. E-Student. e-student.org/types-of-e-learning/

The Education Commission. (2020). Report: Transforming the Education Workforce Report. The Education Commission. https://educationcommission.org/transformingtheeducationworkforce/

Todorova, A., & Osburg, T. (2010). Professional development program for technology integration: Facilitators and barriers to sustainable implementation. Literacy Information and Computer Education Journal, 1(1), 59–66.

Tondeur, J., Braak, V., & Johan, V. M. (2007). Curricula and the use of ICT in education. British Journal of Educational Technology. 38. 962 - 976. 10.1111/j.1467-8535.2006.00680.x.

Tu, C., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. The American Journal of Distance Education,16(3),131–150. Retrieved from Academic Search Premier database.

Twigg C. (2002). Quality, cost and access: the case for redesign. In The Wired Tower. Pittinsky MS (ed.). Prentice-Hall: New Jersey. p. 111–143.

UIS. (2006). Teachers and educational quality: Monitoring global needs for 2015. Montreal: UNESCO Institute for Statistics.

UNESCO Institute for Education (UIE): Annual report, 2005. (2005). In https://unesdoc.unesco.org/ark:/48223/pf0000145585. UNESCO Institute for Education. Retrieved January 9, 2023, from https://unesdoc.unesco.org/ark:/48223/pf0000145585.locale=en

UNICEF (2020). Covid-19 and school closures: Can Children continue learning, UNICEF DATA. Available at: https://data.unicef.org/resources/remote-learning-reachability-factsheet/ (Accessed: April 4, 2023).

Van Braak, J., Tondeur, J., & Valcke, M. (2004). Explaining different types of computer use among primary school teachers. European Journal of Psychology of Education, 19(4), 407.

Varis, T. (2011). Towards global education: The need for the 21st-century literacies. ICT in Teacher Education, p. 75.

Vrasidas, C., & Zembylas, M. (2004). Online professional development: Lessons from the field. Education and Training, 46(6/7), 326–334.

Waite, S. (2004). Tools for the job: A report of two surveys of information and communications technology training and use for literacy in primary schools in the West of England. Journal of Computer Assisted Learning, 20(1), 11–20.

Wakefield, J. (2009). Instructional design and technology. Retrieved on February 24, 2012, from Jenny Wakefield Blogsite.

Watson, J., Gemin, B., Ryan, J., & Wicks, M. (2009). Keeping Pace with K-12 Online Learning: An Annual Review of State-Level Policy and Practice, 2009. Evergreen Education Group. Retrieved from http://files.eric.ed.gov/fulltext/ED535909.pdf

Wayne, A. J., & Youngs, P. (2003). Teacher Characteristics and Student Achievement Gains: A Review. Review of Educational Research. https://doi.org/10.3102/00346543073001089

Webbink, S. G. &. E. P. &. D. (2014). Teacher quality and student achievement: Evidence from a Dutch sample of twins. ideas.repec.org. https://ideas.repec.org/p/cpb/discus/294.html

Welsh, E., Wanberg, C.R., Brown, E.G., & Simmering, M.J. (2003). E-learning: emerging uses, empirical results and future directions. International Journal of Training and Development 2003(7): 245–258

Wenger, E. (1998). Communities of practice: learning, meaning, and identity, Cambridge: Cambridge University Press.

Wenger, E. (2011). Communities of Practice: A Brief Introduction. ResearchGate. https://www.researchgate.net/publication/235413087_Communities_of_Practice_A_Brief_Introduction

Wentling T.L, Waight C, Gallagher J, La Fleur J, Wang C, & Kanfer A. (2000). E-learning - a review of the literature. Knowledge and Learning Systems Group NCSA 9.1–73.

Wiswall, M. (2013). “The dynamics of teacher quality,” Journal of Public Economics, 100, pp. 61–78. Available at: https://doi.org/10.1016/j.jpubeco.2013.01.006.

World Bank Group (2019). World Development Report 2018: Learning to Realize Education’s Promise. World Bank Publications.

World development report (2016). Open Knowledge Repository. Washington, DC: World Bank. Available at: https://openknowledge.worldbank.org/entities/publication/1683bbba-c275-580a-a2f5-c74f805b3679 (Accessed: April 4, 2023).

Wright, E. R., & Lawson, A.H. (2005). Computer-mediated communication and student learning in large introductory sociology classes. Teaching Sociology,33(2),122–135.

Zaid, A. A., (2009). Using e-learning to facilitate 21st-century learning.

Zhao, Y. (2007). Social studies teachers' perspectives of technology integration. Journal of Technology and Teacher Education, 15(3), 311–333.

Zhao, Y., Cziko, G. A. (2001). Teacher adoption of technology: A perceptual control theory perspective. Journal of Technology and Teacher Education, 9(1), 5–3.

Appendices

Appendix A. Consent Letter

Consent Letter

Dear Madam/Sir,

Purpose of the research:
This study intends to explore the viewpoints of teachers on the current e-learning platform (***Muktopaath/ Shikkhok Batayon***) in their professional development. This research will be conducted by the researcher as a part of a Master's thesis under BRAC Institute of Educational Development, Dhaka, Bangladesh.

Expectations from you:
If you decide to participate, you will be requested to provide your knowledge, attitudes, and experiences related to the current e-learning platform utilized in your professional development.

Risk and benefit:
There is no risk associated with participating in this survey. Additionally, teachers, teacher trainers, and policymakers may benefit directly or indirectly from the study's findings if they contribute to initiatives that incorporate participants' observations and opinions on e-learning platforms as a professional development tool.

Privacy, anonymity, and confidentiality:
The information you provide will be kept strictly confidential. We will protect your privacy and confidentiality about any details that you provide. We would be happy to answer your study questions, and if necessary, you are welcome to contact me via mobile phone. The researcher's contact number: +8801851-111485.

Future use of information:
The study may retain some of the collected information for future research purposes. However, in such cases, the data and information will not compromise the privacy, anonymity, and confidentiality of the participants or reveal their identities in any way.

Right not to participate and withdraw:
Participation in this research study is completely voluntary, and you have the sole discretion to decide whether or not to take part in the study. There will be no negative consequences or penalties for choosing not to participate in the study.

If you decide to participate in this research, kindly confirm your agreement by signing in the space provided below. Thank you for your valuable support and cooperation.

Signature of Participant	Date

Appendix B. Interview Guide for Teachers

Date: ---------- Place: ---------- Time: ----------
Duration: 01-hour Interviewer: Md. Abdul Malek
Name of interviewee: ---------- Age: ---------- Qualification ---------
Online platform: Zoom/ Google Hangouts/ Facebook Messenger/ Others
Working experience: Services ---------- This school: ----------

Section A: E-learning platforms in teacher's professional development

1. How long have you been in the teaching profession?

2. During this period, have you received any training?

a. Please Name those.

3. How is your training helping you to teach in the classroom?

4. What do you understand by training for professional development?

a. If yes, what type of training have you received for your professional development?

5. What are the things that are most important to you for your professional development?

6. Do you complete any e-learning courses for your professional development? What are those?

7. What evidence can you find that these platforms/courses are helping in your professional development?

8. How do you use these e-learning platforms/courses in your classroom teaching?

9. What concerns you most about the e-learning platform?

10. Do you feel that e-learning platforms can be accessible for every teacher's professional development?

11. Why do you feel so?

Section B: Challenges in practicing e-learning courses in classroom and professional practice

11. What challenges do you face in accessing e-learning platforms for your professional development?

12. What are your suggestions to overcome these challenges?

13. What type of support do you need to access e-learning platforms? From whom?

14. How favorable is the school and work environment for practicing learnings from this type of professional development?

15. Being a primary teacher, what are your expectations from the school authority and the government? List five items in order of priority.

16. Do you want to change anything to make the e-learning platforms more powerful/robust?

17. What would you recommend for making e-learning platforms more convenient for primary school teachers?

Appendix C. FGD Guideline

FGD No _____ Date_____ Place_____ Time _____Duration _____
Interviewer Name: _____

FGD Participants: Urban Primary Assistant Teachers

FGD Guideline Questions

1. What motivated you to join e-learning platforms?
2. What were the challenges you faced in e-learning platforms during completing different courses? Does this vary by subject/course? How?
3. What are/have been the barriers to joining these platforms/courses and how have these been overcome?
4. Do you see any current gaps in the e-learning platforms that the officials should address?
5. What are the strengths and weaknesses of these learning platforms for organizing better access to professional development?
6. What are your future training/capacity/resource needs in order to excel professionally through the e-learning platforms?
7. Is there anything else you would like to highlight?

Appendix D. Interview Guide for a2i Officials

Date: _____ Place:_____ Time: _____ Interview medium: _____
Interviewer: _____ Interviewee: _____
Designation: _____ Working area: _____

1. What is the duration of professional service at your current position?
2. Please state the objectives of the Shikkhok Batayan Platform
3. Are teachers receiving courses/Training from the Shikkhok Batayan?
4. Courses/Training are available on how many subjects/topics are currently on the platform?
5. How many teachers have completed Training from the platform to date?

6. How many teachers are currently enrolled with the platform?
7. Do the teachers learn something new from the Training provided by online platforms that are different from the regular Training?
8. Are the courses/training support the professional development of the teachers?
9. Do the teachers apply the knowledge from the courses/Training in their classroom?
   9.1. If they apply, does that helps to gain the intended learning outcomes?
   9.2. What could be the reasons if they do not apply in the classroom?
10. Is there any reinforcement for those getting online Training, like recognition, honorarium, etc., from your side?
11. What are the challenges in receiving the courses?
12. What could be done to demolish the challenges?
13. Is there any difference between rural and urban participants receiving on enrolling for the Training?
14. What kind of initiative would you take to make the platform easier for teachers so that more teachers could use the Shikkhok Batayan platform?

Appendix E. Interview Guide for Teacher Trainers

Date: Place: Time: Interview medium:

Interviewer: interviewee:

Office name: Designation: working area:

1. Please tell us how long you have worked as an educational professional.
2. How do you define Teachers' professional development (TPD)?
3. What is the importance of professional development for teachers in the Bangladeshi context?
4. From your experiences, please tell us about the areas where teachers need to develop more.
5. Are teachers using online platforms (Shikkhok Batayon/ Muktopaath) for their professional development?
6. How could online platforms (Shikkhok Batayon/ Muktopaath) help teachers in their Professional development?

7. What could make the difference in learning between online (e-learning) and offline (Face to Face) platforms?
8. Are teachers using their knowledge from online platforms (Shikkhok Batayon/ Muktopaath) in teaching?
9. What challenges do teachers face in using online platforms (Shikkhok Batayon/ Muktopaath) for their professional development?
10. What changes may the Online learning platforms (Shikkhok Batayon/ Muktopaath) bring to make them more teachers friendly?
11. What initiatives could make the teachers more interested in engaging with online learning platforms (Shikkhok Batayon/ Muktopaath)?
12. What could the Development organisations do to engage teachers more in online learning platforms (Shikkhok Batayon/ Muktopaath)?