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Research Article

Assessing the Effectiveness of ICT Training Programs in Enhancing Pedagogical Skills of Secondary School Teachers: A Study on Hathazari Upazila, Chattogram, Bangladesh

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Abstract

This study aimed to assess the effectiveness of ICT training programs in enhancing the pedagogical skills of secondary school teachers. Teachers are continuously expected to incorporate digital tools into classroom instruction to improve teaching effectiveness and student participation due to the growing significance of information and communication technology (ICT) in education. In Bangladesh, various ICT training initiatives have been introduced to assist teachers in developing ICT- based pedagogical practices; however, the actual effectiveness of these programs remains a concern. This study used a qualitative research methodology to investigate teachers' opinions and experiences with ICT training initiatives. Data were collected through semi-structured interviews with secondary school teachers and head teachers, as well as focus group discussion with students. Purposive sampling was used to select participants who had received ICT training. The collected data were evaluated using thematic analysis to identify major themes related to pedagogical skill development, instructional practices, students' engagement and implementation challenges. The findings revealed that ICT training programs positively influenced teachers' pedagogical skills by improving lesson planning, teaching methods, classroom interaction and professional confidence. ICT-based teaching practices were found to enhance student engagement and develop more interactive learning environments. However, the study also identified several challenges, including inadequate infrastructure, lack of ongoing professional support, technical issues and policy- level gaps, which hinder the effective implementation of ICT - based pedagogy. The study concludes that ICT training programs are efficient in enhancing pedagogical skills when supported by adequate resources, institutional support and continuous professional development. The findings of this study have important implications for policymakers, educational administrators and teacher training institutions in enhancing the design and implementation of ICT training programs in secondary education.

Keywords

Information and Communication Technology (ICT), ICT Training Programs, Pedagogical Skills, ICT Integration in Teaching, Effectiveness of ICT Training, Professional Development, Secondary School Teachers

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1. Introduction

Information and Communication Technology has become an indispensable constituent in contemporary educational times. ICT- based teaching - learning can enhance pedagogical practices, increase student engagement, and facilitate innovative teaching methodologies, as mentioned by Malick & Salam, [1, 2]. In the recent years, various education systems across the globe have recognized the significance of fostering ICT skills among teachers to integrate technology efficiently in schools. ICT training programs for secondary school teachers could hence be highly instrumental in bringing up competencies that would not only upgrade their technical skills but also establish pedagogical ones for effective lesson designing and delivering as khan & Hasan [3-5] have mentioned. Pedagogical Skills encompass the competencies and methods that educators employ to ensure learning; they include lesson planning, ways of offering instruction and assessment and instructional leadership. Improving such skills via ICT training programs ensures that teachers can develop interactive, student - centered learning environments, instill critical thinking, and apply digital resources to support curriculum goals effectively [6, 7]. Given the rise in new technologies, continuous development in ICT for teachers remains very essential in terms of maintaining instructional effectiveness and meeting learners increasing variance in learning needs [8, 9]. This study seeks to establish the impact of ICT training programs in the improvement of the pedagogical skills among secondary school teachers and importantly, how much programs influence teaching practices, pupil participation, and broad academic outcomes.

1.1. Background of the Study

In Bangladesh, much attention has been paid to integrating ICT into education both in policy and practice. National - level initiatives have highlighted the issues of ICT - enabled learning, providing ICT training for teachers to enhance training for teachers to enhance digital literacy among them [10]. In spite of these initiatives, the actual integration of ICT in classrooms is yet to take place because of limitations in resources, lack of adequate training, and absence of technical support [11]. Most teaching professionals at the secondary school level are not adequately skilled in the integration of ICT tools for pedagogical purpose; even those with basic computer skills use ICT for very limited purpose in teaching [12]. The study has shown that many times, the use of ICT in classrooms becomes limited for presentations or software demonstrations instead of allowing students to actively engage, collaborate, or participate in meaningful learning activities (Development of instructional design principles for ICT in resource - limited environments - Bangladesh case). The uptake of ICT - based pedagogy, particularly in secondary schools, seems uneven: while some teachers a positive attitude toward integrating ICT into their teaching [13], many faces structural constraints-insufficient training, lack of proper resources or infrastructure, and lack of support which limit effective ICT integration [14]. Thus, whereas the policy environment and institutional intentions are conductive for ICT integration in schools in Bangladesh, a huge gap still exists between the policy and practice, specifically in terms of empowering teachers to use ICT not merely as a technical tool but rather as a medium of pedagogy. Therefore, the evaluation of ICT training programs for secondary school teachers can be used to determine those gaps, understand teachers, experiences and practices, and provide recommendations for teacher development initiatives that are more pedagogically aligned.

1.2. Statement of the Problem

Although ICT has been touted as an integral part of contemporary teaching, even today, many teachers in secondary schools fail to incorporate it into their classrooms. Multiple ICT training programs have been initiated by government authorities in order to assist teachers utilize digital tools within the pedagogical process. In recently, nevertheless, there is a substantial gap between the training imparted to teachers and the performance observed in real life in the classroom. Many undergo ICT training, but in planning lessons, implementing strategies for effective instruction, engaging students, and managing continuous assessment, barely any modification is observed. In many secondary schools, semi - urban and rural areas in particular, teachers lack confidence, hands- on practice, and continuous support in applying the use of ICT- based pedagogical approaches. Due to this fact, the training programs on ICT have seldom resulted in observable changes in teaching quality. An important question therefore arises: Are current programs on ICT training really effective in enhancing the pedagogical skills among secondary school teachers? Moreover, few studies have specifically investigated how ICT training affects the pedagogical competencies of teachers at the secondary level. Without such evidence, redesigning or enhancing ICT - related professional development at the behest of legislators, school administrators, and training providers becomes extremely difficult. The present research, therefore, intends to investigate the effectiveness of the effectiveness of the ICT training programs in enhancing the pedagogical skills of school teachers at the secondary level in Hathazari Upazila, Chattagram, Bangladesh.

1.3. Significance of the Study

The study is important research, as it examines the contribution of ICT training programs in enhancing the pedagogical skills of secondary school teachers. Understanding what really happens as a result of ICT training in schools is crucial for

improving instructional practices in modern times, which progressively rely on technology to support teaching and learning. This finding will, first, inform secondary school teachers of how ICT training can further enhance their pedagogical practices, such as lesson planning, instructional strategies and student engagement. It will also point out the aspects where educators may require further support or extra professional development. This will also help school leaders and training providers to comprehend the efficiency of current ICT training. Findings from this study will help them redesign or upgrade training modules in a more practical, relevant, and supportive way for teachers in actual classroom needs. Third, the results of the study will help the policy makers identify the gaps within the existing ICT initiatives and help them devise better plants that can help in propagating ICT- based pedagogy in secondary education. This can go a long way in transforming government training programs at all stages more efficient and sustainable.

This research will contribute to the academic field by providing evidence- based findings that might be helpful for future research in ICT integration, teacher development, and technology - enhanced education in Bangladesh. This study also compared on Hathazari Upazila, Chattogram, Bangladesh to provide localized insights that can be compared with other regions.

1.4. Objectives of the Study

General Objectives

a) To determine the overall effectiveness of the ICT training programs on improving the pedagogical skills among secondary school teachers.
b) To investigate how ICT training can help in developing teachers' instructional practices and classroom performance.

Specific Objectives

a) To identify types of ICT training received by secondary school teachers and their level of participation.
b) To explore the particular pedagogical skills which the teachers are expected to enhance through ICT training programs.
c) To what extent do the teachers engage in the use of ICT-based strategies in planning lessons, teaching, and engaging students?
d) To determine the challenges faced by teachers in integrating ICT tools into pedagogical activities after training is over.

1.5. Research Questions

1) How do secondary school teachers evaluate their pedagogical skills before ICT training programs?
2) How has the ICT training program influenced teachers teaching effectiveness, instructional strategies and methodological changes in the classroom?
3) What challenges do ICT trained teachers face while implementing ICT -based teaching?
4) How does ICT-based teaching led by trained teachers affect students learning experiences and classroom participation?

1.6. Scope and Delimitation of the Study

This study concentrates on the assessment of the effectiveness of ICT training programs in the realm of pedagogical skills advancement among secondary school teachers. The scope of this research covers selected secondary schools under Hathazari Upazila, Chattogram, Bangladesh, where data were collected from multiple stakeholders, such as head educators, assistant teachers, ICT instructors, and focus group. Their insights provide a comprehensive understanding of how ICT training influences teaching practices, classroom integration of technology and overall instructional enhancement. The specific aspects that the investigation has looked into include the nature of the ICT training programs, teachers' competencies, obstacles faced by them in implementing ICT-based pedagogy, and perceived outcomes of the training. Though the research encompasses varied participant groups, it limits itself to secondary schools only, excluding primary or higher education institutions. Similarly, the qualitative data gathered conveys the participants' individual views and experiences but may not provide a statistical trend across wider settings. It is again context- specific to Hathazari Upazila, Chattogram and may not generalize entirely to other parts of Bangladesh.

1.7. Study Area

This study was conducted in the Hathazari Upazila, a part of Chattogram district in Bangladesh. This area represents a unique combination of an education infrastructure with a variety of schools including government schools, autonomous schools which exist in the University of Chittagong campus, and city corporation schools. The Upazila is divided into several unions and villages with unequal accessibility to education facilities.

2. Literature Review

Information and Communication Technology is increasingly becoming an integral part of contemporary education. It presents opportunities to enhance learning and teaching practices, student - centered learning, and develop new learning designs [15]. To integrate ICT effectively within Bangladeshi secondary education, various government projects have already emphasized teachers' professional development and digital literacy, the development of ICT infrastructure within learning institutions. However, effective implementation at the secondary school level remains an issue. The issue still persists because teachers, though adept with all the technical skills through various trainings and workshops, have failed to

apply these skills appropriately at learning levels, namely the processes and practices of teaching learning, learning designs, and operations and management of classrooms and learning, and finally, the assessment and testing of students [16]. All these variables and components will be discussed and explored within this chapter and provide a comprehensive background on pedagogical skills development within Secondary Education.

2.1. ICT Training and the Development of the Pedagogical Skill

The goal of the ICT training programs is to enhance the technological and pedagogical skills of teachers so that they can use technology effectively in class. Pedagogical Skills include lesson planning, classroom management, teaching methods, and pupils' assessment. It has been seen that although teachers develop confidence in supplying technologies after attending training sessions, it does not positively impact teaching methods [17]. Only a few teachers make use of technologies for delivering classes, and there is no focus on making classes interactive and student -centric. Further, because of the lack of relevance between the training sessions and the pedagogical requirements, the use of technologies becomes bound.

2.2. Alignment of the ICT Competencies Through Professional Development

Sustained professional development and mentoring are critical in translating ICT training into effective classroom practices. Organized mentoring programs, refresher courses, peer collaboration, and hands-on sessions have been shown to enhance the development of more effective and confident use of technology in instruction by teachers. Continuing Professional Development (CPD) ensures that teachers update and refine their ICT- related pedagogical competencies. This develops a long-term improvement in instructional capabilities. Lack of follow- up mentoring or CPD usually leads to skill decay and regression to traditional ways of teaching due to the lack of ongoing support for ICT integration.

2.3. Role of Teacher Confidence, Experience and School Environment to ICT Integration

Teacher confidence, prior experience, and the school environment are core predictors of ICT integration in classrooms. Generally, novice teachers appreciate highly structured guidance and hands-on training, while more experienced teachers develop more complex uses of ICT as part of their pedagogical repertoires. Supportive school environments, comprising necessary infrastructures, administrative encouragement, and access to digital resources, provide conditions that enable the full potential of technology use in teaching. At the same time, teacher motivation and classroom culture serve as moderators in determining the success of ICT integration; it determines the ways of how a teacher can adapt the ICT tool for the encouragement of student- centered learning [18].

2.4. ICT Policy Implementation and School-Level Practices

The national policy on ICT usage within the education field contains enforcement strategies for professional development, ICT infrastructure, and incorporating learning technologies within teaching and learning processes [19]. Nevertheless, there appear to be discrepancies within intervention implementation at various schools. There would be obstacles at some schools regarding restricted ICT infrastructure and functionality, as well as a lack of monitoring and assistance services following any ICT training. IT demonstrates the necessity of establishing school - specific intervention tools for promoting ICT utilization within learning at a school like Hathazari Upazila, Chattogram, Bangladesh.

2.5. Subject -Specific ICT Integration and Student Engagement Challenges

The integration level of ICT varies among subjects. Science and mathematics subjects usually have more benefits from technologically driven teaching approaches, and there are fewer uses of ICT learning materials in humanities and art subjects. The Challenges experienced by teachers who employ ICT learning materials in learning include a lack of materials specific to subjects. Moreover, there may be a lack of proper teaching skills with regards to the use of technology. As a result, it becomes hard for pupils to understand learning supported by ICT.

2.6. Emerging Technologies and the Need for Continuing Professional Development

The accelerated pace of developments in educational technologies, ranging from Learning Management Systems (LMS), Smart Boards, Educational Apps, and virtual labs, requires an uninterrupted process for enhancing skills and competence among teachers. Lacking these forces teachers into a scenario where in they would be less capable of properly incorporating these technologies within the classroom setting [20]. Professional and hands-on experience with these technologies play an indispensable role within a scenario where in retention depends on uninterrupted professional development.

2.7. Role of a2i Initiatives in Strengthening Digital Pedagogy in Bangladesh

Access to Information (a2i) projects have significantly influenced digital pedagogy and ICT adoption within Bangla-

desh educational institutions. As a result of a2i projects, teachers are imparted comprehensive ICT knowledge and provide online facilities for collaborative learning. Educational institutions have been provided with computer labs and technological tools that assist with technology- mediated learning. All these efforts have worked towards improving teachers ICT skills and promoting learning within classes with the adoption and use of technology, as well as enhancing the digital literacy skills among students. Moreover, a2i projects have reinforced administrative efficacy with online facilities and tools for student attendance and monitoring, thus enhancing school performance.

3. Conceptual Framework

In this study, I have developed a conceptual framework to explain how ICT training programs can enhance teachers, pedagogical skills and promote effective classroom practices. ICT Training Program, TPACK Model, Intervention Tool (Nearpod), Enhanced Pedagogical Skills and Effective Classroom Practices are the five main parts of the framework, as shown in the diagram. The study starts with the teachers who are enrolled in the ICT training program, which aims to enhance their comprehension and use of technology in the classroom. Through this training, teachers develop competencies based on the TPACK model (Technological, Pedagogical and Content Knowledge) proposed by Mishra & Koehler [21], which integrates their technological knowledge with pedagogical strategies and subject content. As a result of the training and the use of Nearpod, teachers, pedagogical skills are enhanced, including lesson planning, instructional delivery and classroom management. Finally, the enhancement in pedagogical skills contributes to effective classroom practices, ensuring that students experience more meaningful, engaging and productive learning. This conceptual framework shows a sequential relationship: the ICT training program develop teachers TPACK knowledge which combined with Nearpod as an intervention tool, enhances their pedagogical skills and leads to effective classroom practices. The ICT training programs enhance teaching skills from a pedagogical perspective; yet, they are reliant on mentoring, Continuing Professional Development (CPD), confidence within the teaching profession, school factors, subject matters, developing technologies, and contextual issues. The a2i program is an intervention that has ensured enhanced digital pedagogy within Bangladesh. The Conceptual framework presents a comprehensive approach so that consequences on ICT training programs and teaching skills can be evaluated.

4. Methodology of the Study

The overall objectives of the research were to evaluate the efficiency of ICT training sessions offered to improve the pedagogical abilities of secondary school teachers. To fulfill these objectives, a qualitative research paradigm was adopted. Interviews, observation, Focus Group Discussion (FGD) with students, and document analysis were carried out to obtain a holistic interpretation of ICT implementation and its effects on teaching activities [22].

4.1. Research Approach

A qualitative research approach has been used in the study. Qualitative methods are best suited for in- depth exploration of people experiences, attitudes and behavior. Since the purpose of this study was to understand how ICT training assists secondary school teachers to develop their pedagogical skills, the qualitative approach helped the researcher to naturally comprehend the participants experiences, the real picture of the classroom and the procedure of using ICT. Qualitative research methods allow the researcher to flexibly collect data, analyze participant opinions, and develop integrated concepts using different data sources - such as interviews, classroom observations, student FGDs, and document analysis. This approach emphasizes depth and context of information, which is crucial evaluating the effectiveness of ICT training. This study follows an interpretative approach, where the meaning of reality is understood trustworthy overview of ICT application in the real educational context of Hathazari upazila, Chattogram, Bangladesh, through the experiences and interpretations of the participants. As a result, it is possible to understand in a natural setting how teachers, students and institutions think about, experience and encounter the challenges of using ICT. Overall, the qualitative research methods were most suitable for this study, as it is the impact of ICT training, facilitated a practical and in-depth analysis of changes in teacher skills and classroom ICT implementation.

4.2. Research Area

This study was conducted in Hathazari Upazila of Chattogram District in Bangladesh, which is an educationally important area and has both urban and suburban types of educational institutions. A total of five secondary schools were selected for the study. These include 2 autonomous schools, 1 government school and 2 city corporation schools. These schools differed from each other in terms of management structure, ICT facilities, teacher training possibilities and student diversity, creating a favorable environment for the study. The selected schools were particularly selected because they provide ICT subjects at the secondary level and the teachers here have previously undergone ICT- related training. The inclusion of different types of schools provided an opportunity to analyze in depth how ICT training challenges teachers' pedagogical skills, classroom ICT use and ICT integration.

4.3. Research Samples

In this study, data was collected using the purposive sam-

pling technique. Because in line with the objective of the investigation only those individuals who have received ICT training or are directly involved with the use of ICT in schools have been selected. A total of 15 participants participated in this study. These included 5 head teachers, 8 assistant teachers, and 2 ICT instructors. All of them are working in selected secondary schools of Hathazari Upazila, Chattogram, and have personal experience of ICT training and use of ICT in the classroom. Besides, a focus group discussion (FGD) was conducted with 10 students to find out the students' perspectives and practical consequences of using ICT in the classroom. Students are selected from different classes and schools, to reflect the diversity of their experiences and opinions. A total of 6 classroom observations were conducted in 3 schools to observe the real picture of the use of ICT in teaching by teachers. It enables analysis of ICT integrated teaching style, student participation and classroom environment. The selection of these participants was beneficial in meeting the research objectives and provided a real and reliable data base to evaluate the effectiveness of ICT training.

Table 1. *Demographic Profile of Teacher Participants.*

Variable	Attribute	Number of Participate
Age (Years)	30-39 years	6
	40-49 years	5
	50 years and above	4
Designation	Head Teachers	5
	Assistant Teachers	8
	ICT Instructors	2
Educational Qualification	Bachelor Degree	4
	Master's Degree	5
	B.Ed.	3
	M.Ed.	3
Professional Experience	Less than 5 years	3
	5-10 years	6
	More than 10 years	6
Types of School	Government Secondary School	1
	Autonomous Secondary school	2
	City Corporation Secondary School	2
ICT Training Received	Yes	13
	No	2
Total Participants		15

Table 1 presents the demographic profile of the teacher participants in terms of age, designation, educational qualification, professional experience, type of school, and ICT training exposure. In addition, the academic and professional backgrounds of the participants included Bachelors, masters, B.Ed., M.Ed., qualification, professional experience, type of school, and ICT training exposure. In addition, the academic and professional backgrounds of the participants included Bachelors, Masters, B.Ed., M.Ed. qualifications. A greater number of participants had undergone ICT- related training, which increased the credibility of the information they furnished with regard to the effectiveness of ICT training programs in bringing change into the pedagogical' competencies of the teachers.

Table 2. Demographic Profile of Student Participants (FGD).

Variable	Attribute	Number of Participants
Age (Years)	13-14	3
	15-16	4
	17-18	3
Gender	Male	5
	Female	5
Grade	Grade 8	3
	Grade 9	4
	Grade 10	3
Type of School	Government	2
	Autonomous	4
	City Corporation	4
ICT Exposure	Yes	10
	No	0
Total Students		10

Table 2 introduces the demographics of the 10 students who took part in the FGD. The pupils were selected from government, autonomous, and city corporation schools in grades 8 through 10. The reason for choosing students from different grades is that they would have experienced teaching supported by ICT, which would serve as insight into the effectiveness of teaching with ICT. The choice of the students includes male as well as female students.

4.4. Methods of Data Collection

Data were collected by using multiple qualitative methods to gain an in-depth understanding of teachers' pedagogical practices and student learning experiences. I conducted semi-structured interviews with ICT-trained teachers and head teachers to explore their classroom experiences, instructional strategies and the challenges they faced when implementing ICT. Focus group discussions (FGD) facilitated with students which provided them with a safe space to share their learning experiences and reflections on ICT- supported teaching. Furthermore, document analysis has been carried out by reviewing lesson plans, ICT training manuals and ICT policies to validate and triangulate the information from interviews and FGDs, as well as to understand the formal expectations regarding ICT integration. By combining these methods, I was able to gather comprehensive, credible, and contextually rich data for the study.

Table 3. Description of Data Collection Methods.

Methods	Description
Semi-Structured Interviews	These interviews were held with ICT-trained teachers and head teachers to explore their classroom experiences and teaching practices after the ICT training. These interviews were conducive for the participants to share their experiences and case studies that they have encountered while implementing ICT in class.
Focus Group Discussion (FGD)	Group discussions involved the sharing of experiences by students regarding their learning through ICT-supported teaching. Discussions indeed allowed students to speak about what they think.
Document Analysis	Lesson plans, ICT training manuals, and school ICT policies were reviewed to complement the data from interviews and FGDs. This helped in verifying the teachers' statements, and it showed how formal procedures were followed, thus giving a clear picture of the expectations related to the use of ICT in teaching.

4.5. Data Collection Tools and Instruments

In this study various tools and instruments were used for data collection, so as to ensure data quality and analysis process. Mainly the necessary tools for semi- structured interviews, focus group discussion (FGD), classroom observation and document analysis have been selected. Each tool is used ethically, with the consent of the participants and ensuring the confidentiality of the information. The above table summarizes the main tools and instruments used for data collection in this study. Each tool is selected in line with particular data collection methods, including interviews, focus group discussions, classroom observation and document analysis activities can be carried out efficiently and systematically. The use of these tools has made the research data collection process more reliable and streamlined.

4.6. Data Analysis Procedure

The qualitative data has been analyzed collected from interviews, focus group discussions (FGDs, and document reviews using thematic analysis. All the recordings have been transcribed in order to get the exact words spoken by the participants.

Table 4. *Methodical Qualitative Data Analysis in Steps.*

Step	Process	Explanation
1	Transcription	The interviews and FDGs were tape-recorded without editing or omitting any part of the conversation.
2	Familiarization	Transcripts are repeatedly analyzed to make the data known to everyone. Transcripts are the result of the data collection process, from which data extracted.
3	Coding	Coding is done through meaningful information and statements related to teaching-learning skills, integration of information and communication technologies, and classroom practices.
4	Theme Development	To identify patterns and key findings emerging from this study, themes and sub-themes have been included in relation to the codes used.
5	Interpretation	The nature of the research questions and related literature have been reviewed to present a complete picture of the role of ICT training.

4.7. Trustworthiness

As qualitative research lacks quantitative validity, it is very essential to ensure the credibility of the results. Multiple techniques have been adopted to increase the credibility of the data in this study. Firstly, triangulation has been used to ensure the credibility of the data, that is, the data obtained through semi-structured interviews, focus group discussion (FGD), classroom observation and document analysis have been evaluated and verified with each other. Besides, the information received by the students and teachers has been verified through member checking where needed, so that their beliefs are accurately reflected. Second, data collection and analysis steps are thoroughly documented to maintain data dependability. The researcher precisely saved all observations, notes and transcriptions, so that they could be re- verified if necessary. Thirdly, detailed records of field notes, observation checklist and document analysis are maintained to ensure reliability of data. It has been feasible to reduce researcher bias or personal opinion. Fourth, clear descriptions of the research location, participants, and methods are provided to ensure the transferability of the data, so that the results of this study are relevant to similar contexts in the future. Finally, these techniques ensure the credibility, reliability, and validity of the data. Which makes the research findings acceptable and academically strong?

4.8. Ethical Considerations

All ethical principles have been duly followed in conducting this research. The data collection activities were conducted only after obtaining the approval of the school authorities. Head teachers, assistant teachers, ICT instructors and students participating in the study were clearly informed about the purpose of the study, the method of data collection and the manner in which the data will be used. Informed consent was obtained from the participants and participation in the study was completely voluntary. A participant was given the opportunity to withdraw from the study at any time. Semi- structured interview, questionnaire, focus group discussion (FGD), classroom observation and document analysis methods have been used in data collection. During the conduct of interviews and FGDs, the consent of the participants regarding audio recording was given special importance. Only those participants who consented to audio were recorded. On the other hand, for participants who did not consent to audio recording, no audio

recording was done, rather, their statements were saved in the form of notes. The personal identity of the participants and the confidentiality of the information provided are strictly protected during the research. No participants name, identifying information, or school- specific identity is disclosed in the research report. All information collected is stored securely and used for academic research purposes only. While observing in the classroom, there was no disturbance created in the usual academic activities of the teachers and students, and it was ensured that no physical and mental stress is created on the participants by conducting the study.

5. Findings and Analysis of the Study

The findings of the study have been presented based on qualitative data collected through semi-structured interviews and focus group discussions. Interviews have been conducted with head teachers, assistant teachers, ICT instructors and secondary school students to explore how ICT training programs influence teachers' pedagogical skills and classroom practices. The aim of this study is to organize and interpret the data collected from the field in a meaningful way. During the interviews with the participants, an attempt was made to understand their real experiences, barriers and perceptions regarding the use of information and communication technology (ICT) in teaching and learning. After careful transcribed the interviews and discussion sessions, the data were reviewed repeatedly to familiarize themselves with the participants' response. Through this process, recurring ideas and patterns were identified and subsequently divided into major themes. These themes reflect both the positive contributions of ICT training and the real barriers faced by teachers and institutions. The results are presented thematically. Direct quotes from the participants were used to support each theme, so that their statements are clearly reflected. Along with these quotes, unbiased is also provided to explain how the participants' experiences relate to the objectives of this study. This approach helps to ground the research findings in the data and at the same time provides a deeper understanding of the educational impact of ICT training in secondary education.

5.1. Profile of the Participants

The participants in this study were purposively selected so that those directly involved in information and communication technology (ICT) based teaching and learning could express their experiences and perspectives. During the fieldwork, the views of head teachers, assistant teachers, ICT teachers and secondary schools' students were prioritized so that participants from different roles could be included and the findings could highlight both the institutional and classroom level realities of implementing ICT training. During the interviews, it was found that head teachers provided valuable insights into institutional support, policy implementation and infrastructural barriers related to ICT integration. Assistant teachers shared their practical experiences in their classrooms, especially how ICT training had affected their teaching skills and teaching strategies. ICT trainers gave their views on the effectiveness of the training program, teacher participation and post-training barriers. In addition, a focus group discussion was conducted with secondary schools' students to understand how ICT-supported teaching has affected their classroom participation and learning experiences. Including these divers' group of participants enabled the collection of multiple perspectives and a comprehensive understanding of the educational impact of ICT training programs in secondary education.

Table 5. *Profile of the Participants.*

Participant Category	Designation of Participants	Number of Participants	Data collection Method
School Administration	Head Teacher	5	Semi-structured Interview
Teaching Staff	Assistant Teacher	8	Semi-structured Interview
Training Personnel	ICT Instructor	2	Semi -Structured Interview
Students	Secondary school Students	10	Focus Group Discussion (FGD)
Total	-	25	-

The table above summarizes the categories and number of participants involved in the study. The diversity of participants ensured a balanced representation of administrative, instructional, training and learner perspectives.

5.2. Thematic Findings

The output of this research helps to reveal the dominant themes and lessons in the integration of ICT in secondary

schools in Hathazari, Upazila, Chattogram, Bangladesh. The collected data includes the benefits of teaching and learning activities through the use of ICT, as well as the limitations posed by the availability of resources and the capacity of the teaching force. The presentation of the data in themed clusters will give a deeper understanding of the effect of ICT on teaching and learning.

5.2.1. ICT Infrastructure Constraints and its Impact on Teaching and Learning

Lack of adequate ICT infrastructure is one of the factors hindering the integration of technology in teaching and learning. Many of the learning institutions lack enough computers and internet connectivity. The effect of this is that it directly hinders the use of ICT among students and prevents the teacher from embracing technology in learning and teaching. The deficits of ICT infrastructure hold them back from accessing technology, but at the same time negatively impact students' confidence and motivation and long-term learning outcomes. Without sufficient devices, stable internet and technical support and even well- trained teachers struggle to deliver ICT-based lessons effectively.

5.2.2. Policy Practice Gap in ICT Integration in School

A huge gap between the government directives and the implementation process at the classroom level regarding the implementation of ICT. It is true that the overall government policies on ICT implementation at the education sector are in favor of utilizing information and communication technology. However, these policies have been found limited at the implementation stages. Implementation is dependent on individual teachers. Even if Bangladesh has formulated policies on the incorporation of ICTs, since there are no clear policies or even a proper monitoring system at school levels, there is a failure in completely implementing this goal. In this light, for effective incorporation of ICTs, it is important that policies, implementation manuals and monitoring mechanisms at school levels are achieved.

5.2.3. Variability in Teachers ICT Competence

The competence level among teachers on ICT use showed some variability. The fact a large number of teachers had been trained on the use of ICT, nevertheless, the level of competence and comfort they showed when using technology showed some variability. Consequently, the level of integration with ICT technology was irregular across teachers. ICTs should not be developed in training but rather through continuous support and practice because, in reality, teachers who feel comfortable are more inclined to explore the use of ICTs, while those with less confidence are less inclined and limit the application of ICTs to essential functions. Through observation and discussion with teachers, I also observed that less competent teachers normally only utilized ICT for demonstrational purposes only. This tends to reduce students' involvement with technology and limits the efficacy of incorporating ICT. Following important gaps exists in pertaining to the ICT capability of teachers:

a) Inequity in the level of ICT capabilities among teachers, even with equivalent trainings.
b) Lack of familiarity with advanced applications of ICT tools.
c) Opportunities for regular practices and mentorship for improving skills are lacking.
d) A drop in the utilization of ICT by teachers who are less skilled over time.

Variability in teacher competence with respect to the integration of information communication technology sharply impacts the integration process. This means it is extremely necessary to provide support to the staff to become confident and competent in the usage of information communication technology.

5.2.4. Positive Impact of ICT Training Program

ICT training programs have positively impacted the teaching practices and confidence of the teachers. The application of ICT in training impacts positively on the process of teaching, Classroom interaction, and the involvement of students. Teacher felt much motivated towards the application of technology, and students showed aptitude in their involvement. Although these programs have had a positive effect, it has been identified some areas where these programs may fall short:

a) Long-term sustainability gap- without continuous practice, teachers may slowly fall back into conventional approaches.
b) The resource and support gap-that is, lack of accessibility to ICT resources -might limit the use of training outcomes.
c) Monitoring and mentoring gap - failure to provide continued support leads to a lack of ability to replicate innovative ICT practices in teaching.

After my analysis, the key benefits that the training of ICT offers are:

a) More effective teaching techniques, more interactive, more student-centered.
b) Increased student engagement with the teaching process.
c) Increased motivation for teachers to work with ICT tools and resources.

Thus, ICT training schemes greatly and positively influence both teachers and students. This is because teachers are better trained to apply technology creatively, while students are exposed to more interactive learning. Yet, to accomplish and maintain these levels of success, practice and resources are necessary.

5.2.5. Teachers Motivation, Initiative and Institutional Support

The teachers' motivation and personal initiative, combined with institutional support, play a crucial role in the effective use of ICT in teaching. Even when teachers receive ICT training, their desire to apply it largely depends on encouragement from school authorities and the whole institutional atmosphere. The motivated teachers generally create extra effort, such as preparing digital materials at home or trying some new tools. In cases where these efforts are not recognized or supported, over time teachers get frustrated. Despite the motivational attitude and initiative taken by teachers themselves, several lacunae were noticed:

a) Lack of institutional encouragement and recognition for teachers using ICT.
b) Limited administrative support like access to ICT rooms and flexible scheduling.
c) Uneven encouragement amongst schools leading to inconsistency in ICT practices.

The effective integration of ICT in schools depends not only on training and developing teachers' skills but also on teachers' motivation, as well as institutional support. When motivated teachers are encouraged and recognized by school administrators and provided with basic facilities, they are more inclined to carry on with the same teaching practices based on ICT. Therefore, strengthening institutional support mechanisms is crucial to preserve teachers' motivation and initiative in ICT integration.

5.2.6. Challenges in Student Engagement and Learning Outcomes

The use of ICT makes learning attractive to students, there are still some challenges involved in engaging students in learning and ensuring outcomes. The enthusiasm for technology powered learning is good; however, the absence of hands - on components limits effective participation. This leads to the development of superficial learning for the students as they can retain the information temporary but not for enough when applying the same.

5.2.7. Sustainability of ICT Training and Classroom Practices

ICT training programs initially improves teachers' skill and motivation, maintaining these practices over time continues to be a major challenge. The absence of systematic follow-up, mentoring and monitoring often ends in a gradual decline in the use of ICT - based teaching strategies. So, it eventually establishes the fact ICT training programs are not sustainable. In the absence of professional support, mentoring, technical assistance and administrative monitoring, it becomes difficult for the teacher to cope with the teaching process using ICT. This brings forth the aspect of sustainability in a more distinct manner.

5.2.8. Inequality of Opportunity in ICT Education

Opportunity inequality in ICT education exists as an important and real problem, while talking directly with teachers and students of various secondary schools in Hathazari Upazila, Chattogram, Bangladesh. Most of the schools in this upazila lack of adequate technical infrastructure, sufficient computers, reliable internet connection and regular technical support. These limitations have a direct negative impact on students learning opportunities and learning outcomes. During data collection I collected data from 5 secondary schools of Hathazari Upazila, Chattogram, Bangladesh. Although the infrastructure of the schools differed in some respects, large disparities in access to ICT education were observed in all of them. Lacking adequate equipment, students are often limited to viewing demonstrations and receive, their practical skills, confidence and problem- solving abilities are not properly developed. The opportunity inequality in ICT education in Hasthazari Upazila, Chattogram, Bangladesh, schools is not only limited to the lack of technology; This has a profound negative impact on student confidence, interest in learning and long - term learning outcomes. Therefore, to ensure equality in education, target- based technical infrastructure development in the schools of this upazila, provision of adequate equipment teachers' training and continuous institutional support are essential.

5.2.9. ICT- based Learning and Development of Higher- Order Cognitive Skills

Not only knowledge gained through ICT - based learning, it is also a significant aid in developing critical thinking and problem - solving capabilities among students. While traditional learning is essentially based on rote learning, where a student is merely fed information, ICT based learning tools such as simulation and learning software enable students to weight alternatives and interesting concepts. However, some areas have been identified that restricted the development of higher - order cognitive skill effectively. The schools have poor access to advanced software and ICT equipment and this hider the ability of the learners to tackle complex tasks using these technologies. Furthermore, the skill of teachers to develop critical thinking learning activities is inconsistent. The teachers have the potential to develop problem - solving learning experiences for the learners but mostly promote learning through the demonstration method of teaching. Further, there is also unequal participation by students, whereby some students do not have immediate access to computers or internet- enable gadgets. This undermines their engagement with problem- solving and the totality of the cognitive skill development benefits that derive from ICT learning. Teaching through ICT has immense potential to boost the critical thinking skills and problem- solving capacity of students and this goes far beyond the realm of mere knowledge development. However, the limitations in term of resources, skills and disparities existing among students are hampering the realization of this potential.

5.2.10. The Role of ICT Training in Enhancement of pedagogical Skills

The study found that ICT training plays a crucial role in enhancing teachers' pedagogical skills and the training helped them learn how to plan lessons in different ways and how to make the students more interested in the lessons. The training enhances both the lecture conducted by the teacher and the capability to improve student involvement. The teachers are embedding technology into the teaching processes to make the classrooms interactive. This indicates that ICT training has an impact on pedagogical development but it may be hampered by factors such as lack of equipment. The role of financial institutions in this quote, it is clear that teachers' confidence is enhanced as a result of ICT training through lack of resources limits its classroom implementations. ICT training is thus effective in improving pedagogical competence, student engagement, learning outcomes, as well as creative pedagogical practices. Nevertheless, the potential role of ICT in pedagogical improvement cannot be actualized if proper resources, support and confidence are not ensured.

6. Analysis

In the light of data collected from five schools of Hathazari Upazila, Chattogram, Bangladesh, the impact limitations and interrelationships of ICT training program in improving teachers teaching skills are analyzed.

6.1. ICT Infrastructure and Reality of Classroom Practice

The study shows that the lack of adequate ICT infrastructure limits teaching through technology. While multimedia classrooms have been introduced in schools to a considerable extent, the lack of operational devices prevents active learning among the students. During the interaction with teachers, it became increasingly clear that technology-based teaching in schools remains a demonstration-based process in many cases. These circumstances indicate that infrastructure is not only a technology problem but also an educational problem. Infrastructure has an important bearing on the capability to create student-centered activities, which is an area that ICT is not effective in case the resources required to facilitate the educational process are not available.

6.2. Policy-Practice Gap and Institutional Limitations

An underlying problem, evident within the study, is the mismatch between the national ICT policy and the implementation of the policy within the school contexts. Participants stated there is greater emphasis on ICT integration, yet they experience a lack of monitoring, follow-up, and institutional accountability. It is evident, in light of the findings, these factors lead to uncertainty within the teaching fraternity. This highlights that mere policy formulation is inadequate to bring some change in the pedagogical practices. There has to be proper implementation and evaluation mechanisms. Otherwise, the use of ICT will vary and mostly rely upon the motivation of the teachers.

6.3. Teachers' ICT Competence and Pedagogical Confidence

This study made it clear that there is some observable variation in ICT skills among the teacher population, and this has impacted teacher practices in class. In fact, it was observed during the interview session that those with better ICT skills showed greater confidence in applying interactive teaching methodologies. It should be noted in this result that there is a close linkage between the quality of pedagogy and teachers' confidence in using technology. Professional training programs for ICT integration should take into account the varying expertise in teachers. If neglected, inequalities in pedagogy could be exaggerated in ICT integration.

6.4. Training as a Driver of Pedagogical Transformation

One of the most important findings here is that training in ICT leads to a shift from a teacher-centered to a student-centered approach. Training was followed by a discussion of multimedia resources, class interactions, and group work, according to the teachers. In my opinion, training in ICT helped to change the role of a teacher. This is an indication that ICT training is not only meant to develop technical competency but also shapes teachers' beliefs about pedagogy. If teachers feel competent around technology, they become open to innovative approaches that facilitate active learning.

6.5. Motivation, Support, and School Leadership

Despite the fact that the teaching staff showed high levels of motivation towards the use of ICT, it is clear from the results that motivation by itself is not sufficient to bring about teaching practices. Most participants highlighted the issue of lack of support. Based on my analysis, lack of support from institutions is likely to cause demotivation of the teaching staff. Notably, this underscores the significance of leadership within the institution to facilitate the integration of ICTs. Lack of support from the leadership will limit the effectiveness of efforts to integrate ICTs within the institution.

6.6. Student Engagement and Learning Outcomes

The study establishes that the use of ICT in education has a

positive impact on engagement if the students participate actively in it and passive use of technology did not generate a similar result. This indicates that information and communication technologies improve the learning process only when combined with effective pedagogical approaches. In this respect, active engagement rather than passive engagement with technologies can be seen as a factor in effective learning.

6.7. Sustainability of ICT Practices

Sustainability became a consideration of this research. This is because the teachers expressed that the adoption of ICT reduces after the completion of official training programs. Sustaining implementation through refreshers and monitoring would have played a significant role in this consideration. This indicates that the process of integrating ICT can be a continuous process and can never be a single-point intervention. For sustained pedagogical improvement, there could be long-term planning, monitoring, and further professional development.

6.8. Equity and Access in ICT-Based Education

This study also reveals a considerable disparity in the accessibility of ICTs among schools. Among the points that the participants raised was that the inequality in the provision of facilities would impact the instructional advantage of ICTs, especially in the disadvantaged regions. In my view, inequality could be a threat to the inclusiveness of ICTs in education. This is an implication that supports the importance of resource allocation equality. If equality is not considered, the integration process may contribute to an intensification of inequality within the education sector instead of overcoming it.

6.9. Continuous Professional Development and Skill Retention

The second important finding is about the continuous reinforcement of skills possessed by school teachers regarding ICT. The participants suggested a continuous loss of skills if practice and training are not updated. Based on my analysis and findings, continuous development is a necessary process to keep these skills updated and fresh. Rather, this implies that continuous training should and can be incorporated in the education system in order to promote long-term educational improvement.

6.10. ICT Training and Learner-Centered Pedagogy

The study establishes that ICT training is responsible for enhancing learner-centered teaching practices. The teachers reported increased interaction, cooperation, and class participation. From my view, ICT is a teaching aid that allows various modes of instruction when implemented effectively. Technology is reaffirming the fact that technology alone cannot reform education, instead the application of technology in education for meaningful learning to occur. This chapter presented the results of the study by contextualizing the findings. The analysis reveals the positive impact of ICT instruction on confidence, teaching practices, and engagement, but it is hampered by challenges such as infrastructure, gaps between policies and practices, institutional constraints, issues of sustainability, and equity of access. These issues must be addressed in order to have effective and sustainable adoption of ICT in secondary education.

7. Conclusion

The prime focus of the research work was to assess the effects of ICT training programs on the teaching capabilities of teachers and the performances of students in the educational institutions of Hathazari Upazila, Chattogram, Bangladesh. The results revealed that the teachers felt motivated and inclined towards effective teaching methods that involve interactive approaches to teach the students or engage them in class activities. However, the sustainability and extent of the impact of the project have been affected by several challenges. These include the availability of computers, unreliable internet connectivity, absence of technical support and follow-up that limit the teacher's ability to fully utilize the new skills learned. The success of ICT training depends on the experience and motivation of the teacher, as an important aspect of an effective ICT integration project is not just the kind of training given. The support and involvement of institutions and administrators contributed considerably to the implementation of skills by teachers. In the case of districts with the support and guidance of the institutions, teachers practiced new strategies all the time. However, teachers did so less and less due to the lack of recognition and support of the learned skills in other districts. The process of learning by students was also affected by the mix of the above factors. On the whole, the research reveals that ICT training has the capability to improve the speaking competencies of teachers and student engagement, but for sustainable success, there should be appropriate infrastructure and active engagement of teachers.

7.1. Recommendation

1) Recommendations Based on Research Findings:
   a) Implementation of Continuous Professional Development Programs: Develop ongoing programs to help teachers sustain and enhance ICT competencies over time.
   b) Organization of Refresher and Advanced ICT Training Workshops: Conduct advanced workshops to familiarize teachers with emerging technologies and tools.
   c) Establishment of Structured Monitoring and Evalua-

tion Systems: Introduce formal evaluation frameworks to assess the impact of ICT training on teaching quality and student learning outcomes.

d) Provision of Strong Institutional Support and Resource Allocation: Ensure schools provide administrative encouragement and necessary resources for successful ICT integration.

e) Formulation of ICT Integration Policies: Develop policies to address infrastructural gaps, set minimum requirements, and standardize ICT facilities in schools.

f) Introduction of Post-Training Follow-Up Programs: Implement structured follow-up initiatives to guide teachers in applying ICT skills practically.

g) Promotion of Collaboration between Teachers and ICT Trainers: Facilitate continuous interaction to align training content with classroom realities and curriculum needs.

2) Recommendations Based on Pedagogical Skills:

a) Emphasize Student-Centered and Interactive Learning Approaches: The training of ICT should be based on engaging student-centered learning strategies.

b) Integrating pedagogical strategies with ICT tools: The policy should encourage teachers to integrate instructional methods with technology for conceptually meaningful lessons.

c) Inclusion of Practical Classroom Exercises within the Training Modules: Incorporate real classroom scenarios and lesson simulations that allow for practical application of ICT skills.

d) Design Collaborative and Project-Based Activities: Encourage group work and project-based ICT activities that enhance problem-solving and critical thinking.

e) Recognition and Reward Systems for Motivating Teachers: Programs should be implemented in schools to recognize those teachers who integrate ICT effectively in order to keep them motivated and innovative.

f) Promotion of Reflective Practices and Continuous Improvement: Regularly encourage teachers to assess, reflect, and refine their ICT-based teaching strategies.

3) Recommendations based on Participants' Suggestions:

a) Provision of Adequate ICT Infrastructure in Classrooms: This involves ensuring that classrooms are provided with adequate ICT resources such as computers and projectors.

b) Maintenance and Upgrading of ICT Equipment: A regular maintenance and update program should be done for the equipment and software to avoid disruptions when teaching.

c) Continuous Mentoring and Professional Guidance for Teachers: Ensure continuous mentorship from school administrators and ICT professionals to promote effective integration of ICT in teaching.

d) Equal Access to ICT Training Programs for All Teachers: Guarantee access to ICT training sessions for all teachers, irrespective of their level of experience and ranking.

e) Engagement of Dedicated Technical Support Staff: Employ technical support staff in schools to aid teachers in troubleshooting, maintenance, and application of ICT there.

f) Creation of a Peer Learning Network among Teachers: Encourage the use of peer groups for the sharing of best practices, innovative approaches, and experiences gained through ICT integration.

g) Organizing Administrative Awareness and Sensitization Sessions: It is necessary to conduct workshops for school heads and administrators about the challenges, ICT infrastructure, and administrative support.

7.2. Implications and Future Directions for the Researcher

The results from this research have several implications for teachers, administrators, and policymakers engaged in secondary education. Specifically, this research indicates that the training of teachers in ICT is an important factor that plays a critical role in improving teaching capacity by adopting student-centric approaches and utilizing digital tools. It is apparent that this research has major implications that offer directions towards improving teaching capacity and overall learning processes within secondary schools. The study further reveals that the effectiveness of ICT training depends not only on training content but also on institutional support, resource availability, and continuous professional development opportunities. School authorities should, therefore, prioritize providing adequate infrastructure, technical support, and follow-up mechanisms for the sustainable integration of ICT in classroom practices. Policymakers can use the findings of this study to design more context-sensitive ICT training programs addressing the practical needs of teachers, especially in semi-urban and rural areas. In terms of future directions, the above study provides a number of research opportunities. Researchers can immediately carry out the study using the mix-methods or quantitative research paradigm in measuring the long-term effect of ICT training on the teaching performance of the educators and the educational outputs of the students. Moreover, the study can be widened across the regions, featuring a larger sample for a wider view on the integration process of ICT in the secondary educational level.

Abbreviations

a2i	Access to Information,
B.Ed.	Bachelor of Education
CPD	Continuing Professional Development
FGD	Focus Group Discussion
ICT	Information and Communication Technology
LMS	Learning Management System

M.Ed.	Master of Education
TPACK	Technology, Pedagogical and Content Knowledge

Author Contributions

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Conflicts of Interest

The authors declare no conflicts of interest.

Appendix: Research Questions & Interview and Focus Group Discussion Questions

Appendix I: Research Questions

1) How do secondary school teachers evaluate their pedagogical skills before ICT training programs?
2) How has the ICT training program influenced teachers teaching effectiveness, instructional strategies and methodological changes in the classroom?
3) What challenges do ICT trained teachers face while implementing ICT -based teaching?
4) How does ICT-based teaching led by trained teachers affect students learning experiences and classroom participation?

Appendix II: Head Teacher Interview Questions

Table 6. *Questions of Head Teachers' Interview.*

1. What was your overall assessment of the teachers' pedagogical skills before the ICT training? What kind of teaching strategy did the teachers use more then?
2. What kind of changes have you noticed in teachers teaching practice after training?
3. Are teachers using more technology- based and learner- centered strategies after ICT training?
4. What are the main institutional challenges in implementing ICT- based teaching at the school level?
5. Are school infrastructure and technical support adequate for ICT teaching?
6. How has the quality of student learning and participation in the classroom been affected by ICT- based teaching?
7. Have you observed any changes in the students' level of interest and participation?

Appendix III: Assistant Teacher Interview Questions

Table 7. *Questions of Assistant Teachers' Interview.*

1. How was your teaching method and classroom practice before ICT training? What aspects of your pedagogical skills seemed weak at that time?
2. How has ICT training improved your lesson planning and teaching effectiveness?
3. Which pedagogical skills (interaction, assessment, presentation) have improved the most?
4. What kind of technological or pedagogical problems have you encountered while using ICT?
6. What do you find to be the biggest challenge in the area of time, skills and learning resources?
7. How has the use of ICT influenced students' interest and participation in the classroom?
8. What is your experience of student understanding and learning speed?

Appendix IV: ICT Instructor Interview Questions

Table 8. *Questions of ICT instructors' Interview.*

1. How did you assess the pedagogical competence of the teachers at the beginning of the training?
2. In which skills areas do you notice the greatest shortage of teachers?
3. What kind of changes were observed in the teachers' classroom implementation after the training?
4. In your opinion, has ICT training really been able to bring pedagogical transformation?
5. What are the most difficult areas faced by the teachers during and after the training?
6. What do you think are the limitations of the training?
7. How effective was the ICT- based teaching in instructing the students, based on the feedback obtained at the end of the training?
8. Is ICT- based teaching helping to ensure learner- centered learning?

Appendix V: Focus Group Discussion (Students) Questions

Table 9. *Questions of Focus Group Discussions' Interview.*

1. What were your classes like before using ICT?
2. What kinds of problems with participation in class and reading comprehension were present?
3. Has learning in the classroom using ICT become easier and more than before?
4. Are teachers teaching more interactive and participatory now?
5. Is teaching ever interrupted due to technical problems in the classroom using ICT?
6. What effect do these problems have on the learning process in the classroom?
7. Are you more interested and active in class using ICT? Why?
8. How has ICT - based teaching improved your learning experience?

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