Teachers' Perceptions on The Use of Information and Communication Technology (ICT) In Teaching Young Children (3-6 years) In Classroom

By

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A Thesis Submitted to Brac Institute of Educational Development in partial fulfilment of the requirements for the degree of

Master of Science in Early Childhood Development

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Declaration

It is hereby declared that

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

Student's Full name & Signature

Rafia Jabin
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Approval

Teachers' Perceptions on The Use of Information and Communication Technology (ICT) In Teaching Young Children (3-6 years) In Classroom.

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Of Summer, 2022 has been accepted as satisfactory in partial fulfilment of the requirement for the degree of Master of Science in Early Childhood Development on May 7,2024.

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Ethics Statement

Title of Thesis Topic: _____

Student name:

_____

1. Source of population

_____

2. Does the study involve (yes, or no)

a) Physical risk to the subjects
b) Social risk
c) Psychological risk to subjects
d) discomfort to subjects
e) Invasion of privacy

3. Will subjects be clearly informed about (yes or no)

a) Nature and purpose of the study
b) Procedures to be followed
c) Physical risk
d) Sensitive questions
e) Benefits to be derived
f) Right to refuse to participate or to withdraw from the study
g) Confidential handling of data
h) Compensation and/or treatment where there are risks or privacy is involved

4. Will Signed verbal consent for be required (yes or no)

a) from study participants
b) from parents or guardian
c) Will precautions be taken to protect anonymity of subjects?

5. Check documents being submitted herewith to Committee:

a) Proposal
b) Consent Form
c) Questionnaire or interview schedule

Ethical Review Committee:

Authorized by:
(chair/co-chair/other)

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Abstract

This study investigates teacher educators' perception of Information and Communication Technology (ICT) in teaching 3-6 years young children in Bangladesh, against the backdrop of the government's National ICT policy of 2022. The policies emphasize the integration of ICT across pre-primary sectors. Including teacher training. Ten educators from two different pre-primary schools were selected for IDI and FGD. During their interview they revealed that the view ICT as more than just a teaching tool, recognizing its potentials to enhance education quality and facilitate professional learning. However, they also acknowledge that simply providing ICT tool is insufficient for ensuring quality education; teachers need technological knowledge, pedagogical strategies for ICT integration and cross-curriculum experiences. Therefore, ICT courses in teacher education should go beyond operational skills to include social communication, knowledge construction and dissemination. Successful ICT integration requires a supportive professional culture and administrative support. Overall, the study underscores the importance of comprehensive ICT training for teachers and the need for a holistic approach to ICT integration in Bangladeshi education.

Keyword Teacher Perceptions; National ICT Policy and National Educational Policy; ICT Integration; Teaching young children; Teacher education programmes; Professional learning; Pedagogical strategies; Technological knowledge; Educational administration.

Dedication

It's wonderful to have someone like my parents who serves as a constant source of inspiration and support in pursuing my educational goals. It speaks volumes about the love and encouragement they provide.

Acknowledgement

First and foremost, I want to express my gratitude to Allah for showering me with blessings throughout my Masters course, allowing me to successfully complete my degree.

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like to express my gratitude to all of my ECD classmates for your mental support as we continue the course. Finally, I owe a great deal of gratitude to my parents and colleagues for their reliable direction and consistent motivation during my academic years, as well as the research and writing phases of this thesis.

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Acronyms

ICT- Information and Communication Technology

ECE- Early Childhood Education

NEP- National Education Policy

UN- United Nation

TPCK- Technological Pedagogical Knowledge

PCK- Pedagogical Content Knowledge

CPD- Continuous Professional Development

IDI- In-depth Interview

FGD- Focus Group Discussion

Chapter I Introduction & Background

Introduction

Education is a multifaceted endeavour influenced by various factors, including policy, management, curriculum development, and the teaching process. The ongoing global discourse on computer usage emphasizes the need for diverse societal segments to actively participate in the education system. The integration of Information and Communication Technology (ICT) in schools significantly impacts children's lives, shaping their perceptions, values, and cultural development, guiding them becoming global citizens. The widespread acceptance of ICT at the end of the 20th century has led to rapid transformations in the modern education system, encompassing teaching methods, instructional materials, and education as a discipline. The rapid integration of technology into various aspects of daily life has resulted in a significant transformation in the learning process in individuals. In educational sectors globally, with a particular emphasis on developing nations like Bangladesh. Human development, as highlighted by the institute of Medicine and National Research Council (2015), underscores the significance of early childhood experiences in shaping a child's educational trajectory. Consequently, early childhood education (ECE) is acknowledged as a critical stage for holistic development of young children before entering primary school.

In recent years, Information and Communication Technology (ICT) has been increasingly integrated into education systems worldwide, including Bangladesh. This integration aims to enhance teaching and learning processes, improve access to education and students for the digital age. This assignment will explore the impact of ICT on the Bangladeshi educational system. One of the significant contributions of ICT in Bangladesh's education system is improving access to education, especially in remote and underserved areas. Through the establishment of digital classrooms and online learning platforms, students across the country

can access educational resources and engage in interactive learning experiences. Additionally, initiatives such as the government's "Digital Bangladesh" vision have led to the distribution of laptops tablets to students, further bridging the digital divide and ensuring equitable access to education. ICT tools and resources have enhanced the quality of education in Bangladesh by providing teachers with multimedia content, simulations, and interactive learning materials. These resources make learning more engaging and facilitate better understanding of complex concepts. Moreover, the integration of ICT enables personalized learning experiences tailored to individual student needs, promoting student-cantered approaches to education.

ICT has also played a crucial role in enhancing teacher professional development in Bangladesh. Training programs and workshops on ICT integration in education are conducted regularly to equip teachers with the necessary skills and knowledge. By incorporating ICT into their teaching practices, educators can deliver more effective lessons, promote critical thinking and problem-solving skills, and adapt to diverse learning styles. In contrast to many developing nations, Bangladesh has traditionally employed teaching methodologies and ICT-related activities that fall short facilitating critical inquiry and knowledge construction. Recognizing this challenge over a decade ago, the country has recently undertaken an innovation action plan, providing laptops, multimedia tools, and other accessories to select primary schools in each upazila. Simultaneously, teachers in these schools receive training to incorporate ICT into the professional development.

The integration of ICT has led to the modernization of the curriculum in Bangladesh, aligning educational content with the demands of the digital age. New subjects such as computer science and information technology have been introduced, equipping students with essential digital literacy skills. Furthermore, ICT-enabled teaching methodologies encourage innovation and creativity among students, preparing them for future careers in technology-driven industries.

Despite the numerous benefits, the integration of ICT in the Bangladeshi education system faces several challenges, including infrastructural limitations, inadequate internet connectivity, and resistance to change among stakeholders. Addressing these challenges requires concerted efforts from the government, educational institutions, and other stakeholders to invest in infrastructure development, improve internet connectivity, and provide ongoing support for teachers. This recent change in schools, integrating ICT with necessary adjustments, occur within the complex educational context, considering factors like interpersonal interactions and mutual trust between students and teachers (Palinsar,2005). Some scholars argue that the global forces interacting with local politics at national, sub-national, and local levels contribute to a complex process that mediates global trends (Takayama,2007). These forces shape a country's education policies and draw inspiration from the educational policies of developed countries that adeptly navigate globalization and development processes. While historically, international education policies have been shaped by wealthy nations using Western theoretical paradigms (William,2015), international organisations like the United Nations (UN), ILO, UNESCO and UNICEF strive to integrate local education system into the broader perspective of globalization.

Statement of the Problem

The education system in Bangladesh has received limited attention in terms of research across various sectors, leading to a lack of comprehensive guideline for educational policies. Existing literature reviews indicate that only a few non-governmental organisation (NGOs) and donor agencies have conducted studies, resulting in a limited number of published papers. These papers often recommend further research on the implementation of Information and Communication Technology (ICT) in education training at the school level. Numerous

challenges have surfaced in the field, and addressing these challenges requires new research studies to explore suggestions across different broad areas.

Ali (2003, p. 2) identified three key areas for further research. The first areas focus on participation in the information society, the second examines how ICT impacts access, cost-effectiveness, and the quality of primary education, and the third delves into how ICT changes the education process.

As a research organization, the National Academy Education (NAPE) in Bangladesh has been actively involved in research activities over the past two decades. Despite providing an insider's view, these activities have highlighted that many objectives of the government's Primary Education Development Program III (PEDPIII) for development remain unachieved. This realization has motivated researchers pyritize ICT as a crucial research area for NAPE.

Furthermore, no specific studies have been conducted in the past to examine the usage of ICT hardware and software or the monitoring and evaluation mechanism at the school level. Consequently, investing the implementation of ICT equipment emerge as a significant research area for NAPE's research faculty. This situation justifies an inquiry into the use of ICT and its pedagogical implications, aiming to identify potential research issues for NAPE in the fiscal year 2016-17.

Purpose of the Study

- Determine the perception of ECD teachers on the use of technology in teaching young children
- Identify ECD teachers' behaviour and attitude toward the use of technology in teaching young children
- Detect factors hindering the usage of technology in teaching and learning in the early years

Significance and Justification of the Study

Bangladesh, characterized by a high population density, endeavours to achieve development by harnessing its human resources. The key to cultivating quality human resources lies n establishing a robust educational system. This system must be designed to provide access to modern technology for all children, irrespective of their socio-economic backgrounds.

Despite the critical role of Information and Communication Technology (ICT) in shaping educational landscapes, there is a noticeable absence of significant empirical research exploring the challenges and opportunities associated with ICT implementation in primary education in Bangladesh. Consequently, the primary objective of this study is to investigate and comprehended the current state and adoption of ICT in schools.

This research study serves dual purposes: exploration and evaluation. Through exploration, the study seeks to uncover the nature of issues related to the use of ICT in primary education in Bangladesh. Simultaneously, the evaluative aspect aims to assess the current status of ICT implementation in schools. Additionally, the researcher's intent to provide policy recommendations geared toward enhancing and optimizing ICT implementation in primary schools. The ultimate goal is to contribute the improvement of the overall education system in Bangladesh by leveraging the potential of modern technology for the benefit of all students.

Research Questions

- What are the perceived beliefs of ECD teachers regarding the use of technology in teaching young children?
- What barriers do ECD teachers perceive as obstacles that prevent them from using technology in teaching young children?
- What application do they prefer to use for their teaching performance?

Operational Definition

In the contemporary era, Information and Communication Technology (ICT) has revolutionized various sectors, including education. Bangladesh, a developing country in South Asia, has recognized the potential of ICT in transforming its education system. This paper aims to provide an operational definition of the impact of ICT on the Bangladeshi education system, focusing on access, quality, teacher professional development, curriculum modernization, challenges, and future directions.

Access to Education

Access to education refers to the availability and affordability of educational opportunities for all segments of society, irrespective of geographical location or socioeconomic status. In the context of Bangladesh, the impact of ICT on access to education can be operationalized through metrics such as the establishment of digital classrooms, the distribution of laptops and tablets to students, and the utilization of online learning platforms. Additionally, access can be measured by the percentage of students in remote and underserved areas who have gained access to educational resources through ICT interventions.

Quality of Education

The quality of education encompasses the effectiveness and relevance of teaching and learning processes, as well as the attainment of learning outcomes. In Bangladesh, the impact of ICT on the quality of education can be operationalized by assessing factors such as the availability of multimedia content and interactive learning materials, the adoption of student-cantered teaching methodologies facilitated by ICT tools, and improvements in student engagement and comprehension levels. Evaluation of learning outcomes and academic performance before and after ICT integration can also serve as indicators of the impact on quality.

Teacher Professional Development

Teacher professional development refers to activities and programs aimed at enhancing the knowledge, skills, and pedagogical practices of educators. In the Bangladeshi context, the impact of ICT on teacher professional development can be operationalized through indicators such as the participation rates in ICT training programs and workshops, the integration of ICT tools and resources into classroom instruction by teachers, and the perception of teachers regarding the effectiveness of ICT in improving teaching and learning outcomes.

Modernization of Curriculum

The modernization of the curriculum involves updating educational content and methodologies to align with contemporary needs and trends. In Bangladesh, the impact of ICT on curriculum modernization can be operationalized by examining the introduction of new subjects such as computer science and information technology, the incorporation of ICT-enabled teaching methodologies and learning activities into existing subjects, and the integration of digital literacy skills across the curriculum. Analysis of curriculum documents and educational policies can provide insights into the extent of ICT integration in the curriculum.

Challenges and Future Directions

Challenges refer to obstacles and barriers that hinder the effective integration of ICT in the education system, while future directions entail strategies and initiatives to overcome these challenges and maximize the benefits of ICT. In Bangladesh, challenges related to ICT integration can be operationalized through factors such as infrastructural limitations, inadequate internet connectivity, and resistance to change among stakeholders. Future directions can be operationalized by identifying policy measures, investment priorities, and capacity-building initiatives aimed at addressing these challenges and promoting sustainable ICT integration in education.

In conclusion, operationalizing the impact of ICT on the Bangladeshi education system requires defining key concepts such as access, quality, teacher professional development, curriculum modernization, challenges, and future directions. By using specific metrics and indicators, policymakers, researchers, and educators can assess the effectiveness of ICT interventions, identify areas for improvement, and formulate evidence-based strategies to enhance the educational outcomes for all learners in Bangladesh.

Chapter II Literature Review

The primary objectives of this are to present pertinent literature that informs and supports the goals of the current study. In the analogy presented by Hesse-Biber and Nagy (2010), the literature reviews act as a compass guiding, he studies. Its roles go beyond summarizing existing literature related to the research topic; instead, it involves a critical evaluation of research studies to purposefully establish the importance of the inquiry in this study. Additionally, the literature reviews serve to build the contextual framework and rational for selecting the specific research question. Another aim of this chapter is to highlight the significance of the study, demonstrating to readers that it addresses a notable gap in the current understanding of ICT education in developing countries. Through an examination of relevant literature, this chapter is also constructing a conceptual framework for investigating the research issue at hand.

Introduction

ICT, an abbreviation for Information and Communication Technology, generally encompasses all technologies that facilitate the processing communication of information. Within educational context, ICT serves as the umbrella team for various information and communication technologies, which include computer technology, multimedia, and networking, particularly the internet, commonly found in educational sectors (Romeo, 2008). While the team "computer technology" has been largely replaced by "information and communication technology" (ICT) in Europe and "information technology" (IT) in North America (Voogt & Knezek, 2008), education professionals may alternatively use the term 'computer technology' or 'information technology' instead of ICT (Anderson, 2008). This variety in terminology is influenced by the rapidly evolving integration of computers with communication, video and audio technologies, blurring the lines between these distinct

technologies. Regardless of the terminology used to describe ICT, the challenges associated with implementing ICT in education revolve around developing the abilities and willingness of teachers, students, institutions and their broader communities to use ICT appropriately (Anderson, 2008).

Rational for ICT education

Since the integration of computers into education in 1980's, its potential for educational purposes has been widely acknowledges by researchers, policymakers and practitioners (Romeo, 2008). Consequently, various rational has been put forth to justify the introduction to Information and Communication Technology (ICT) in education. Despite being advocated for two decades, these rationales remain relevant (Kozma,2008; Voogt,2008).

The social rationale revolves around preparing students for their roles in society, aligning with the notion that modernised education necessitates the incorporation of ICT into schools. Policy documents across different countries emphasize the introduction of ICT to share knowledge, foster cultural creativity, enhance democratic partnership, increase government service accessibility and promote social cohesion and integration among diverse cultural groups (Kozma,2008).

The visual and interactive features of ICT engage students and multimedia and interactive software make abstract concepts understandable. This innovative way also enhances educational opportunities for children with special needs. This initiative focuses on providing hardware without adequately addressing software, teacher professional development, and learning resources (Peck & Sprenger,2008).

The vocational rational views ICT as a means of equip students with skills for lucrative careers in the job market (Voogt,2008). The belief is that ICT knowledge becomes part of the school curriculum to prepare students for successful and wealth- creating careers (Kozma,2008).

However, the rapid evolution of ICT poses a challenge, requiring frequent curriculum updates to accommodate change. Critics question whether schools rare suitable for vocational training (Hawkridge,1990).

The pedagogic rationale concentrates on enhancing teaching and learning through robust ICT support. This rationale aims to extend traditional methods of presenting information by leveraging ICT supported techniques such as stimulations (Hawkridge, 1990; Romeo,2008).

Zembylas and Vrasidas (2005) argue on these rationales that developed countries can exploit ICT to control developing nations, fostering a new form of colonization. International finance organizations introduce ICT uncritically to developing countries, leading to passive consumption without considering how ICT can truly contribute to society. Local language and culture had been specified by them.

Nature of ICT education

The Ministry of Education, New Zealand (MoENZ,2003) explains that learning about ICT aims to develop knowledge and skills about skills about current ICT in order to gain the experiences necessary to understand the potential of ICT and its applications, Learning with ICT recognises the 14 broad use of ICT, particularly computers the networks communications, to support teaching and learning. The role includes a wide range of application in this sector as a tool. For an example, using a word processor to enable redrafting of an essay, running a simulation to test a prediction in science and developing cross-cultural understanding through computer conferencing.

It had been stated (Msdougall,2008) regarding the aspects of ICT that ICT changes the way teaching and learning occurs. Now a days children are participating in virtual field experiences by interacting with experts in remote and interesting locations using a mixture of synchronous and asynchronous web-based tools. In addition. Three-dimensional virtual worlds to affiliate

connections, interactions and creativity. Teacher education programs typically seek to prepare in-service and pre-service teachers to understand and use ICTs in four ways in order to support ICT education in schools: providing experiences of learning through ICT, developing pedagogical understanding of the cross-curriculum, acquiring ICT skills and comprehending what it means to transform education with ICT.

The first aspect aims to encourage the acquisition of ICT skills to ensure teachers have the confidence and capability to use the equipment. The second aspect indicates that teachers not only need ICT knowledge but also, they need to understand how to enhance the learning interest within the existing curriculum as well as how to design and implement different learning experiences by using technologies. According to the third aspect, ICT education in professional development further aspire to introduce ICT is an integral component of broader curriculum reforms that are changing not only how learning procedure is occurring but what has been learned. The final aspect points towards traducing ICT as an integral component of the reforms that after the organization and structure of schooling itself. (Thomas and Knezek,2008)

The integration of ICT in education

It is essential to recognize that successful ICT integration necessitates a comprehensive transformation in the education system. Merely providing computers in schools without overhauling the curriculum, fostering professional development and altering traditional teaching methods which doesn't constitute ICT integration. It is widely acknowledged that government policies often focus on supplying ICT equipment to schools, presuming that this alone will automatically instigate integration or the anticipated change. While the author highlighted this issue in 2001, more recent authors such as Twining (2008) argued that ICT use in classroom primarily revolves around scaffolding traditional practices and employing ICT similarly to traditional teaching tools (Cuban,2001).

Peck and Sprenger (2008), specified that potential of ICT to bring about transformative change in the education system in hindered by the lack of appropriate educational strategies, such as ICT supported curriculum framing professional development and infrastructural establishment.

Belief in ICT

Pajares (1992) suggested that beliefs serve as strong indicators of the decisions individual make in their lives. In case of teacher's perception, there is a strong connection t\between their beliefs and various aspects of their professional practice including planning, instruction, decision- making and practices,

Ertmer and Ottenbreit-Leftwich (2010) highlighted the influence of teachers' belief on their use of information and communication technology (ICT) in education. Two types of beliefs are identified as particularly influential: pedagogical beliefs related to how ICT can support students' learning and value beliefs related to hoe ICT can help teachers achieve instructional goals.

Judson (2006), found a correlation between teacher's pedagogical beliefs and their use of technology. Teachers with traditional pedagogical beliefs tend to implement more traditional or low-level technology strategies while those with constructivist beliefs use more student cantered or high-level technologies.

Knowledge of ICT

Koehler and Mishra (2008) introduce the concept of Technological Pedagogical Knowledge (TPCK), a framework that combines technological knowledge with pedagogical content knowledge. This framework guides effective teaching with technology, emphasizing the understanding obtains technology's potential to support teaching content knowledge. While Shulman and Koehler and Mishra focus on pedagogical knowledge, the passage notes the

importance of also considering andragogical knowledge, while pertains to the ways adults learn. The includes recognizing that adults learn differently from children.

Shulman (1986) propose the Pedagogical Content Knowledge (PCK) framework, which includes three main components: content knowledge (CK), pedagogical knowledge (PK), and pedagogical content knowledge (PCK). Additional categories knowledge includes curriculum knowledge, learner knowledge, context knowledge and knowledge of educational goals and beliefs.

Borko and Putnam (1995) argue that teachers' knowledge is crucial in guiding their decisions in academic practice. To improve teaching practices, it is essential to help teachers expand and elaborate their knowledge system.

Despite having knowledge of ICT, teachers may lack co confidence in using that knowledge to facilitate student learning (Ertmer & Ottenbreit-Leftwich,2010).

Confidence in using ICT

Ertmer and Ottenbreit-Leftwich (2010) point out common gap between teachers' knowledge about ICT and their actual use of these technologies in classrooms. This gap is attributes to a lack confidence in successfully implementing ICT-related tasks.

Collaborative strategies such as working with proficient peers, participating in professional learning communities and providing training with access to suitable models are identified as effective ways to improve teachers' confidence in integrating ICT in education (Ertmer, Ottenbreit-Leftwich & York 2006; Looi, Chen 2008 & Ertmer 2005).

Piper's (2003) survey with 160 teachers found that teacher's confidence in using computers significantly influenced the integration of technology in schools. Similarly, Wozney, Venkatesh

and Abrmi (2006) conducted a survey with 764 teachers, concluding that teacher's confidence was a major factor contributing to the achievement of instructional goals using computers.

Professional culture

Davis (2008) argues that the integration of ICT in education involves multiple layers in the education system, ranging from classroom perspectives to global perspectives. Teachers play a key role in implementing ICT, but the success of integration depends on various sub-cultures within the proposed 'Educational Ecosystem.'

Hennessey, Ruthven and Brindley (2005) and Somekh (2008) highlight the importance of investigating contextual factors perceived by teachers as influential for integrating ICT. Teachers are not "free agents," and their use of ICT is influenced by cultural, social and organizational context in which they live and work.

Barriers to integrating ICT in teacher education programs include insufficient training of educators and lack of appropriate software and hardware (Goktas et al.,2009)

CHAPTER III Methodology

Research Approach and Design

Research on the impact of Information and Communication Technology (ICT) on the Bangladeshi education system requires a comprehensive approach and a well-defined research design to gather relevant data and draw meaningful conclusions. This section outlines the research approach and design that can be adopted to study the impact of ICT on various aspects of the Bangladeshi education system, including access, quality, teacher professional development, and curriculum modernization.

Qualitative research methods focus on exploring the subjective experiences, perceptions, and attitudes of individuals through in-depth interviews, focus group discussions, and observations. Qualitative research in the context of the impact of ICT on the Bangladeshi education system can involve conducting interviews with teachers, students, parents, policymakers, and other relevant stakeholders to gain insights into their experiences with ICT integration, the challenges they face, and their suggestions for improvement. Focus group discussions can facilitate nuanced discussions on specific topics related to ICT use in education, while observations of ICT-enabled classrooms and educational activities can provide valuable contextual understanding.

Research Participants and Site

This study is situated in Pirojpur, Bangladesh. Four educators were selected for IDI and a FGD has conducted with six educators for different pre-primary schools. Selected schools are geographically diverse, representing various regions of that particular area. A purposive sampling method was employed to select educators who teach the Basic Computer Skills course regularly at these schools.

Data Collection Method and Procedure

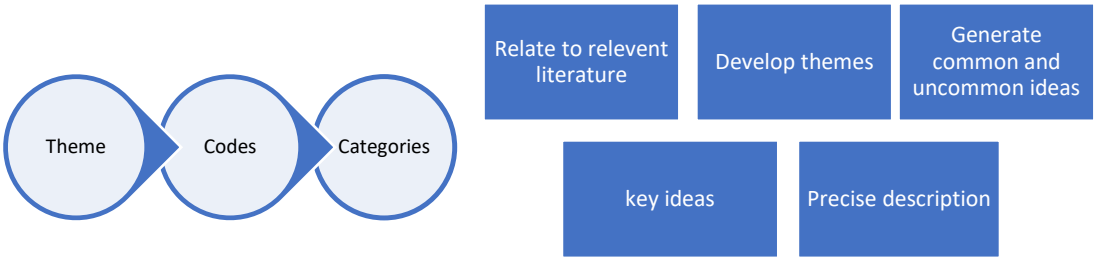
For this research, in-depth interview (IDI) and focused group discussion (FDG) ware utilized. In-depth interviews are characterized by their personal and unstructured nature, aiming to uncover participants emotion, behaviour, practices, understanding level and opinion regarding research topic. Personal interviews offer the advantages of direct interaction between interviewers and interviews, minimizing non-response rates. However, conducting successful interviews requires interviewers to possess developed skills (Fisher 2005; Wilson 2003). Additionally unstructured interviews provide flexibility in the interview process, allowing for the emergence of unexpected conclusion. Regarding data collection tools, structed 10 questions were employed for IDI and 8 were for FGD. While specific questions were prepared to steer the interview towards fulfilling research objectives, additional questions arose organically during the interview.

The data collection technique employed in the present study. This research typically employs three primary methods of information collection: interviews, document analysis and observation (Merriam,1998). These methods are often utilized together, either concurrently or sequentially, to cross-verify or complement the information gathered from each individual methods or to capitalized on the unique advantages offered by each method at different stages of the research process (Merriam, 1998; Yin, 2009). Interview serve as the primary methods for data collection in this study, while document analysis serves to provide valuable supplementary and contextual information.

Data Management and Analysis

Qualitative data analysis encompasses several key steps, including data collection, memo writing, data coding, analytical writing, concept or theme development and connecting theme with existing literature (Bogdan & Biklen, 2007). For this study, data sources included interview transcripts, field noted and selected secondary documents such as policy documents curricula.

Employing an interpretivist research approach (Bogdan & Biklen, 2007), I analysed the interview transcripts. To conduct an in-depth analysis. I meticulously examined the interview transcripts and field notes. Initial analysis and coding were conducted in native form to remain closely aligned with the participants' original meanings. I had reviewed the transcripts, creating preliminary list of potential coding categories in my research notebook during each reading session (Bogdan & Biklen, 2007). Alongside the categories, I also noted ideas which has sketched diagram below to illustrate any observed relationships:



Ethical Issues

This research involving human participants, will undergo a thorough review and approval process by BRAC University. All individuals participating in this study will do so voluntarily, without any coercion or undue influence. It is imperative to uphold their rights, dignity and autonomy, ensuring appropriate protection. The study commits to preventing any physical, psychological, social or legal harm to the participants.

Oral consent will be obtained from each participant, assuring them that the information collected will be used solely for research purposes and no personal details will be disclosed to any other third party. Those who willingly choose to participate will be include in the study. Additionally, all relevant details about this research, including context, purpose, objectives, rationale for approaching participants and the researcher's profile, will be provided to the participants if deemed necessary. Participants who express disinterested in participating or choose not to answer specific questions will have their wishes and involvement in those aspects will be skipped.

Limitations of the Study

The findings of this research are derived from educators' statements during interviews and information extracted from documents. The interviews served as a platform for educators to reflect on their beliefs and practices regarding ICT component of the curriculum. However, it's important to note that these reflections may not entirely represent their actual classroom practices. Similarly, the document analysis reflects the expected practices of educators in teaching ICT rather that what is necessarily implemented practices and may not fully align with the actual teaching ang learning experiences in the teacher education program, presenting a limitation of this study. Another potential limitation is the absence of female educators in the participant pool. In the selected teachers', the majority of ICT educators are male, and during

visits to these institutions, female educators who previously taught ICT were not present. Additionally. It's important to acknowledge that the result of this study may not be readily generalized or applied to broader context. This limitation arises from the relativity small sample size of participants and the restricted geographic coverage as the data was collected from a limited institution in Bangladesh. Therefore, caution should be exercised when extrapolating these findings beyond the specific context of this study.

Chapter IV Results/Findings and Discussion

Results/Findings

This study aimed to investigate the perceptions of Bangladeshi teacher educators regarding the integration of Information and Communication Technology (ICT) in teaching education. The research involved interviewing total 10 educators and analysing ICT policy document in Bangladesh to understand how ICT is perceived and utilized for educational purpose. The findings of the study are presented in this chapter, beginning with an examination of the policy documents that shape the educational landscape in Bangladesh. Subsequently, the chapter discuss the insights gathered from the interviews with educators, shedding light on their experiences and perspectives regarding the role of ICT in education. Through this analysis, the chapter provides valuable insights into how ICT is understood and implemented within teacher education programs in Bangladesh, highlighting the influence of policy frameworks on educational practices.

The National Education Policies in Bangladesh

Study reveals that despite to formulation of the National Education Policy (NEP) in 2010 (10 years goal) in Bangladesh, many of its directives remain unimplemented even after a decade. Structural reforms proposed for primary education have been disregarded, leading to a lack of interest among students in science and vocational education. Administrative changes recommended by the policy, such as establishing national education commissions and Chief Education Inspector, have not been enacted. The absence of an education law further compounds the challenges. Factors such as high teacher-student ratios, teachers inadequate educational backgrounds, insufficient infrastructure and budget and dearth of original research and monitoring impede the quality of education. Additionally, teacher education suffers from poor quality, limited opportunities for continuous professional development (CPD) and

inadequate pay scales (particularly in non-govt. schools). Lack of motivation and commitment, reliance among the teachers on outdated pedagogical practices, engagement in private coaching and interference of party policies further undermine policy objectives.

Educators' experiences and understandings of ICT

The participant educators have diverse perceptions of ICT in education, particularly in relation to its role in teacher education programs. These perceptions encompass beliefs about ICT's potential contributions to education, knowledge derives from personal experiences, practices of ICT in their professional roles and the influence of their professional culture on ICT utilization. Findings are organised to four main themes: beliefs, knowledge, self-efficiency and emerge. Especially concerning ICT integration in initial teaching educational process. The results are presented under theses thematic headings, elucidating educators' beliefs in ICT, their understanding of ICT, their confidence levels in utilizing ICT and the impact of the professional environment on ICT integration in their pedagogical practices.

Educators' beliefs in ICT

Study has delved into the introduction of ICT in education within Bangladesh, recognising it as a relatively novel concept despite the familiarity of ICT equipment among the populace. Within the advent of 2010 education policy by the Bangladeshi government, which advocates for the incorporation of ICT as a distinct learning domain in teaching and teacher training. The aim of this research is to understand how teacher educators perceive ICT both generally and as a distinct educational focus. By exploring these perceptions, the study seeks to elucidate the educators' beliefs, knowledge and practices concerning ICT integration in their profession, considering the significance of grasping their conceptualizations in navigating the landscape of ICT in Bangladeshi education.

Educators' knowledge of teaching about ICT

The educators' perspective underscores the pivotal role of pedagogy in teacher education programs and the necessity for ICT courses to focus on teaching-learning strategies. While there is agreement among educators that acquiring fundamental ICT skills is crucial for trainee teachers, there exists a debate regarding the optimal approach for teaching these skills.

Some educators advocate for maintaining a separate course dedicated to teaching ICT skills, such as the existing Basic Computer Skills course. They argue that this approach allows trainee teachers to build confidence in using technologies independently before incorporating them into their teaching practice. By mastering ICT skills in a dedicated course, trainees can develop a solid foundation that will enable them to effectively integrate technology into their teaching across various subjects.

This perspective reflects a belief in the importance of providing trainee teachers with comprehensive training in ICT, separate from the pedagogical aspects of teaching. It acknowledges the need for educators to possess a certain level of proficiency and confidence in using technology themselves before they can effectively teach it to their students.

However, it's important to note that this approach may lead to the segregation of ICT from other subjects, potentially limiting opportunities for its integration into diverse teaching contexts. Additionally, it may overlook the potential benefits of integrating ICT skills within the pedagogical content of other subjects, facilitating a more seamless and contextualized approach to technology integration in education. Ultimately, the ongoing debate highlights the need for careful consideration of the most effective and contextually appropriate approach to teaching ICT skills in teacher education programs. Balancing the need for dedicated ICT courses with the benefits of integration across subjects requires thoughtful planning and

collaboration among educators, curriculum developers, and policymakers. FGD 3 described that:

"*We do not have previous experience of working with computers, a separate course would be helpful for learning the skills."*

On the other hand, participants points that there is a lack of ICT expert educators in the teachers' training colleges, so it may be difficult to find sufficient teachers who can teach ICT through cross-curricular use. The lack of computer knowledge of the educators is identified as a potential barrier to cross-curricular use of ICT. Acknowledging their different approaches to teaching ICT skills, the educators consider that ICT can contribute to improving teacher preparation programs. They have a positive belief about integrating ICT in teacher preparation programs. They believe that ICTs can be used to motivate the trainee teachers by gaining their attention, engaging them in productive works and presenting visual illustrations of learning contents. Although a majority of the educators think that ICT can motivate the trainee's learning, some educators questioned the ways ICT is being used and taught in teacher education programs. The educators also identify ways that ICT supports different instructional strategies. Some educators asserted that ICT can be used to instruct the students for learning both individually and collaboratively. FGD 4 describes "*Learning software available in the market place that can supplement textbooks to teach children."*

FGD 4 adds that:

"There are some playful programs that guide children to learn alphabets, word-making, arithmetic and so on. … We can show our trainees how to use these for teaching children."

Some of the educators also expressed the opinion that ICT facilities can be used to teach the trainees in a constructivist way. FGD 6 thought that:

"Adult students can be encouraged to learn through ICTs in a collaborative way. He suggests using social networking for teaching the trainees."

He also added the collaborative learning approach:

"We can create some group-email addresses for them, and as an educator I can also be a member of these groups. Then, I can raise a question in the group-mail and they will answer individually. They will be allowed to argue against each other. For example, I can pose a question like 'What is the importance of ICT in your teaching practice?' Each one will answer this question, and will debate it. In this way they will construct their own knowledge and learn from each other."

ICT is a combination on hardware and software by humans

The educators participating in the study exhibit a shared comprehension of ICT, viewing it as encompassing both electronic devices and the underlying principles governing their operations. Their descriptions of ICT largely revolve around terms such as "computer," "internet," and "digital devices," highlighting the board spectrum of electronic tools considered part of ICT. Moreover, they emphasize the significance of understanding the logic behind these devices, including software and programming, underscoring the inseparable relationship between hardware, software and human operators in effective ICT utilization.

Regarding the integration of ICT in education, the educators advocate for its inclusion as a distinct learning domain in teacher education programs. They stress the importance of equipping teachers with ICT-related knowledge and skills to facilitate its integration into teaching practices. Many educators note the lack of ICT proficiency among in-service teachers, emphasizing the necessity of providing basic computer training within teacher preparation programs. They also recognize the multi-modal capabilities of ICT, highlighting its potential

to accommodate diverse learning styles and enhance teaching materials' effectiveness. FGD 1 reveals that:

"ICT is better than our traditional chalkboards, papers-posters, audio-record player and other teaching materials that we use to teach our students because combines multiple mediums of communication such as colourful images, sounds and animation."

Furthermore, the educators perceive ICT tools for enriching both personal skills and professional knowledge among trainee teachers. They underscore ICT role in accessing information, facilitating online communication and fostering collaborative knowledge creation thereby enhancing teaching quality. Overall, the educators' advocates for comprehensive ICT education within teacher preparation programs to equip future educators with the necessary skills and competencies for effective ICT integration. FGD 4 generalizes the concept of ICTs as:

"From my little wrist watch to the sophisticated computer systems, everything is part of ICT (because) they give me some information I need."

The importance of ICT in teach education program

Some of the educators also see ICT as a means of developing their own professional knowledge and the quality of their performances as teacher educators. They argue that they develop their knowledge from different sources on the web. Social network facilities and email services provide them with opportunities to construct their own knowledge and enhance their skills through independent professional learning. Several of the educators described the process of becoming a teacher educator within the context of Bangladesh and argued that ICT enhances their professional knowledge as educators. In Bangladesh, there is little formal education or training for becoming a teacher educator. The requirements of becoming a teacher educator in Bangladesh include having a postgraduate degree along with a one-year diploma in teaching

and learning, or having a bachelor degree in Education (Honours). The fresh postgraduate students having good academic results are generally appointed as teacher educators in the teachers' training colleges through some public examination and recruitment procedures. Often these newly appointed educators have little or no teaching experience. Besides this, at times some lecturers or professors from general colleges are transferred to the teachers' training colleges as educators. Although they have no experience of teaching in the school sector, they are responsible to train the school teachers.

Importance of ICT for professional development

Some educators also view ICT as a means to enhance their own professional knowledge and improve their effectiveness as teacher educators. They argue that they acquire knowledge from various online sources, utilizing social networking platforms and email services to engage in independent professional learning and skill development. Several educators detailed the process of becoming a teacher educator in Bangladesh, highlighting how ICT contributes to enhancing their professional expertise in this role. Formal education or training for teacher educators is limited in Bangladesh, with requirements typically including a postgraduate degree and a one-year teaching and learning diploma or a bachelor's degree in Education (Honours). Newly appointed teacher educators often lack significant teaching experience, with some being transferred from general colleges to teacher training colleges despite having no prior experience in the school sector. Despite these challenges, they are tasked with training school teachers. IDI 4 shared that:

"Although I have been working here for more than four years, I was not trained in how to train the school teachers. ... At the beginning, I used to observe the senior educators to see how they take classes; I talked to them about how to teach the teachers in an effective way. I used to read the books locally available here. ... In this way I tried to prepare myself as an educator. But

now I have got internet; I can find updated information about teacher education on the web and can develop myself."

IDI 4 emphasizes that:

"*ICT serves as a valuable tool for him to address gaps in his professional knowledge. Consequently, he suggests that ICT can benefit educators seeking to enhance the quality of their skills through updated knowledge. Expanding on this notion, some educators consider ICT as a virtual mentor, asserting that browsing the web frequently yields essential information that aids in the preparation of learning materials incorporating up-to-date content."*

IDI 4 also asserted that:

"*Whenever I get any confusion about any idea or concept, I first remember the internet ... there are many free books, journals, articles, newspapers etc. on internet ... these help me to develop my knowledge base."*

Most of the educators involved agree that the internet has been a valuable resource in accessing necessary information, with some specifically acknowledging the assistance of ICTs in providing them with up-to-date information. However, a few educators have raised concerns regarding the reliability and usability of the information available on the web. IDI 1 expressed concern that:

"We need to be very selective while searching information online. Not all information can be applicable for us. For an example, you cannot necessarily apply the developed countries' practices of ICT integration in the developing countries' classrooms. They have different perspectives, different situations. If you read something online, and try to infuse the ideas in your classrooms, it may cause more complexities."

It is critical about the appropriateness of the information and its applicability within the Bangladeshi context, some other educators think that the available information on the web is still helpful for them because it keeps them upto-date with the practices of ICT in teacher education around the world and how ICT is being integrated for this purpose. Accordingly, the educators perceive that ICT is important for them because it is helping them to develop their professional knowledge where necessary. Therefore, the educators consider that learning about ICT is important for both the trainee teachers and the educators themselves because it supports enhancing their knowledge and developing their quality relevant to their profession.

ICT isn't mandatory or specialist subject

The majority of participating educators hold the opinion that ICT is not a specialized subject, as they believe that anyone proficient in computer usage can impart ICT skills. These ten educators come from various academic backgrounds and possess differing levels of prior experience with computers, yet all were capable of teaching the ICT course. For instance, FGD 4 mentioned:

"Since I had some computer skills, I was assigned to teach the ICT class." This sentiment is echoed by other educators. However, some educators argue that specialized ICT experts should be appointed to teach this subject."

IDI 2 described that:

"Different educators are teaching ICT in different way, and it is because they do not have proper ICT education or training. This may have an effect on the trainees' quality of ICT learning."

ICT should be taught by expert and trained educators in order to implement the goals of the course as stated in the curriculum. He explains that the curriculum suggests teaching the trainees about spreadsheets so that they can use these for preparing students' results and preserving records, but some educators may not have enough knowledge about how to do these tasks using spreadsheets, and, consequently, the trainee teachers will not develop sufficient knowledge to accomplish those tasks in schools. Similarly, FGD 6 supports that:

"The idea that educators who teach the ICT course must have specialist knowledge of teaching with ICT. He adds that since ICT is rapidly changing, a general educator may find it difficult to keep up-to-date with new technologies. Therefore, he argues that if some ICTspecialist educators are appointed, they will be able to adopt and teach new technological knowledge to the trainee teachers."

Affective dimensions

Although concern was expressed about the educators' knowledge and proficiency, the educators feel confident when they see their trainee students successfully operating computers. IDI 3 says that:

"Many trainees did not know about computers before they enrolled here. At the end of the year, when I see them working with computer, I feel that I have been successful."

This feeling of success gives them confidence that they are teaching the right way. While some educators find themselves confident in teaching ICT, a few of them find it overwhelming. These educators claim that often ICT gets more attention than the main subject content. IDI 1 says:

"Sometimes, when I present the trainees with some information using PowerPoint, it seems like they are more interested in the attractive slides than the content in it."

He thinks the reason behind it is that because the trainees are learning new ICT skills, they focus on how to learn to use the technology for their teaching purpose rather than the content of the lesson. Some educators think that ICT can be a disempowering element for some educators and teachers. They argue that senior educators are proficient and confident in their existing experience and knowledge. They often are less efficient in using ICTs than their younger colleagues, so they may not be as successful in teaching with ICT as they are comfortable with traditional teaching tools. As a result, they may feel disempowered while teaching with ICTs.

Educators' professional culture

The educators mention that several elements of their professional environment influence the integration of ICT in their training institutes. These elements include the physical facilities, available infrastructure, resources, administrative supports and educators' attitude towards ICT in education. This section presents the educators' opinions about how their professional culture affects their practice of ICT.

Some participants identify that there are some other educators in the training session who do not appreciate the benefits of teaching with ICT and who do not think it is essential for them to teach.

Discussion

ICT is more than a teaching learning tool

The Bangladesh policy documents regarding ICT in education present ICT as an effective tool that can enhance the quality of education by supporting students to learn subject content in meaningful ways. The policy documents state that ICT can be used to present content knowledge attractively and that multimedia can motivate students to learn. There is a tendency within the documents to focus on ICT as a teaching-learning tool to enhance the quality of traditional educational approaches. The policy documents support learning about and with ICT, but they do not seem to emphasise the potential of ICT to change the way students learn. ICT has the potential to change the way students learn and this is often described as 'learning through ICT' (Cook, 2010; Finger et al., 2007). The educators in this study believe that ICT can support not only meaningful learning for individual students but also a range of collaborative and constructive teaching-learning activities. Some of the educators described how online group discussion can provide a novel platform for knowledge construction, presentation and sharing ideas. While, the policy documents present a relatively limited view of how ICT can support students' learning, the educators expressed their belief in the broader potential of ICT in education. Romeo and Russell (2010) note that teachers' opinions need to be reflected in the policies for a successful integration of ICT in education. Therefore, the Bangladeshi educators' beliefs in ICT as more than a teaching-learning tool could be influential in the further development of the national policies and they could also make valuable contributions to the revision of the curriculum to embrace some of the more progressive views of ICT.

ICT provides relative advantages over traditional teaching tools

The reason for using ICT in the classroom is an important question to be addressed before providing computers in schools. Roblyer and Doering (2010) point out that teachers' understanding of how ICT can contribute to their practice is important for successful implementation of ICT in the classrooms. In Bangladesh, both the policy documents and the educators perceive the relative advantages of ICT over traditional teaching tools. Traditionally the educators use chalk-board, posters and some locally available, often handmade, teaching materials. These materials are often less interactive and less motivating than digital technologies; whereas, ICT supports multiple types of interactions simultaneously, such as seeing, listening and interacting together. Moreover, the reusability feature of digitally developed teaching-learning materials is another reason the educators appreciate using ICT in classrooms. Using ICT instead of traditional teaching tools requires some attitudinal and behavioural change, and Rogers (2004) notes that people are often reluctant to 82 change their way of doing things, even if new ways are better than the traditional ways. However, people are more likely to change their approaches if they clearly understand the benefits of new concepts, strategies and tools (Roblyer & Doering, 2010). Since the Bangladeshi policy documents and the educators identify relative benefits of ICT over traditional teaching-learning tools, there is an expectation that ICT will begin to be implemented more in Bangladeshi classrooms.

Teachers are key agent to integrate ICT

Bangladeshi educators emphasize the pivotal role of teachers in integrating ICT into education. While acknowledging ICT as a blend of hardware and software, they underscore the importance of 'humanware,' particularly the teachers operating ICT within educational settings, for successful utilization of technology. This recognition of teachers as central figures in the

effective integration of ICT in classrooms enjoys widespread support. Scholars like Ertmer and Ottenbreit-Leftwich (2010) assert that teachers serve as the 'key agents' in implementing ICT in educational environments, emphasizing the need for initiatives to ensure teachers comprehend their crucial role. It's essential for teachers to believe that ICT complements rather than replaces them, as highlighted by Li (2007). Fear of being replaced by ICT can lead to feelings of disempowerment among teachers, thus underscoring the significance of teachers' self-perception regarding their role in ICT implementation. Therefore, the Bangladeshi educators' recognition of teachers' critical role should be viewed as a positive indication for the successful integration of ICT in Bangladeshi classrooms.

ICT is a virtual mentor to the teacher educators

Bangladeshi educators participating in the study view ICT as an opportunity to enhance their professional knowledge and skills. Given the limited formal education available for preparing teacher educators, educators often bear the responsibility of self-preparation to instruct other teachers. O'Sullivan (2010) observes that teacher educator preparation tends to be informal or ad hoc in many countries, requiring newly appointed educators to take personal initiative in their professional development. This pattern is evident not only in Bangladesh but also in various developed and developing countries (Murray & Male, 2005; Swennen & Klink, 2009). Murray and Male (2005) found that in the UK, it takes several years for newly appointed teacher educators to gain confidence in their roles, with concerns about knowledge adequacy and the stress associated with assuming new professional responsibilities. Bangladeshi educators echo similar sentiments, expressing struggles in acquiring relevant and current knowledge as educators. They highlight the utility of ICT in this pursuit, emphasizing three aspects: the vast information available online to bridge knowledge gaps, email for academic communication and consultation within their professional community, and social networks for collaborative knowledge construction through discussions with peers. Consequently, the

conception of ICT as a virtual mentor is also recognized by other researchers. Whitehouse, Breit, McCloskey, Ketelhut and Dede (2006) reviewed some empirical studies on online teacher professional development programs and noted that online communications among teachers were regarded as a useful strategy for their professional development. Similarly, Looi, Lim and Chen (2008) point out that computer-mediated communication (CMC) is becoming popular among teachers and educators as it supports constructing knowledge from different perspectives. Therefore, the Bangladeshi educators' perception of ICT as a virtual mentor indicates that they recognize ICT not only as a teaching-learning tool, but also as a way of knowledge constructing and sharing. these educators regard ICT as a virtual mentor for their ongoing professional development.

Educators understanding of ICT within teacher education program

This section discusses the Bangladeshi teacher educators' understandings of implementing ICT within teacher education in response to the complementary question: How do the educators address the aims of ICT in education in their practice? The responses are discussed in the following themes.

Confidence in teaching about ICT

Confidence is the other factor. Confidence is the other factor that enables the educators to teach the ICT courses. The participant educators of this study have commented on being assigned the work of teaching the ICT courses because they worked with computers. Firstly, previous knowledge of the computer is perceived to influence their confidence. Secondly, the educators would self-study and practice computer technology, which muc more confidence. Thirdly, few educators would maintain communication with their professional community to discuss, share and learn ICT knowledge. Fourthly, the educator will gain more confidence with the success of the trainee teachers in the ICT courses. This is because having watched the trainee learn the

ITC skills, the educators feel it is possible to deliver as well. In this context, Ertmer and Ottenbreit-Leftwich 2010.

Areas of implication for practice ICT

The findings of this study may directly relate to the implications for people directly or through several measure involved in the levels of the 'educational ecosystem' responsible for planning and implementing ICT in education. School teachers and educators will find insight to become 'food for thought for teachers who strive for an appropriate non- passivity oriented position of three states of being non-passive consumer' which done right should be "critical consumer" of ICT artefacts and engender ways of them integrating on his/her practice. The educators and teachers may also contribute to conceptualizing the opportunities and tensions in ICTCT in teacher education programs. The findings of this study of the critical reading of the Bangladeshi ICTCT policy documents provide work on a more sophisticated understanding of the potential of ICT to the policy makers of Bangladesh, and also.

The integration of ICT in education is a staged process

The discourse surrounding ICT (Information and Communication Technology) integration in education within Bangladesh reveals a significant disparity between the perspectives of educators and the government's curriculum. While the B.Ed. curriculum outlines a two-step approach to ICT integration, educators advocate for a more comprehensive three-step model. This model encompasses not only the acquisition of ICT skills and their use in teaching-learning activities but also the utilization of ICT as a medium for education delivery, such as online distance learning.

The educators' viewpoint aligns with broader international trends, as identified by Finger, Russell, Jameson-Proctor, and Russell (2007). Their review indicates that the integration of ICT in education is often conceptualized as a three-stage process: acquiring ICT skills,

enhancing learning and teaching with ICT, and ultimately transforming pedagogy, content, and the structure of schooling through ICT.

This discrepancy suggests that Bangladeshi educators are ahead of the government's vision and strategies regarding ICT integration in education. Their broader understanding of the potential of ICT to bring about transformative changes in the education system should be acknowledged and incorporated into policy documents. This echoes the findings of Davis, Preston, and Sahin (2009) and Davis (2010), who argue that teacher education programs can influence multiple "ecologies" within education ecosystems, facilitating innovative changes through ICT.

In essence, recognizing and incorporating the insights of Bangladeshi educators into policy documents is crucial for aligning government strategies with the evolving needs and potentials of ICT in education. This collaborative approach can foster more effective ICT integration, ultimately benefiting both educators and students in Bangladesh.

Educators understanding of teaching and learning about and with ICT

The discussion surrounding the ICT curriculum for B.Ed. programs in Bangladesh highlights a significant gap between the prescribed skills and what educators believe is necessary for effective teaching with ICT. While the curriculum emphasizes basic skills like file management and word processing, educators argue for the inclusion of more advanced competencies such as multimedia content development and social networking. They contend that these additional skills are essential for teachers to effectively present and share knowledge, aligning with the expectation that teachers should be able to create learning materials and engage students using digital platforms.

Roblyer and Doering (2010) advocate for teachers to not only possess ICT skills but also to critically understand how ICT can support their teaching practice. Bangladeshi educators demonstrate a deep understanding of both the technological and pedagogical aspects of ICT

integration in education, emphasizing the importance of incorporating these insights into the B.Ed. curriculum. They recognize that learning technological skills and employing them pedagogically are crucial for effective teaching (Koehler & Mishra, 2008).

The debate among educators regarding the inclusion of social networks in teacher education programs reflects differing perspectives on their educational value. While some see social networks as a platform for collaborative learning and knowledge construction, others view them as advanced and potentially inaccessible to teachers lacking basic ICT skills. However, the majority advocate for their inclusion, citing the recognized potential of social networks for autonomous and self-directed learning. In terms of pedagogy, Bangladeshi educators integrate both pedagogical and andragogical approaches, considering both child and adult learning principles. They design lessons that engage trainee teachers in collaborative problem-solving while also emphasizing the pedagogical use of ICT to support meaningful learning. However, challenges arise in balancing both andragogy and pedagogy due to a lack of knowledge and experience among educators.

To address this challenge, the study recommends the development of a comprehensive framework that incorporates both andragogical and pedagogical knowledge, building upon the TPCK framework proposed by Koehler and Mishra (2008). This new framework, termed Technological Andragogical Pedagogical Content Knowledge (TAPCK), would provide guidance for teacher educators in preparing teachers to effectively integrate ICT into their teaching practice. Future research should explore how andragogy and TPCK can be integrated to develop such a framework's understanding of teaching and learning about ICT

ICT should be taught as an integral part of all subjects

The debate among Bangladeshi educators regarding whether ICT should be taught as a specialist subject or integrated across the curriculum reflects differing perspectives on the most effective approach to ICT education in teacher training programs.

When trainee teachers have limited ICT knowledge and the primary goal is to equip them with basic ICT skills, teaching ICT as a specialist subject is often preferred. This approach allows for focused instruction on ICT fundamentals without the complexities of integrating it into various subjects. However, this method can sometimes isolate ICT from pedagogical knowledge, leading to a lack of confidence in using ICT effectively in the classroom.

Conversely, when trainee teachers already possess substantial ICT knowledge and the emphasis is on integrating ICT pedagogically into teaching practice, a cross-curricular approach is favoured. This method aims to embed ICT skills within the context of subject-specific learning, facilitating their practical application in diverse educational settings. However, this approach may lack the expertise in ICT operations necessary for comprehensive understanding and effective implementation.

Law and Plump (2003) highlight a global trend where the initial introduction of ICT as a specialist subject evolves into a focus on its pedagogical use across the curriculum. In Bangladesh, where many educators lack proficiency in ICT, teaching ICT across subjects presents challenges. Thus, educators advocate for comprehensive training in the pedagogical use of ICT before implementing cross-curricular ICT education.

McDougall (2008) points out a discrepancy in research focus, with more studies on the use of ICT in teaching-learning activities than on teaching ICT as a specialist subject. This highlights

the need for further research to examine the effectiveness of different approaches to ICT education within teacher training programs.

Future studies should explore the outcomes and challenges associated with both specialist and integrated approaches to ICT education in teacher training. By addressing this debate through empirical research, educators can make informed decisions regarding the most suitable approach to ICT integration in teacher education curriculum within the Bangladeshi context.

Lack of ICT resources and infrastructure

The challenges outlined regarding the lack of ICT resources in teacher training institutions in Bangladesh underscore the critical importance of building a supportive infrastructure to facilitate effective ICT integration in education. Insufficient access to computers, multimedia facilities, and reliable internet connections significantly hinders the ability of educators to adequately train trainee teachers in essential ICT skills. The fact that two or more trainee teachers must share one computer reflects a stark disparity between the demand for ICT resources and their availability. Moreover, unreliable internet connections further limit opportunities for teaching skills such as email and online search, essential in today's digital age. The issue is compounded by the frequent malfunctioning of computers and the lack of a budget for maintenance, resulting in broken computers going unrepaired. This not only exacerbates the shortage of available resources but also contributes to a sense of frustration and discouragement among educators and trainee teachers alike.

Ertmer and Ottenbreit-Leftwich (2010) highlight how technical problems can undermine teachers' confidence in utilizing technology, while Hew and Brush (2007) demonstrate how resource deficiencies act as barriers to technology use among educators. Addressing these challenges requires not only the provision of adequate ICT resources but also the development of pedagogical expertise to maximize their meaningful use and maintenance. Simply providing

hardware and software is insufficient; training and ongoing support are essential to ensure that educators can effectively integrate ICT into teaching and learning processes.

In addition, efforts to enhance ICT integration in education must prioritize the establishment of a supportive infrastructure that encompasses both technological resources and pedagogical expertise. By addressing these fundamental challenges, Bangladesh can better equip its educators and trainee teachers to harness the full potential of ICT for enhanced teaching and learning outcomes.

Educators' suggestion to improve the ICT program courses

The educators' suggestions for enhancing the teaching of ICT in B.Ed. classrooms reflect a holistic approach aimed at addressing various challenges and barriers to effective ICT integration. Here are some key ideas and recommendations put forth by the educators:

Incorporating Pedagogical Knowledge of ICT: Educators emphasize the importance of integrating pedagogical knowledge of ICT into the curriculum. This approach would enable trainee teachers to understand the practical applications of ICT while learning essential skills. Additionally, providing training for educators themselves before they teach ICT to trainee teachers can help overcome barriers stemming from educators' own lack of ICT knowledge.

Recognizing and Rewarding Best Practices: Educators suggest implementing yearly awards or incentives to recognize educators who demonstrate exemplary use of ICT in teaching. By highlighting and celebrating best practices, this approach aims to increase educators' confidence in using ICT and motivate them to integrate it more effectively into their teaching practices.

Fostering Positive Beliefs and Attitudes Towards ICT: Recognizing the impact of attitudes on technology integration, educators recommend efforts to cultivate positive beliefs and attitudes towards ICT among all educators in teacher training colleges (TTCs). This recommendation aligns with research emphasizing the importance of attitudes in shaping the successful implementation of ICT in education.

Creating a Supportive Professional Culture: Educators stress the significance of professional culture, including leadership from principals and government-level support, in facilitating the successful implementation of ICT in education. They suggest that principals take a proactive role in fostering a community of practice among educators, encouraging collaboration and professional development focused on enhancing ICT knowledge and skills.

By incorporating these suggestions into teacher education programs and fostering a supportive professional environment, Bangladesh can take significant strides towards effectively integrating ICT into teaching and learning processes. These recommendations emphasize not only the acquisition of technical skills but also the cultivation of positive attitudes, pedagogical understanding, and leadership support necessary for successful ICT integration in education.

English script embedded in computers is a barrier

The perception among Bangladeshi educators regarding the English language embedded in computer programs presents a significant barrier to the effective use of ICT in classrooms. English, being a foreign language in Bangladesh, poses a dual challenge for teachers: firstly, they must learn about new technologies, and secondly, they must do so in a language that may not be entirely comfortable or familiar to them.

This challenge resonates with findings from research conducted in other contexts, such as the study by Ingec (2009) on Turkish students encountering difficulties learning concept maps in English. Similar to the situation in Bangladesh, where educators understand English to some

extent but may struggle with learning new knowledge in a foreign language, Turkish students faced challenges in comprehending educational concepts presented in English.

The discomfort associated with learning ICT in English can hinder educators' confidence and competence in utilizing technology effectively in the classroom. It can create a sense of alienation and frustration, ultimately impeding the integration of ICT into teaching and learning processes.

To address this issue, efforts should be made to provide localized resources and support materials that are available in the native language. Additionally, professional development programs should include language support components to assist educators in overcoming language barriers associated with ICT adoption.

By acknowledging and addressing the challenges posed by the English language in computer programs, Bangladesh can better support its educators in harnessing the potential of ICT for enhancing teaching and learning outcomes. This recognition underscores the importance of ensuring that ICT initiatives are inclusive and accessible to all educators, regardless of their language proficiency.

Conclusion

In conclusion, teachers' perceptions play a crucial role in shaping the effective integration of Information and Communication Technology (ICT) in teaching young children (3-6 years) in the classroom. Through this study, we have identified several key insights into how teachers perceive the use of ICT and the factors that influence their attitudes and practices.

Firstly, it is evident that teachers recognize the potential of ICT to enhance learning experiences and engage young children in meaningful ways. However, concerns about access to technology, pedagogical alignment, and equity must be addressed to ensure that all students benefit from ICT integration. Professional development opportunities are essential for equipping teachers

with the skills and confidence needed to effectively integrate ICT into their teaching practices. Emphasizing pedagogical principles and promoting reflective practice can help teachers make informed decisions about when and how to use ICT to support learning outcomes. Moreover, involving stakeholders such as parents, administrators, and policymakers in discussions about the use of ICT in early childhood education is crucial for building support and addressing concerns. By fostering collaboration and dialogue, we can create a shared understanding of the role of technology in young children's learning and development.

In conclusion, while there are challenges and considerations to navigate, teachers' perceptions of ICT in the classroom are pivotal in shaping its effective implementation. By providing support, professional development, and opportunities for collaboration, we can empower teachers to harness the full potential of ICT to enrich the learning experiences of young children.

Recommendation

Based on research and best practices, here are some recommendations for teachers' perceptions regarding the use of Information and Communication Technology (ICT) in teaching young children (3-6 years) in the classroom:

Promote Balanced Integration: Emphasize the importance of using ICT as a supplement to, rather than a replacement for, traditional teaching methods. Highlight the value of hands-on experiences and human interaction alongside digital tools.

Provide Professional Development: Offer training sessions and workshops to help teachers develop the skills and confidence needed to effectively integrate ICT into their teaching practices. Focus on practical applications, troubleshooting, and strategies for using ICT to enhance learning outcomes.

Emphasize Pedagogical Principles: Encourage teachers to align their use of ICT with established pedagogical principles, such as active learning, scaffolding, and differentiated instruction. Emphasize the role of technology as a tool for facilitating learning and extending students' abilities rather than as an end in itself.

Ensure Accessibility and Equity: Address concerns about access to technology and digital resources by advocating for equitable distribution of ICT tools and internet connectivity. Provide support for teachers to accommodate diverse learners and ensure that all students have opportunities to engage with ICT regardless of their background or abilities.

Encourage Reflective Practice: Foster a culture of reflection and continuous improvement by encouraging teachers to critically evaluate their use of ICT in the classroom. Encourage them to consider the impact on student engagement, learning outcomes, and socio-emotional development, and to adjust their approach accordingly.

Involve Stakeholders: Engage parents, administrators, and other stakeholders in discussions about the use of ICT in early childhood education. Provide opportunities for dialogue, share research findings and best practices, and address any concerns or misconceptions about the role of technology in young children's learning.

Stay Informed and Adaptable: Encourage teachers to stay informed about emerging technologies and trends in early childhood education. Foster a culture of experimentation and innovation, where teachers feel empowered to try new approaches and adapt their practices based on feedback and evidence of what works best for their students.

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Appendix A.

Name:

Gender:

Age:

Experience in ECD sector:

- What do you understand/know about the word "ICT?"
- Do you think/agree that ICT is important in early years for teaching and learning?
- What kind of technology-based equipment are available in your institution?
- Express in words, how do you use technology tools (phone, desktop, whiteboard) for teaching and learning?
- How frequently are you using these tools?
- Do you use it in preparing lesson plans? Yes/No (if yes then how, explain?
- What are the challenging factors that hinders the use of ICT in teaching and learning?
- What kind of training and support programs are there for using ICT in ECE?

FGD

- When and how you get the access for ICT equipment?
- How often ICT based lesson take place in weekly?
- How much time do teachers use ICT equipment's in classroom?
- What is the cause of enjoyment those lessons in classroom?
- What is the cause of understanding those lessons in classroom?
- Is it possible to finish the class on time while you are using digital content-based methods?
- Which subject were held through digital content-based lesson in last 30 days?
- What kind of training you've got in last 6 month?