

Research Report
on
Training Need Assessment of Teachers to Implement
Formative Assessments at the Secondary Level in Bangladesh

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Executive Summary

Formative assessment has emerged as a transformative approach in education, shifting focus from traditional summative evaluations to continuous feedback and student engagement (Ma Ding, 2024). As education policies in Bangladesh move toward competency-based and student-centered learning models, the effective integration of formative assessment in classroom practice has gained renewed importance. However, the success of this shift largely depends on teachers' capacity to implement formative assessment meaningfully and consistently. The implementation of formative assessment in secondary education system has encountered significant misconceptions and systemic challenges.

In secondary education system, formative assessment has been emphasized in policy documents, yet its implementation remains inconsistent and often misunderstood. Many teachers still equate formative assessment with the absence of examinations, leading to exam-oriented practices that undermine its learner-centered potential. Recognizing the central role of teachers in effective formative assessment implementation, this study conducts a Training Needs Assessment (TNA) to evaluate their Knowledge, Skills, and Attitudes (KSA) and to explore the factors contributing to create the gaps, and examine the causal relationships influencing teacher capacity.

Using a mixed-methods approach, data were collected from 223 secondary-level teachers representing diverse subjects and geographical areas, complemented by focus group discussions with experienced trainers and practitioners. Findings reveal that while teachers generally demonstrate moderate to high skills and positive attitudes toward formative assessment, significant knowledge deficits persist. Only 19.8 percent of respondents exhibited strong conceptual understanding, with misconceptions evident in areas such as performance indicators, competency mapping, and distinctions between formative and summative assessment. Knowledge gaps were particularly pronounced among teachers of Digital Technology, Mathematics, English, Bangla, Religious Studies etc.

The study also identifies systemic and institutional barriers, including overcrowded classrooms, high student-teacher ratios, excessive workloads, insufficient incentives, and limited leadership support. Private school teachers scored higher overall (79.4 percent) than government school teachers (72.2 percent), suggesting disparities linked to institutional capacity and support structures. Importantly, the analysis underscores that knowledge serves

as the foundation influencing both skills and attitudes; without strengthening this core, improvements in Formative Assessment practice will remain limited.

Moreover, institutional leadership emerged as a pivotal factor, head teachers' limited formative assessment knowledge leads to unsupportive environments, where noise from interactive activities or interdisciplinary conflicts discourages implementation.

For addressing institutional support, it is crucial to reduce student-teacher ratios through targeted recruitment drives, particularly in government schools where TNA scores were lower. Additionally, state-led awareness campaigns targeting parents, students, and communities are essential to dispel misconceptions about formative assessment. Training for head teachers should be mandatory and parallel, focusing on monitoring Formative Assessment and creating supportive school ecologies.

Curricula should adopt a modular structure, beginning with foundational knowledge sessions that clarify formative assessment's pedagogical purpose, using current textbooks for subject-specific examples to ensure relevance for secondary-level teaching. Skills development must emphasize hands-on, practice-oriented approaches, including microteaching simulations for rubric design, diagnostic questioning, and digital tool usage, with separate modules for technical subjects like Science and Mathematics to build proficiency in complex assessments. Attitude-building components should demonstrate formative assessment's benefits through real-classroom scenarios, fostering belief in its efficacy and interdisciplinary respect via collaborative exercises. To incorporate other factors, curricula must include dedicated sections on large-class management strategies, workload mitigation techniques, and advocacy skills for engaging institutional leaders.

Policy revisions should integrate formative assessment more robustly into the national curriculum framework, aligning it with summative evaluations to reduce the dominance of high-stakes exams and incorporate incentives for formative assessment adoption, such as recognition in teacher performance appraisals or financial rewards to alleviate workload burdens and ensure proper recognition of intellectual labour.

This Training Needs Assessment (TNA) provides critical insights for bridging the gap between formative assessment policy and classroom reality. By investing simultaneously in teacher capacity, institutional support, and systemic reforms, Bangladesh can move toward a more competency-based, learner-centered secondary education system.

Acronyms and Abbreviations

Acronyms & Abbreviations	Expression
ANOVA	Analysis of Variance
CLRM	Classical Linear Regression Model
DSHE	Directorate of Secondary and Higher Education
FGD	Focus Group Discussion
GoF	Goodness of Fit
HSC	Higher Secondary School Certificate
KII	Key Informant Interview
KSAs	Knowledge, Skills, and Attitudes
MANOVA	Multivariate Analysis of Variance
MoE	Ministry of Education
MS	Mean Square
NCTB	National Curriculum Text Board
OCED	Organization for Economic Cooperation and Development
RO	Research Objective
RQ	Research Question
SdFA	Student-directed Formative Assessment
SED	Socioeconomic-Demography
SPSS	Statistical Package for Social Sciences
SSB	Sum of Square between classes
SSC	Secondary School Certificate
SST	Sum of Square Total
SSW	Sum of Squares Within Classes
TdFA	Teacher-directed Formative Assessment
TFAPS	Teacher Formative Assessment Practice Scale
TE	Training Specialist
VIF	Variance Inflation Factor

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Chapter-1: Introduction

1.0 Introduction

This chapter lays a comprehensive foundation for understanding the context, significance, and rationale behind implementing formative assessment within Bangladesh's secondary education landscape. In response to global educational trends and national curriculum reforms, Bangladesh has initiated a pedagogical shift towards more dynamic, student-centered assessment practices- particularly starting at the sixth-grade level. Formative assessment, which emphasizes continuous feedback and adaptive instruction, holds the potential to transform traditional modes of teaching and learning, thereby enhancing student engagement, motivation, and academic performance.

The effective application of formative assessment, however, requires that teachers possess adequate knowledge, practical skills, and a positive attitude toward this approach. As the country undergoes this paradigm shift, challenges have emerged, particularly regarding teachers' preparedness, institutional support, and systemic readiness. Addressing these concerns calls for a comprehensive Training Need Assessment (TNA) of teachers to identify the capacity gaps and inform evidence-based professional development strategies.

Accordingly, this introductory chapter outlines the key components of the research, including the background and problem statement, the rationale and context of the study, the research questions and objectives, and the limitations. Operational definitions of the core concepts and an overview of the report structure are also provided to guide the reader through the subsequent chapters. The findings of this study aim not only to contribute to the academic discourse on formative assessment but also to offer practical insights for policymakers, educators, and stakeholders working to improve learning outcomes across Bangladesh's education system.

1.1 Background of the Study

Formative assessment has emerged as a vital component in enhancing the quality of education and achieving the Sustainable Development Goals (SDGs), particularly those related to inclusive and equitable quality education. It facilitates continuous learning by providing timely feedback, enabling teachers to monitor student progress, and equipping learners with the skills necessary to meet future academic and life challenges (Kunuba, 2022). Moreover, formative assessment contributes to deeper understanding, increased student engagement, and the development of learner autonomy and accountability within the educational process (Mihelic

& Zore, 2022). Numerous studies confirm its positive impact on learning outcomes across different educational contexts and levels (Ahmed & Teviotdale, 2008).

Despite its recognized benefits, the implementation of formative assessment varies widely between countries. In many international education systems, formative assessment is systematically embedded within evaluation frameworks, whereas in many developing countries like Bangladesh, it remains inconsistently practiced and insufficiently supported (Mihelic & Zore, 2022). Although educators in Bangladesh increasingly acknowledge the pedagogical value of formative assessment in improving instructional quality and learner outcomes, many lack the necessary training and skills to apply these techniques effectively during classroom interactions (Ndlovu, 2025).

In this context, conducting a TNA becomes critically important. A well-designed TNA identifies the specific performance standards expected of teachers and pinpoints the knowledge, skills, and attitudes (KSA) they need to develop to meet these standards (Liwanag, Padohinog, & Balsicas, 2023). As part of a comprehensive professional development framework, TNA serves as a diagnostic tool that aligns teacher capacity-building initiatives with institutional goals and national education policy priorities (Koloi-Keaikitse, 2016).

Recognizing these needs, the present study seeks to assess the readiness of secondary-level teachers in Bangladesh to effectively implement formative assessment. It is guided by three primary objectives: first, to evaluate teachers' current levels of knowledge, skills, and attitudes related to formative assessment; second, to identify the contextual and institutional factors influencing these competencies; and third, to analyze how these factors interact to shape teachers' preparedness and performance.

By examining the existing gaps and challenges in teacher capacity, this study aims to inform evidence-based training strategies and policy interventions. The findings will offer valuable insights to educational planners, training providers, and policymakers committed to improving student learning outcomes through the strengthened implementation of formative assessment practices in Bangladesh's secondary education sector.

1.2 Statement of the Problem

The implementation of formative assessment (FA) in Bangladesh's secondary education system has encountered significant misconceptions and systemic challenges. When the initiative was first introduced, many stakeholders- including parents, educators, and even teachers-

misunderstood the purpose of formative assessment, assuming it meant the abolition of exams and a decline in academic rigor. This misinterpretation contributed to a perceived vacuum in student knowledge acquisition and assessment practices, ultimately raising concerns about declining educational quality (Ogah, 2013). In some cases, FA was even viewed as part of a broader conspiracy to weaken the intellectual development of the younger generation.

Culturally embedded practices in Bangladesh further complicate the effective adoption of formative assessment. Overcrowded classrooms, resource limitations, and an entrenched reliance on rote memorization impede the shift toward more dynamic, student-centered assessment approaches. Within this context, successful implementation of FA demands a multifaceted and context-sensitive strategy- one that acknowledges the existing constraints and seeks to transform teacher capacity through targeted interventions.

A core challenge lies in the inadequate preparation and professional support available to educators. Empirical studies have shown that a large number of secondary school teachers have not received any formal training in formative assessment (Chowdhury et al., 2021). Those who have undergone training often report that the sessions were poorly designed and misaligned with practical classroom realities. Without proper understanding, tools, or confidence, teachers struggle to utilize formative assessment techniques effectively limiting its potential to personalize instruction and improve student outcomes (Kuze & Shumba, 2011; Juan et al., 2023).

Moreover, successful application of formative assessment is not only dependent on knowledge and skills but also on teacher attitudes. A teacher's belief in the value of FA plays a pivotal role in its consistent use. Positive teacher attitudes can foster a supportive classroom environment where students feel encouraged to participate, make mistakes, and engage in reflective learning (Subedi, 2015). However, such attitudes must be cultivated through structured training programs that demonstrate both the relevance and benefits of FA for teachers and learners alike.

Given this situation, it is evident that the existing teacher training programs in Bangladesh are insufficient to support the effective rollout of formative assessment. This gap underscores the urgent need for a comprehensive training needs assessment (TNA) that can pinpoint the specific knowledge, skills, attitudes, and contextual barriers influencing teachers' ability to implement FA strategies. By identifying these needs, relevant stakeholders- including the Ministry of Education, Directorate of Secondary and Higher Education (DSHE), and curriculum planners- can design contextually appropriate professional development programs

that strengthen classroom-based assessment practices and promote meaningful student learning (Alam & Shengquan, 2019; Berry et al., 2019; Nurfiqah & Yusuf, 2021).

1.3 The Research Rationale and Context

Formative assessment has garnered increasing global attention due to its demonstrated effectiveness in enhancing both teaching and learning processes. In Bangladesh, the introduction of a competency-based curriculum has initiated a paradigm shift, particularly at the secondary level, with formative assessment positioned as a central element of classroom instruction. In response to this policy reform, the present study is designed to evaluate the practical implementation and impact of formative assessment from the perspective of teachers working within the new curriculum framework.

This research is grounded in an empirical investigation involving responses from 202 secondary-level teachers, collected through a structured Google Form survey. The data were analyzed using both descriptive statistics and inferential techniques, including t-tests, ANOVA, and multivariate regression models, to uncover patterns, relationships, and key influencing factors.

The rationale for this study stems from the urgent need to understand how teachers are experiencing, perceiving, and implementing formative assessment at the classroom level. Despite its formal introduction, there is limited empirical evidence on how teachers interpret and apply formative strategies in practice, or how contextual factors- such as institutional support, workload, and pedagogical training - affect their readiness and engagement. This study seeks to bridge that gap by capturing the field-level realities of teachers' knowledge, skills, attitudes, and challenges related to formative assessment.

Specifically, this research offers four significant contributions to the ongoing discourse on formative assessment in Bangladesh. First, it provides a robust statistical evaluation of formative assessment practices using advanced analytical methods. Second, it explores teachers' behavioral readiness and willingness to adopt formative assessment approaches in their classrooms. Third, it identifies the key enablers and barriers that influence successful implementation, offering insights into teacher performance and institutional dynamics. Finally, it contextualizes formative assessment practices through an interdisciplinary lens, examining not only teacher practices but also student engagement (e.g., feedback, group work, self-assessment), grading strategies, and government policy interventions.

In sum, this study aims to generate actionable evidence that can inform teacher training programs, support curriculum implementation strategies, and guide education policymakers in promoting more effective and sustainable formative assessment practices in Bangladesh's evolving educational landscape.

1.4 Research Objectives

The general objective of this study is to assess the training needs of secondary-level teachers in Bangladesh for the effective implementation of formative assessment, with a focus on understanding their current knowledge, skills, and attitudes, as well as identifying additional influencing factors.

Specific Objectives:

1. To identify the essential Knowledge, Skills, and Attitudes (KSA) secondary-level teachers need to effectively implement formative assessment.
2. To assess the current level of preparedness among secondary-level teachers in terms of their knowledge, skills, and attitudes toward formative assessment.
3. To explore additional factors- such as institutional support, workload, teacher-student ratio, and access to professional development-that influence the effective implementation of formative assessment.
4. To provide evidence-based recommendations for designing targeted teacher training curricula that address both the KSA requirements and the influencing contextual factors related to formative assessment.

1.5 Research Questions

Following the background of the study and the research problem, the following research questions arise which require immediate attention:

1. What are the teacher's required Knowledge, Skills, and Attitude to implement formative assessment at the secondary level?
2. Besides Knowledge, skill, and Attitude, what other factors influence formative assessment that need to be addressed in designing training curricula of teachers for formative assessment?

1.6 Limitations of the Study

While this study provides valuable insights into the training needs of secondary-level teachers for implementing formative assessment, it is not without limitations. First, constraints related to time and budget may affect the overall scope and depth of the research. Access to essential documents and instruments from institutions such as the National Curriculum and Textbook Board (NCTB), Ministry of Education (MoE), and other educational agencies posed additional challenges. Moreover, limited cooperation from the Directorate of Secondary and Higher Education (DSHE) and its regional offices potentially hindered data validation and triangulation. The absence of Key Informant Interviews (KII) and Focus Group Discussions (FGD) may also restrict the richness of qualitative insights. Additionally, the study's relatively small sample size and potential sample heterogeneity could affect generalizability. These limitations suggest the need for further, more expansive studies in this field to complement and refine the findings of the current research.

1.7 Operational Definitions of Relevant Terms

To maintain conceptual clarity and ensure consistency throughout the study, the following key terms have been operationally defined:

1.7.1 Teachers' Knowledge

Teachers' knowledge of formative assessment encompasses their understanding of the theoretical and practical aspects of assessment, including the purpose of feedback, continuous instructional adjustments, and engaging students as partners in their learning. This knowledge base is fundamental for the accurate application of formative assessment strategies in classroom practice.

1.7.2 Teachers' Skill

In the context of this study, teachers' skill refers to the practical and pedagogical abilities educators apply to monitor, assess, and respond to student learning during instructional activities. These skills include the effective use of tools such as class quizzes, group discussions, peer assessments, case studies, project-based learning, and reflective tasks like self-assessments and presentations.

1.7.3 Teachers' Attitude

Attitude refers to teachers' perceptions, beliefs, and willingness to adopt and implement formative assessment strategies. It encompasses their valuation of the curriculum, confidence in the feasibility of its application, and openness to pedagogical change and innovation.

1.8 Organization of the Report

This research report is structured into six comprehensive chapters:

Chapter One outlines the introduction to the study, detailing the background, research problem, rationale, objectives, limitations, and operational definitions.

Chapter Two presents a review of relevant literature concerning formative assessment and the professional development needs of teachers.

Chapter Three discusses the research methodology, including design, sampling, and data collection and analysis techniques.

Chapter Four provides the data analysis and findings according to the research questions and uploads the quantitative and qualitative parts separately.

Chapter Five reveals detailed discussions of the statistical results of quantitative data and interpretation of qualitative data.

Chapter Six concludes the study with a summary of key findings, practical implications, and policy recommendations aimed at strengthening the training curriculum with a view to implementing of formative assessment more effectively at the secondary level in Bangladesh.

1.9 Conclusion

This introductory chapter has set the stage for understanding the significance of formative assessment within the evolving educational landscape of Bangladesh. By presenting the rationale, objectives, and scope of the study, it highlights the pressing need to address gaps in teacher preparedness through systematic training interventions. The chapters that follow will build upon this foundation by critically examining the existing literature, outlining the research design, analyzing empirical data, and ultimately proposing actionable insights for educators and policymakers committed to enhancing student learning outcomes through formative assessment.

Chapter-2: Literature Review

2.0 Introduction

Formative assessment (FA) has emerged as a transformative approach in education, shifting focus from traditional summative evaluations to continuous feedback and student engagement (Ma Ding, 2024). As education policies in Bangladesh move toward competency-based and student-centered learning models, the effective integration of FA in classroom practice has gained renewed importance. However, the success of this shift largely depends on teachers' capacity to implement FA meaningfully and consistently.

This chapter critically reviews the theoretical foundations of formative assessment, explores its conceptual dimensions, examines the role of Training Needs Assessment (TNA), and analyzes the interplay between teacher competencies and contextual factors. Importantly, it develops a conceptual framework that integrates these elements and establishes a clear linkage between theory, variables, and measurement tools, thereby addressing a key gap identified in prior research.

2.1 Theoretical Foundation of Formative Assessment: Assessment for Learning

The conceptualization of formative assessment in this study is grounded in the theory of Assessment for Learning (AfL), as developed by Paul Black and Dylan Wiliam. AfL represents a fundamental departure from traditional assessment paradigms by positioning assessment as an integral component of the learning process rather than a terminal evaluative mechanism. Black and Wiliam (2009) argue that assessment becomes formative when evidence about student learning is actively used by teachers to adapt instruction and by students to regulate their own learning processes.

Central to AfL is the notion that learning is enhanced when feedback is timely, specific, and actionable. Wiliam (2011) further emphasizes that formative assessment is not defined by specific tools but by its function in informing teaching and learning. This implies that the effectiveness of FA depends not merely on the presence of assessment activities but on how these activities are interpreted and utilized within the classroom.

The AfL framework conceptualizes formative assessment as a cyclical process involving the elicitation of evidence, interpretation of student understanding, provision of feedback, and instructional adjustment. This cyclical nature highlights the dynamic interaction between

teacher cognition and classroom practice. Consequently, teachers must possess a deep conceptual understanding of assessment principles, practical skills to implement diverse assessment strategies, and a positive disposition toward continuous feedback-oriented teaching.

However, empirical studies have consistently shown that teachers often struggle to operationalize these theoretical principles in practice. Bennett (2011) observes that many educators conflate formative assessment with frequent testing, thereby reducing it to a procedural activity devoid of its pedagogical intent. This misalignment between theory and practice underscores the need for a structured analysis of teacher competencies, which is addressed in this study through the KSA framework.

2.2 Conceptualizing Formative Assessment in Practice

Formative assessment has been defined in various ways across the literature, reflecting its multidimensional nature. According to Lee et al. (2020), formative assessment encompasses a range of methods used by teachers to evaluate student comprehension, identify learning needs, and adjust instruction accordingly. Morris et al. (2021) further emphasize its role in providing continuous feedback that enhances learning outcomes.

Despite this conceptual clarity in the literature, the practical implementation of formative assessment often deviates from its theoretical ideals. Studies indicate that while formative assessment is widely recognized as beneficial, its application is frequently superficial or inconsistent, particularly in developing countries (Mihelic & Zore, 2022). In Bangladesh, this challenge is exacerbated by an entrenched examination-oriented culture, where high-stakes summative assessments dominate educational priorities.

The literature suggests that formative assessment is most effective when it is integrated into daily classroom practices and aligned with learning objectives. Techniques such as questioning, peer assessment, and self-assessment are not inherently formative; rather, their effectiveness depends on how they are used to generate meaningful feedback and inform instructional decisions (Han & Fan, 2020). This perspective reinforces the argument that teacher competence is central to the success of formative assessment initiatives.

2.3 Training Needs Assessment (TNA) in Educational Reform

Training Needs Assessment (TNA) is widely recognized as a systematic approach to identifying gaps between existing competencies and required performance standards. In the context of formative assessment, TNA serves as a diagnostic tool that informs the design of targeted professional development programs.

Liwanag, Padohinog, and Balsicas (2023) define TNA as a process that evaluates the discrepancy between current and desired competencies, particularly in relation to organizational goals. Within educational settings, TNA plays a critical role in aligning teacher training initiatives with curriculum reforms. Koloi-Keaikitse (2016) argues that effective TNA not only identifies technical skill gaps but also considers broader factors such as teacher beliefs, institutional support, and contextual constraints.

In Bangladesh, the introduction of formative assessment under the NCF 2021 necessitates a comprehensive TNA to ensure that teachers are adequately prepared to implement new pedagogical practices. However, existing training programs are often criticized for being overly theoretical and disconnected from classroom realities (Jahan, Hasan, & Islam, 2025). This highlights the need for a more nuanced approach to TNA that incorporates both individual competencies and systemic factors.

2.4 Teachers' Knowledge, Skills, and Attitude (KSA) towards Formative Assessment

Effective implementation of formative assessment (FA) is not simply a matter of policy adoption or tool dissemination- it is deeply contingent upon the professional Knowledge, Skills, and Attitudes (KSA) of teachers. These three domains interact dynamically and are crucial determinants of whether formative assessment can be translated from theory to actual classroom practice.

2.4.1 Knowledge

Teachers' knowledge is foundational to the successful practice of formative assessment. This encompasses not only an understanding of key assessment principles but also clarity on their pedagogical purposes, alignment with learning objectives, and connections to curriculum competencies. Heritage (2010) emphasizes that formative assessment requires a conceptual understanding of how assessment informs learning, rather than merely measuring it. Teachers must grasp how to construct appropriate assessment tasks, interpret student evidence, and use this data to make instructional decisions (Wiliam, 2011).

However, several studies have pointed out significant gaps in teachers' conceptual clarity around FA. For instance, Bennett (2011) notes that while many teachers believe they are practicing formative assessment, they often confuse it with frequent testing or informal questioning, lacking the theoretical grounding that distinguishes formative processes from summative ones. This disjunction between policy rhetoric and practical understanding can render formative assessment superficial or misapplied.

2.4.2 Skills

Even with sound conceptual knowledge, teachers require a specific set of practical skills to implement formative assessment effectively. These include designing varied assessment tasks, using rubrics and checklists, managing performance data, and integrating digital tools into assessment workflows. Black and Wiliam (2011) argue that effective formative assessment involves a cyclical process- eliciting evidence of learning, interpreting it, and adapting teaching accordingly- which demands significant pedagogical and technological proficiency.

In resource-constrained contexts like Bangladesh, such skills are often underdeveloped or inconsistently practiced. Jahan, Hasan, and Islam (2025) observed that many secondary teachers lack familiarity with the technical tools (e.g., digital reporting apps like NIPUNYATA) and struggle to document student learning systematically. Without targeted training, these gaps can undermine the feedback loop central to formative assessment (Popham, 2009).

Furthermore, data literacy has emerged as a critical skill in recent years. As formative assessment increasingly relies on performance tracking through digital platforms, teachers must be capable of analyzing trends in student performance and making data-informed pedagogical decisions (Datnow & Hubbard, 2015).

2.4.3 Attitudes

Teachers' beliefs, motivation, and institutional perceptions are equally essential for sustained and authentic use of formative assessment. Guskey (2002) emphasizes that change in classroom assessment practices often follows, rather than precedes, shifts in teacher beliefs. When teachers perceive formative assessment as burdensome or incompatible with their workload or institutional priorities, they are less likely to implement it effectively.

Positive attitudes toward student-centered assessment, commitment to feedback-oriented teaching, and openness to professional development all influence implementation quality

(OECD, 2013). Yet in systems dominated by high-stakes summative examinations- as in Bangladesh—many teachers remain skeptical about the value of FA or feel constrained by time, class size, or lack of recognition (Rahman, 2019). This mismatch between expectation and institutional reality often leads to demotivation or superficial compliance with FA guidelines.

Moreover, collaborative culture and peer support have been linked to sustained teacher engagement with FA. Avalos (2011) highlight that teacher learning is deeply social; peer dialogue, shared practices, and institutional encouragement are vital for promoting a formative assessment mindset. Therefore, it was found from the research that teachers' KSA are essential to the effective implementation of FA. However, there are some factors that need to be addressed through effective training.

2.5 Factors Influencing Teachers' Knowledge, Skills, and Attitude (KSA) to Implement Formative Assessment

While teachers' KSA are essential to the effective implementation of formative assessment (FA), these elements do not develop in isolation. Instead, they are shaped by a complex interplay of individual, institutional, and systemic factors. A critical understanding of these influences is necessary for designing impactful capacity development and ensuring the sustainability of FA reforms, particularly in resource-constrained contexts like Bangladesh.

2.5.1. Professional Development Opportunities

Access to quality and continuous professional development (CPD) is among the most direct and influential factors shaping teachers' KSA for formative assessment. As noted by Darling-Hammond et al. (2017), professional learning that is sustained, collaborative, and embedded in practice significantly enhances teachers' instructional capacity, including assessment literacy. Unfortunately, many training programs in Bangladesh and similar settings are often short-term, overly theoretical, or disconnected from actual classroom needs (Jahan, Hasan, & Islam, 2025). Such inadequacies can lead to partial or superficial understanding of formative assessment practices. To cope up with this issue, Timperley (2008) suggested that effective CPD should focus not only on "what" formative assessment is, but also "how" and "why" it is used, encouraging reflective teaching and critical application. Moreover, training programs should target all three KSA dimensions- conceptual knowledge, practical skills, and attitudinal dispositions- rather than emphasizing only one.

2.5.2. Institutional Support and Leadership

Institutional culture and leadership practices strongly mediate how well teachers can apply their KSA in practice. Studies show that supportive school environments- where school heads value formative feedback, allocate time for collaboration, and encourage innovation- contribute to positive teacher attitudes and more effective FA implementation (Liwanag et al., 2023; OECD, 2013). In contrast, rigid administrative norms, excessive workload, or pressure to "teach to the test" can discourage meaningful use of formative strategies (Rahman, 2019).

Furthermore, teacher autonomy and shared leadership structures promote ownership over assessment decisions. When teachers feel trusted and supported to experiment with classroom strategies, their professional motivation and assessment competence grow (Hargreaves & Fullan, 2012). This emphasizes the importance of leadership development in parallel with teacher training.

2.5.3. Curriculum and Assessment Policy Alignment

Alignment or lack thereof between formative assessment practices and national curriculum and examination policies significantly affects teachers' motivation and attitude toward FA. In high-stakes environments, teachers often prioritize summative outcomes due to performance pressures and public accountability (Bennett, 2011). Bangladesh's exam-centric education system creates conflicting expectations, where teachers are expected to adopt formative strategies without corresponding changes in promotion criteria or classroom assessment weightage (NCTB, 2021).

This misalignment generates tension between belief and behavior: even when teachers value formative assessment, they may feel constrained by systemic demands, leading to compliance-based rather than pedagogically authentic application (Wiliam, 2011).

2.5.4. Peer Collaboration and Professional Communities

Teacher collaboration and participation in professional learning communities (PLCs) play a vital role in reinforcing and deepening assessment practices. According to Avalos (2011), ongoing dialogue among teachers fosters mutual support, critical reflection, and the co-construction of best practices. Such communities offer a space for teachers to share experiences, co-develop rubrics, and jointly solve assessment challenges, especially in low-resource or large-class settings. Without such collegial spaces, teacher attitudes toward FA may

remain isolated, inconsistent, or dependent solely on external training rather than internal professional growth.

2.5.5. Student and Contextual Characteristics

Teachers' ability to implement formative assessments is also shaped by classroom realities such as student diversity, class size, teacher-student ratio, and socio-cultural expectations. For example, large class sizes and heavy administrative loads- common in many public schools in Bangladesh- restrict the individualized feedback that formative assessment demands (OECD, 2013; Jahan et al., 2025).

Moreover, students' own readiness and attitudes toward continuous assessment, along with parental expectations focused on exam scores, can hinder the effectiveness of formative approaches. This implies that any training effort must also include awareness-building among students, parents, and communities about the benefits of FA. Thus, the implementation of formative assessment is not merely a technical challenge but a deeply embedded socio-institutional process.

2.6 Conceptual Framework of the Study

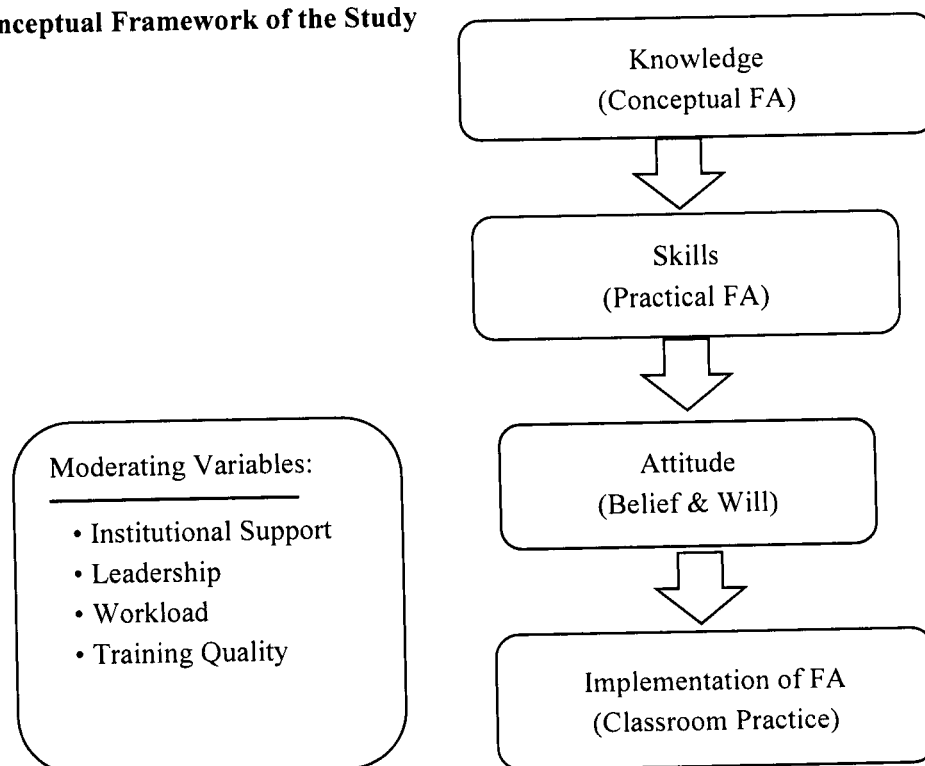


Figure 1: Conceptual Framework of the study

The conceptual framework of this study is grounded in the theoretical principles of Assessment for Learning (AfL) and operationalized through a Knowledge–Skills–Attitude (KSA) model. The framework posits that teachers' knowledge of formative assessment constitutes the foundational component that influences both their practical skills and attitudinal dispositions.

Knowledge refers to teachers' conceptual understanding of formative assessment principles, including its purpose, processes, and alignment with competency-based curriculum. This knowledge base directly shapes teachers' ability to develop and apply assessment strategies, thereby influencing their practical skills. Skills, in turn, represent the operational dimension of formative assessment, encompassing the ability to design assessment tasks, provide feedback, and utilize classroom-based evaluation techniques.

Attitude is conceptualized as teachers' beliefs, perceptions, and willingness to implement formative assessment practices. It mediates the relationship between skills and actual classroom implementation, as even skilled teachers may not adopt formative practices without positive dispositions toward its effectiveness and feasibility.

The framework further identifies institutional and contextual factors as moderating variables that influence the strength and direction of these relationships. Factors such as school leadership, workload, institutional support, and quality of training programs can either facilitate or constrain the application of teachers' competencies in real classroom settings.

Thus, the implementation of formative assessment is not viewed as a linear outcome but as a function of interconnected competencies and contextual influences. This structured framework provides a basis for both the analytical design of the study and the development of measurement instruments, ensuring alignment between theoretical constructs and empirical investigation.

2.7 Research Gap

Despite growing global recognition of FA as a pedagogically sound and student-centered approach, research on its effective implementation in Bangladesh remains limited and fragmented. Several government policy documents and curriculum frameworks (e.g., NCTB, 2021) advocate for the use of FA at the secondary level. However, there is a noticeable gap in empirical studies that assess teachers' actual readiness- in terms of knowledge, practical skills, and attitudes for implementing these approaches in real classroom settings.

Most existing studies in Bangladesh have either focused on policy-level discussions (e.g., curriculum reforms or assessment models) or have broadly explored challenges in assessment

practices without disaggregating the specific professional development needs of teachers (Rahman, 2019). Few attempts have been made to systematically conduct a TNA grounded in a comprehensive understanding of the KSA required for formative assessment. Even fewer have triangulated this with institutional and contextual realities such as teacher workload, infrastructure gaps, peer collaboration, and leadership support which significantly influence classroom assessment practices.

The literature reviewed in this chapter provides the theoretical, conceptual, and analytical basis of the present study. More specifically, it informs the design of the questionnaire used to assess teachers' readiness for implementing formative assessment at the secondary level in Bangladesh. The Knowledge dimension is grounded in literature that emphasizes teachers' conceptual understanding of formative assessment principles, competency alignment, performance indicators, evidence of learning, and assessment records. The Skill dimension draws on studies focusing on the practical application of formative assessment, including the design of assessment tasks, use of rubrics and checklists, collection of student evidence, digital documentation, and the use of assessment results to improve instruction. The Attitude dimension is informed by literature on teachers' beliefs, motivation, confidence, peer support, workload, institutional environment, and willingness to engage in further professional development. Thus, the questionnaire was structured to reflect the interconnected framework of teachers' Knowledge, Skills, and Attitudes (KSA) in relation to formative assessment implementation.

Additionally, much of the teacher training in Bangladesh remains content-heavy and examination-focused, with insufficient emphasis on how to embed formative assessment strategies within the new competency-based curriculum (Jahan, Hasan, & Islam, 2025). As a result, the implementation often becomes a matter of compliance rather than deep pedagogical change.

This study, therefore, fills an important gap by critically examining the training needs of secondary-level teachers through the lens of KSA, while also exploring the institutional factors that enable or constrain FA practices. In doing so, it provides evidence-based insights that can inform the design of context-sensitive teacher development programs aligned with the goals of the new national curriculum and global educational standards.

2.8 Conclusion

The literature reviewed underscores the centrality of formative assessment in enhancing student learning, promoting continuous feedback, and aligning with competency-based education goals. It also reveals that effective implementation of formative assessment depends significantly on teachers' knowledge, practical skills, and attitudes, shaped by both individual competencies and institutional support systems. While global research offers valuable frameworks and best practices, there remains a notable gap in context-specific studies within Bangladesh particularly regarding the training needs of secondary-level teachers. This study addresses that gap by focusing on a comprehensive TNA of teachers' KSA, thereby contributing to more targeted and sustainable professional development initiatives in line with ongoing curricular reforms.

Chapter-3: Research Methodology

3.0 Introduction

Researchers found that Formative Assessment (FA) has significant positive impacts on academic achievement and attitudes towards learning (Ozan & Kincal, 2018; Pajuelo Purizaca et al., 2021) among the high school students. In this regard Jahan, Hasan, & Islam (2025) reveals that more training need to be done to encourage the teachers and promote the smooth implementation of Formative Assessment at the secondary level in Bangladesh. Therefore, this study explores the TNA for effective implementation of the FA in Bangladesh Secondary education. Therefore, this sequential mixed-method study will investigate the teachers' current knowledge, skills, and attitudes regarding formative assessment; the factors contributing to gaps in these areas and examine how they are interrelated, and to explore causal explanations for how these factors influence teacher preparedness and performance in the context of Bangladesh. This approach will combine questionnaire surveys and Focus Group Discussion (FGDs) to gather verifiable data from respondents. Furthermore, several recognized procedures will be adopted to confirm validity, reliability, and trustworthiness to enhance the acceptance of this research. Additionally, data presentation procedures will be presented, followed by ethical issues.

3.1 Research Methodology (Mixed Method)

Research methodology refers to the procedures of a piece of research used to ensure valid and reliable results that address the research aims and objectives. Similarly, the methodology helps researchers understand the scientific inquiry (Kaplan 1973 in Cohen, Manion & Morrison, 2007). Three widely used and acknowledged research methods in education are quantitative, qualitative, and Mixed Methods. For numerical data, textual data, and data types, researchers select a quantitative approach, qualitative approach, and mixed methods, respectively (Williams, 2007). The quantitative (deductive) method firstly puts a hypothesis based on the existing theory and collects data to justify the hypothesis. On the contrary, the qualitative (inductive) method starts from specific observations to identify the patterns and general theory (Khaldi, 2017).

Perhaps the most severe disadvantage of the quantitative method is that it can miss out on substantial contextual and background knowledge that could be used to enhance the accuracy of data interpretation (Burns, 2000). Another problem with this method is its nature of reliance

on theories. In this nexus, Khaldi (2017) argues that it may falsify the ideas after the hypothesis was rejected relying on observation and experimentation. On the other hand, ensuring reliability and validity is a big challenge in qualitative methods (Ibid). Another drawback of this method is that data collection and analysis procedures are time-consuming.

For avoiding the mentioned problems, this study has opted mixed-method strategy. For this study, to understand the research problem, collecting, analyzing, and combining quantitative and qualitative methods is considered mixed method (Creswell & Clark, 2017). Mixed-method research is imperative because the result will be superior to any single method research. Besides, both the quantitative and the qualitative data for each research question together offer a better understanding of the research problem than any mono method (Creswell,2012).

Furthermore, due to little evidence on the TNA for effective implementation of FA in Bangladesh, the study needs numerical and textural information about the issue. This mixing of different data sources provides a compact understanding of the issue and the detail (Creswell,2012). In this ground, the research followed an explanatory sequential mixed methods design. It first collected quantitative and then collected qualitative data to help explain the quantitative results. This approach will provide a general picture of this research problem through quantitative data and products; more deep understanding will be obtained through qualitative data and findings (Creswell, 2012).

However, the difficulty in using this design is labour-intensive, and it requires both expertise and time to collect two types of data (Creswell, 2012). This researcher collected quantitative data through an online survey and qualitative data through FGDs to cope with the challenge. Additionally, Onwuegbuzie and Collins (2007) identified four flows of mixed methods-representation, legitimization, integration, politics. In this case, the researcher adopted an optimal sampling design to address these problems (details in next section) because appropriate sampling techniques in a mixed-methods study allow the researcher to address the four mentioned crises as adequately as possible simultaneously (Onwuegbuzie, & Collins, 2007).

3.2 Research Population and Methods of Sampling

The study population is the same features group of individuals (Creswell, 2012). Likewise, a target population comprises individuals with some standard defining features for the research (Ibid). However, expense, time, accessibility have influences on data collection procedures (Cohen, Manion, & Morrison,2007). Researchers collect data from a representative group called a sample selected from the population (Ibid). In this study, the population is comprised

of 246784 (BANBEIS, 2023) teachers at secondary level. This includes both teachers in public and private institutions. The sample size is 223 teacher participants for quantitative and ten teachers and ten policy makers for qualitative data collection.

Due to the influence of sampling strategy on research success (Cohen, Manion, & Morrison, 2007), this study chose a convenience sampling approach for quantitative data collection. Because the participants are willing and available to be studied and can provide useful information for answering questions (Creswell, 2012).

This study intended to explore the in-depth understanding of teachers' KSA of the FA as well as policy makers understanding regarding training needs through qualitative inquiry. The researcher purposefully selects ten teachers at secondary level, and ten policy makers and training specialist. This identification from different designation is considered as maximal variation sampling (Creswell, 2012). Due to working for a long time in this profession, the participants can understand the research phenomenon well (Ibid). Moreover, they might provide "useful" information to develop many research perspectives (Ibid).

3.3 Methods of Data Collection

Researchers' philosophical stance in pursuing research is compatible with the data collection methods (Brundrett & Rhodes, 2014). In this ground, for pragmatism orientation, quantitative methods serve the aim of a subjective stance (Ibid), whereas qualitative serve objective and mixed methods embrace their interrelations. This study selected a cross-sectional survey where the questionnaire is widely used to collect data (Ibid), followed by FGDs protocol to corroborate findings and produce potential outcomes. According to the nature of this research problem, it is imperative to understand teachers' knowledge, skills and attitude about issues, whereas practices are their actual behaviors (Cresswell, 2012). Henceforth, the cross-sectional survey can examine the participants' current attitudes, ideas, beliefs, or practices (Ibid) according to research questions.

In contrast, Cohen, Manion, & Morrison (2007) argued that missing information of a single variable during data collection could significantly undermine the results. To cope with this challenge, the survey was conducted through an online platform (Google Form). Additionally, it involves only duplication and mailing expenses (Creswell, 2012).

On the other hand, textual information has been collected through FGDs due to its handy nature of gathering huge useful information (Brundrett & Rhodes, 2014). Its intersubjective nature helped explore the perception of the research topic under conversation (Ibid). Hence, informants discussed their interpretations of FA and how and to what extent they draw this knowledge to influence students' learning of their context. Furthermore, by talking to the people, curriculum specialist, policymakers and teachers involved in this study, in-depth information could be gained on the topic (Ibid). Consequently, the data have been collected through FGDs maintaining data recording protocols. It provides the opportunity to note informants' complete responses, including physical attitude and tone of voice (Ibid).

3.3.1 Questionnaires

Participants of a questionnaire respond to questions and provide some demographic information for the researcher (Creswell, 2012). Confidentially, it offers much practical and efficient information with a swift response (Brundrett & Rhodes, 2014). Considering the benefit, the research has chosen a questionnaire survey (Appendix-A) according to the sequence of factual questions, → closed questions → , open-ended questions suggested by Cohen, Manion, & Morrison (2007). The questionnaire has two sections, started with 14 authentic questions that seek to obtain some participants' factual demographic information. It also includes 34 closed questions. Each question aims to ascertain teachers' KSA and training needs regarding FA. Additionally, it contains one open-ended question to elicit more detailed textual responses from the participants. However, Chang (1994) argued that the Likert-type scale maximized reliability. Therefore, this study constructed a Likert scale questionnaire.

However, data have been collected through an online survey (Google Form). The participants were mailed the link to the questionnaire. In this case, the main weakness would be the low response rate that affected trustworthiness (Brundrett & Rhodes, 2014). A general information sheet and a consent form has been sent with the questionnaire to stimulate their response to meet the challenge.

3.3.1.1 Analysis of the Training Needs Assessment (TNA) Questionnaire

The Training Needs Assessment (TNA) questionnaire for this study was developed through an extensive review of literature on formative assessment, teacher assessment literacy, and training needs assessment. Based on the conceptual framework of the study, the items were organized into three domains: Knowledge, Skills, and Attitude. Each domain was designed to capture a distinct but interrelated aspect of teacher readiness for formative assessment implementation. The selection and wording of the items were guided by their relevance to the

research objectives and their alignment with the theoretical foundations discussed in the literature review.

To ensure content validity, the draft questionnaire was reviewed by experts in curriculum, assessment, and teacher education. Their comments were incorporated to improve the clarity, relevance, and contextual suitability of the instrument. A pilot study was then conducted to examine the usability and internal consistency of the questionnaire before full-scale administration. Reliability was assessed through Cronbach's Alpha coefficient, and the instrument demonstrated satisfactory internal consistency across the major scales. Although the present report focuses primarily on the substantive findings, the reliability checking process contributed to the refinement and finalization of the questionnaire for the main study.

Knowledge Domain

This section evaluates the extent to which teachers possess a clear and accurate understanding of formative assessment concepts, including its principles, objectives, and procedural elements. Foundational knowledge is key to any meaningful application of assessment strategies in the classroom (Heritage, 2010). The initial items in this domain (Q1–Q4) explore whether teachers are aware of the comprehensive nature of competency-based assessment, which includes cognitive, behavioral, and affective elements. Items Q5–Q6 assess familiarity with tools used to indicate performance levels, such as specific symbols and evidence collection methods. Furthermore, items Q7–Q11 focus on teachers' ability to align formative assessment with summative evaluations, maintain accurate student records, and apply assessment components like competencies, experiences, performance indicators, tasks, and final evaluations. By exploring these aspects, the questionnaire helps identify knowledge gaps that need to be addressed through targeted training interventions.

Skill Domain

The skill-related items (Q12–Q21) investigate how well teachers can apply formative assessment techniques in their daily teaching practices. This includes the ability to plan, conduct, and evaluate assessments as part of the instructional process. Items such as Q12 and Q16 assess whether formative assessment is integrated into regular teaching activities, reflecting the principle that assessment should be ongoing and embedded within instruction (Black & Wiliam, 2009). Items Q17 and Q18 focus on practical tools, such as using rubrics and collecting evidence of learning, which are essential for effective assessment in competency-based education (Heritage, 2010). With the growing importance of digital tools in

education, items Q19 and Q20 examine teachers' technological proficiency in managing student data—especially relevant given the rollout of digital platforms like the Nipunyo app in Bangladesh (BANBEIS, 2022). Lastly, item Q21 addresses teachers' ability to use assessment results to inform and adjust their teaching, which is a cornerstone of formative assessment (Popham, 2009). Overall, this domain helps determine which practical skills need reinforcement to ensure successful implementation of formative assessment strategies.

Attitude Domain

This section (Q22–Q31) assesses teachers' beliefs, motivation, and perceptions of institutional support related to formative assessment. Teachers' attitudes significantly influence whether and how they implement formative assessment, regardless of their level of knowledge or skill (Guskey, 2002). Items Q22 and Q24 examine whether teachers perceive formative assessment as beneficial and learner-friendly. Positive perceptions are known to correlate with increased use and effective practice (Black & Wiliam, 1998; Popham, 2009). Items Q23 and Q25 capture teachers' comparative views of formative versus traditional assessments and their confidence in implementing formative assessment within existing school structures- a particularly important issue in systems like Bangladesh, where high-stakes exams dominate the culture (Rahman, 2019).

Items Q26 and Q27 explore the availability of peer support and teachers' motivation to engage in professional development. These social and motivational factors play a critical role in sustaining any educational reform, including the shift toward formative assessment (OECD, 2013; Avalos, 2011). Additionally, items Q28 and Q29 shed light on contextual barriers, such as large class sizes and heavy workloads, that may hinder effective assessment practices (Jahan & Haque, 2021). Finally, items Q30 and Q31 assess teachers' willingness to receive further training and use feedback to support student learning key indicators of their openness to change and professional growth.

In sum, this TNA questionnaire is a comprehensive tool that explores the multifaceted nature of teacher readiness to implement formative assessment. By examining conceptual understanding, practical capability, and personal and institutional attitudes, the questionnaire helps identify targeted areas for professional development. Insights from this assessment will enable education authorities and stakeholders to design context-sensitive training and support programs that bridge the gap between policy and practice in formative assessment across secondary schools in Bangladesh.

3.3.2 Pilot Study

A pilot test was conducted to think through and justify the theoretical and methodological decisions (Lipscomb, 2008). Among the participants, 15 teachers (5 from each 3 different institutions) were incorporated for the pilot study. The data were inserted into the SPSS programme, and instrument reliability was measured through Cronbach's alpha test. One FGD was also conducted with the four informants from different institutions (NCTB, NAEM, DESHE, School). However, content, construct, and criterion validity was further established by Moore (1989). The participants and informants in this pilot study confirmed that the instrument is relevant and easily understood.

3.3.3 Focus Group Discussion (FGD)

Focus Group Discussion (FGD) is a widely used qualitative data collection method in social science and educational research (Boateng, 2012; Shabina et al., 2024). Its primary strength lies in generating rich, in-depth data through participant interactions (Afiyanti, 2008; Shabina et al., 2024). Before the discussion, the researcher prepares a good FGD protocol (Appendix-B) to outline questions asked to the interviewees to find the research objectives (Brundrett & Rhodes, 2014). For this study there are two FGDs. The participants of Group-1 are curriculum specialist, Training specialist and policy makers. The FGD protocol for Group-1 contained 12 questions (Appendix-B) that sought to ascertain informants' deep experience on FA and policy regarding its training, influences on students' learning. The participants of Group-2 are teachers of Secondary level institutions. The FGD protocol for Group-2 contained 13 questions (Appendix-C) that seek to ascertain informants' deep experience on KSA regarding FA and training needs.

3.4 Methods of Analysis

Mixed methods analysis techniques refer to applying quantitative and qualitative analytical methods within the same framework (Onwuegbuzie, & Combs, 2011). This study, firstly, created a codebook, a list of variables of the instrument with coded (Creswell, 2012) to analyze the quantitative data. Secondly, data were inputted in the IBM Statistical Package for the Social Sciences (SPSS) 25 software. The study mainly used descriptive statistics for finding general tendencies in the data and comparison, to some extent, among independent and dependent variables (Ibid). Additionally, inferential statistics have also been used for comparing the scores among independent variables. The following table denotes some test of this study.

Table-3.1: List of the statistical tests of the study

Statement	Name of test
TNA Scenario Based on Institution Type	Independent Samples Test
TNA Scenario Based on Gender of the teachers	Independent Samples Test
TNA Scenario Based on Curriculum Version	Independent Samples Test
Implementation Scenario Based on Training	Independent Samples Test
Training Need Assessment based on Education Board	ANOVA

In the second phase, the researcher followed five steps, introduced by Renner & Taylor-Powell, (2003), to produce qualitative results from the collected raw data. First, the researcher has transcribed data listened to from the audiotape. Then read and re-read the transcription of participants' responses to identify the focus area of the data. Second, the researcher gave priority to research questions in focusing on the analysis of the data. Additionally, other important themes have been selected to understand the teacher's knowledge, skills and attitude of effective use of FA. Third, the data have been categorized and coded to precede the analysis. Fourth, the connection among patterns has been established and logically inked the findings. Fifth, the result has been interpreted to support and compare the quantitative findings.

3.5 Validity, Reliability & Trustworthiness

According to Burns (2003), validity is an essential criterion for evaluating the quality and acceptability of research. Similarly, reliability is a necessary precondition of validity. In research, reliability is considered the consistency, dependability, and replicability of interpretation from a specific study (Nunan, 1999). On the other hand, Lincoln & Guba (1985) considered validity as trustworthiness in qualitative research. In this regard, content validity ensures the validity of both instruments. Therefore, the researcher counselled the specialists to inquire about and asked them to rate each thing within the tool regarding its pertinence to the substance (Rubio et al., 2003, in Oluwatayo, 2012). The reviews of the experts were taken to validate the questionnaire. The experts recommended some amendments, and those were considered in the final instruments.

Furthermore, methodological triangulation was used frequently to validate the study for considering multiple viewpoints in a mixed-method strategy (Jick, 1979; Cohen, Manion, & Morrison, 2007). Here, quantitative and qualitative data have been collected sequentially on the same content through the different instruments, and finally, those data have been combined

and compared. Hence, mixed-method enhances the belief that the results are valid (Bouchard, 1976 in Jick, 1979). The alpha coefficient of reliability was used in the quantitative phase because it provides internal consistency by offering a correlation of every item (Cohen, Manion, & Morrison, 2007). However, as the present report focuses primarily on substantive findings, the detailed reliability coefficients are not presented here. The analysis indicated satisfactory internal consistency for the major domains of the instrument, with the scales meeting the commonly accepted threshold for reliability. This suggests that the questionnaire items were sufficiently consistent for use in the present study.

For the qualitative side, the researchers ensured trustworthiness by collecting data from multiple sites (curriculum specialist, policy makers and teachers), which denotes transferability. Additionally, audio recording interviews confirmed the dependability of this research. Furthermore, the use of member checking techniques and connecting information to the context ensured confirmability. According to Bloomberg & Volpe (2018), these criteria of the qualitative phase ensured the reliability of research.

3.6 Ethical Considerations

For ethical issues, the researcher followed the British Educational Research Association's guidelines (BERA, 2018) and the ethical guidelines of Bangladesh Medical Research Council (BMRC, 2009). Following the guidelines of BERA (2018), all participants were asked to provide voluntary and active consent at the beginning of the study through a general information sheet (Appendix A) and ethical consent form (Roberts & Allen, 2015). All collected data were kept confidential and anonymous (Gay, Mills & Airasian, 2012; BERA, 2018).

3.7 Scoring and Data Processing Procedure

The quantitative data collected through the questionnaire were processed using a structured scoring procedure aligned with the conceptual framework of Knowledge, Skills, and Attitudes (KSA). Each questionnaire item was measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Numerical values were assigned to each response category to facilitate quantitative analysis.

The scores for individual items were aggregated to generate composite scores for each construct, namely knowledge, skills, and attitudes. These composite scores were then standardized to ensure comparability across different dimensions. The calculation of composite scores followed established practices in educational research, where multiple indicators are combined to represent a single latent construct (DeVellis, 2016).

To enhance interpretability, the composite scores were categorized into three levels: low, moderate, and high. These categories were determined based on predefined thresholds derived from the distribution of scores. This categorization enabled a clearer understanding of teachers' competency levels and facilitated comparison across different groups and variables.

The processed scores were subsequently used to generate tables and graphical representations, including bar charts and comparative figures, which are presented in Chapter 4. This systematic approach ensures consistency between data collection, processing, and analysis, thereby strengthening the validity and reliability of the findings (Creswell, 2012).

3.8 Conclusion

Overall, this study chooses explanatory sequential mixed methods research design. Therefore, quantitative data was collected through questionnaire surveys and qualitative data through FGDs in the light of research context, population, and questions.

Chapter-4: Data Analysis and Findings

4.0 Introduction

This study adopts a mixed-methods approach to investigate the training needs of secondary-level teachers in Bangladesh for implementing formative assessment (FA), addressing two research questions: (1) What are the teachers' required knowledge, skills, and attitudes to implement FA at the secondary level? and (2) Besides knowledge, skills, and attitudes, what other factors influence FA that need to be addressed in designing training curricula? The Findings Chapter presents results from three data sets: a quantitative survey of secondary-level teachers, a Focus Group Discussion (FGD) with training experts, and an FGD with secondary-level teachers. Quantitative findings, analyzed using the Statistical Package for the Social Sciences (SPSS), are presented first to provide numerical insights into teachers' competencies and contextual barriers. Subsequently, qualitative findings from the two FGDs, analyzed through thematic analysis, offer in-depth perspectives on training needs and influencing factors.

4.1 Findings of Quantitative Part

4.1.1 Demographic Analysis

It was tried to cover all areas and types of teachers to ensure the participation of all diversification of teachers.

Table-4.1: Demographic Analysis (Sample N= 223)

Geographic and Professional factors	Frequency (N)	Percent (%)
TYPE OF INSTITUTION		
Government	51	22.9
Private	172	77.1
CURRICULUM VERSION		
Bangla	209	93.7
English	14	6.3
EDUCATION BOARD		
Barishal	19	8.5
Chittagong	49	22.0
Cumilla	7	3.1
Dhaka	30	13.5
Dinajpur	41	18.4
Jessore	17	7.6
Madrasha	15	6.7
Mymensingh	7	3.1
Rajshahi	33	14.8

Sylhet	5	2.2
GENDER OF THE RESPONDENT		
Male	147	65.9
Female	76	34.1
WORKING LOCATION		
Union Level	78	35.0
Pourashova Level	13	5.8
City Corporation Level	39	17.5
Upazila Level	20	9.0
District Level	40	17.9
Division Level	33	14.8

Table 4.1 demonstrates the demographic information of the respondent. It shows that 172 teachers come from private institutions and 51 from government institutions. Again, 209 Bangla version teachers participated, whereas 14 teachers from the English version participated. Similarly, participation from 10 education boards and different areas is purposively ensured. This diversity enhances the representativeness of the findings and allows for subject-wise comparison of competencies.

4.1.2 Overall TNA Scenario from the Three Factors Perspective

The Training Need Assessment scenario from the knowledge, skill, and attitudes are calculated. The average of these three factors is considered the Overall Training Need Assessment scenario for implementing formative assessment. The findings and graphical presentation were as follows

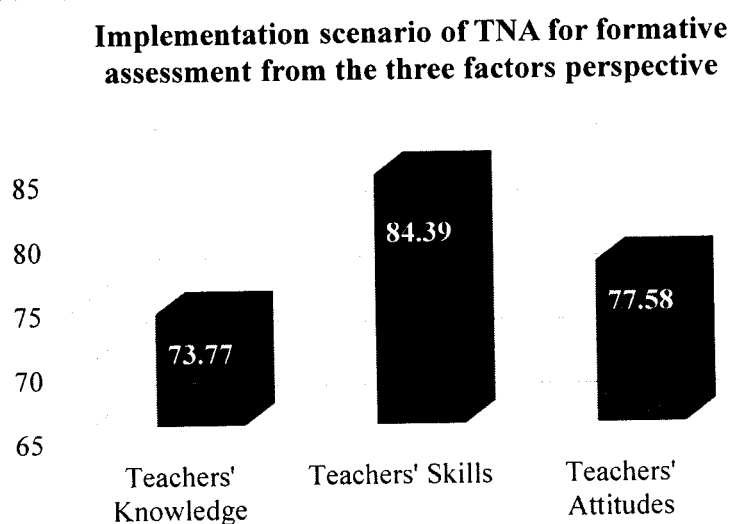


Figure-2: From the three factors perspective, the Training Need Assessment (TNA) scenario.

Here, figure 2 indicates that, though the overall TNA score is 77.74 %, there is a comparatively strong lack in Teachers' Knowledge and Attitude for formative assessment, and the teacher's skill factors for the formative evaluation are relatively higher than the other two factors.

4.1.3 Implementation Scenario of Four Factors in Different Levels

For a compelling visualization of the TNA analysis, the three factors' achieved score is divided into four different levels as follows-

Table-4.2: Score and Level

Score	Level
1 – 50 %	Lower Level
51 – 70%	Moderate Level
71 – 90 %	Good Level
91 – 100 %	Outstanding Level

4.1.4 Knowledge Factor for Formative Assessment in Different Levels

Figure 3 presents the distribution of teachers' knowledge levels regarding formative assessment. The figure indicates that only 1.8 percent of teachers receive an outstanding level of support, whereas 5.4 and 21.10 percent of teachers receive lower level and moderate level support, respectively.

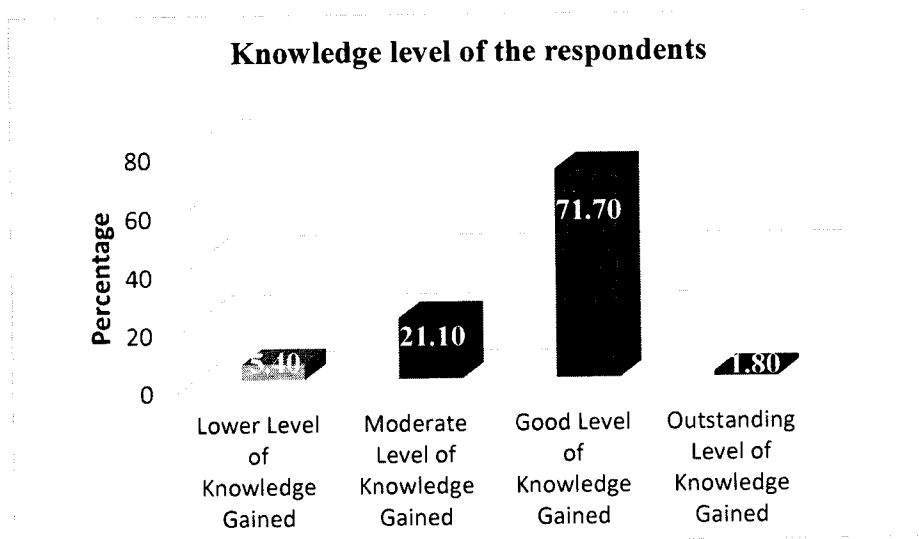


Figure-3: Knowledge Level of FA

A high level of knowledge of teachers is expected to make formative assessment more visible and feasible and ensure a practical implementation. However, the empirical data shows they don't have that sort of high level or outstanding knowledge for formative assessment, like a detailed understanding of Performance Indicators, Behavioral Indicators, permanence determiners, detailed competence of each subject, and their alignment with Performance Indicators (PI).

4.1.5 Skill Factor for Formative Assessment in Different Levels

Figure 4 represents the skill level of the teachers regarding FA. Regarding skill, 39.5 and 43.9% of teachers lie on the Excellent and Good levels. That means most of the teachers have the required skills to implement the new formative assessment strategy. However, as we found earlier, they don't understand this new formative assessment strategy and don't have the necessary knowledge.

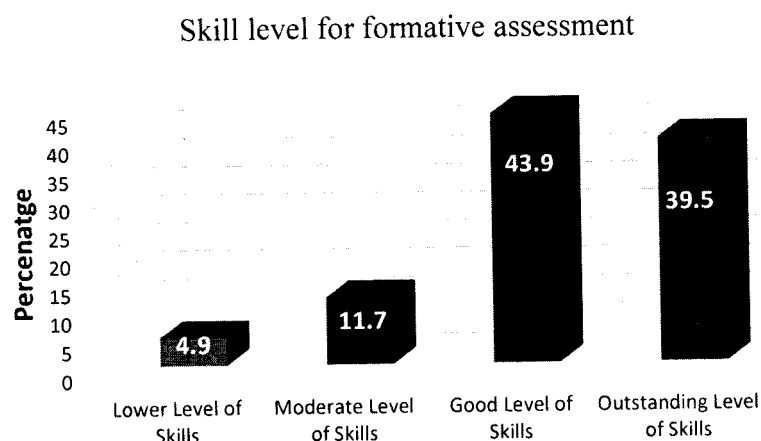


Figure-4: Skill level for formative assessment

4.1.6 Attitude Factor for Formative Assessment in Different Levels

Figure 5 denotes a matter of thinking that only 22.9 % of teachers' attitude level for formative assessment lies in the Outstanding level. That means that, except for 22.9%, a significant portion of the teachers' attitudes towards implementing this formative assessment are not accepted. Most teachers do not positively approach the newly introduced formative assessment strategy. Though 54.7 % of teachers showed a good attitude towards formative assessment, it is crucially necessary to express an enthusiastic attitude towards this new formative assessment as it is a paradigm shift in the assessment strategy of our educational system.

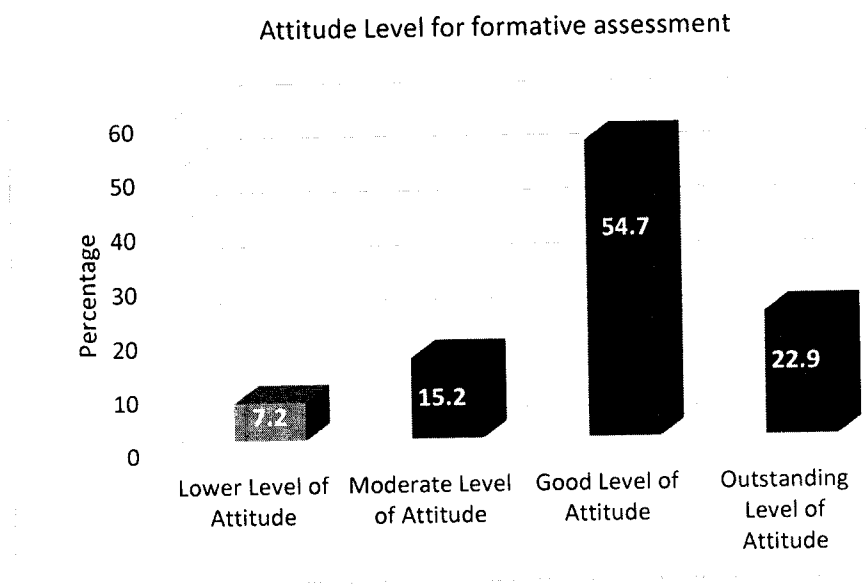


Figure-5: Attitude level for formative assessment

4.1.7 Subject-wise Knowledge, Skill and Attitude Scenario

Earlier, it was mentioned that there are ten subjects in Grade Vi -X: Bangla, English, Mathematics, Science, History and Social Science, Digital Technology, Art & Crafts, Wellbeing, Life and Livelihood, and Religion Studies. Here, an in-depth Training Need Assessment scenario for formative assessment was examined from the perspective of the three factors in these ten subjects.

4.1.8 Subject-wise Knowledge to Implement Formative Assessment

From figure 6 it is vivid that Digital Technology, mathematics, English, Bangla and Religion studies teacher's knowledge of formative assessment are comparatively less than other subjects, which is also supported by previous findings that the knowledge of formative assessment in mathematical and digital technological instruments is not at the expected level. Again, wellbeing and Life & Livelihood teacher's knowledge to implement formative assessment is better, which means that the knowledge to implement formative assessment is better since wellbeing activities don't require any laboratory equipment and are related to daily lifestyles. Similarly, in the case of life & livelihood, since most of the activities in this subject related to daily family life and life skills, their knowledge to implement formative assessment is better.

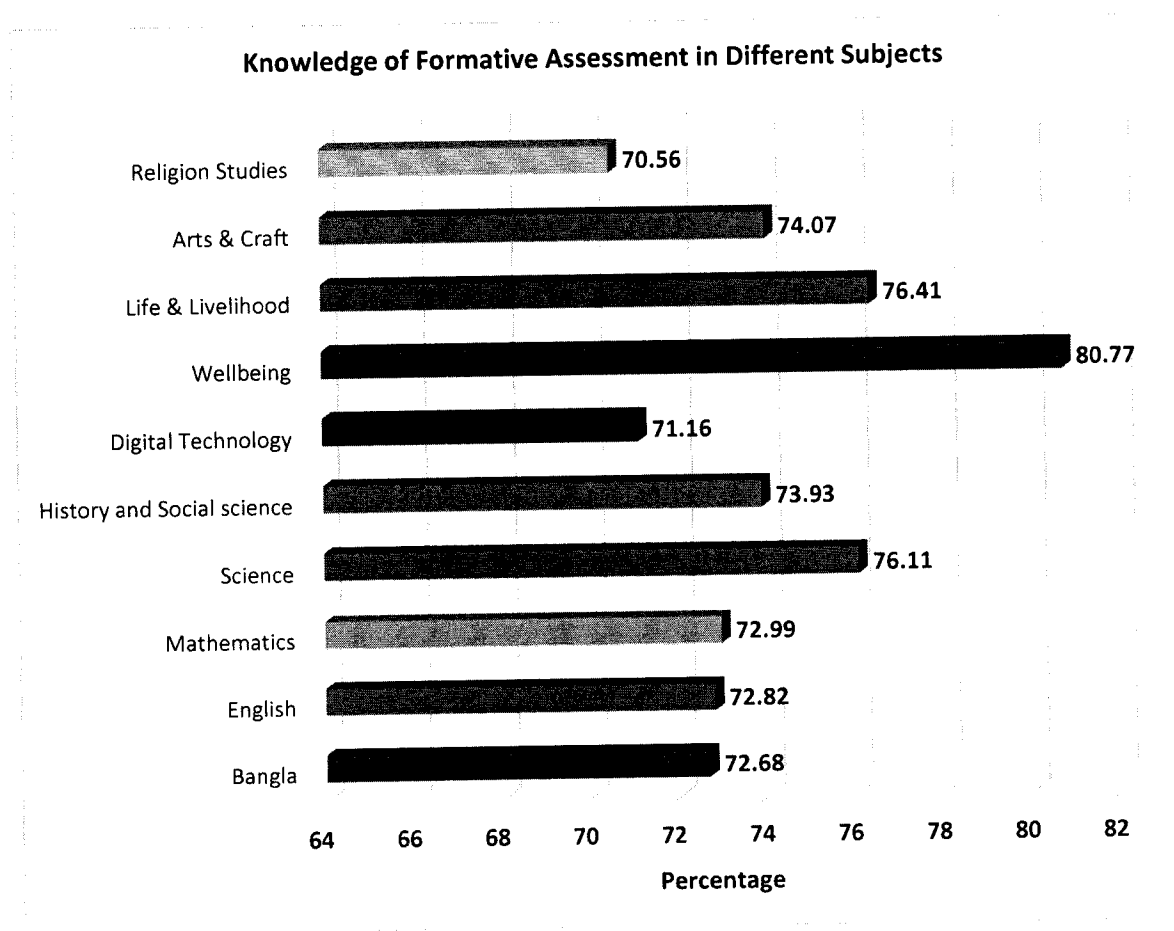


Figure-6: Knowledge of Formative Assessment in Different Subjects

4.1.9 Subject-wise Skill to Implement Formative Assessment

It is already mentioned that skill means the ability or willingness to learn the skills to implement the newly introduced formative assessment. Figure 7 illustrates that, in almost every subject, teachers are trying to gain the skills required for formative assessment or have the skill to implement formative assessment. But the facts lie in knowledge or understanding of new formative assessment methods.

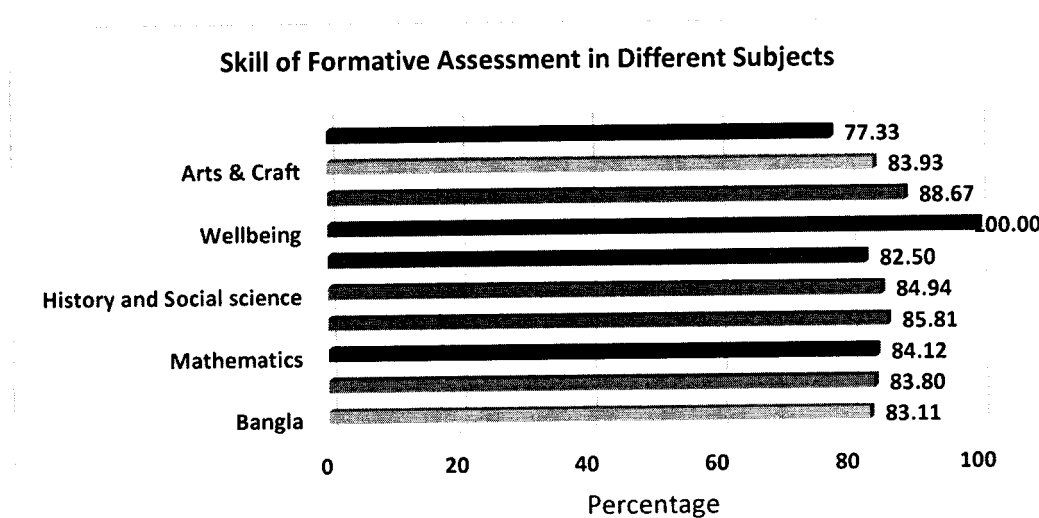


Figure-7: Subject-wise Skill to implement formative assessment

4.1.10 Subject-wise Attitude to Implement Formative Assessment

As the attitude towards formative assessment, well-being, and Life & Livelihood, teachers are more enthusiastic about implementing formative assessment. In contrast, figure 8 shows that this attitude is comparatively lower in the case of Science, Mathematics, digital Technology, Bangla, and English Subjects. As there is a huge technological orientation in Science, Mathematics, and Digital Technology subject, and in some cases of mathematics and science subject, the instruction for formative assessment with different projects and activities is not clear and easily understandable, some teachers are reluctant to use this kind of technology in formative assessment. Again, Since the listening part is included in the English language and assessing English listening skills is comparatively new, teachers are facing a struggle, and therefore, their enthusiasm is relatively lower than in other subjects to implement formative assessment.

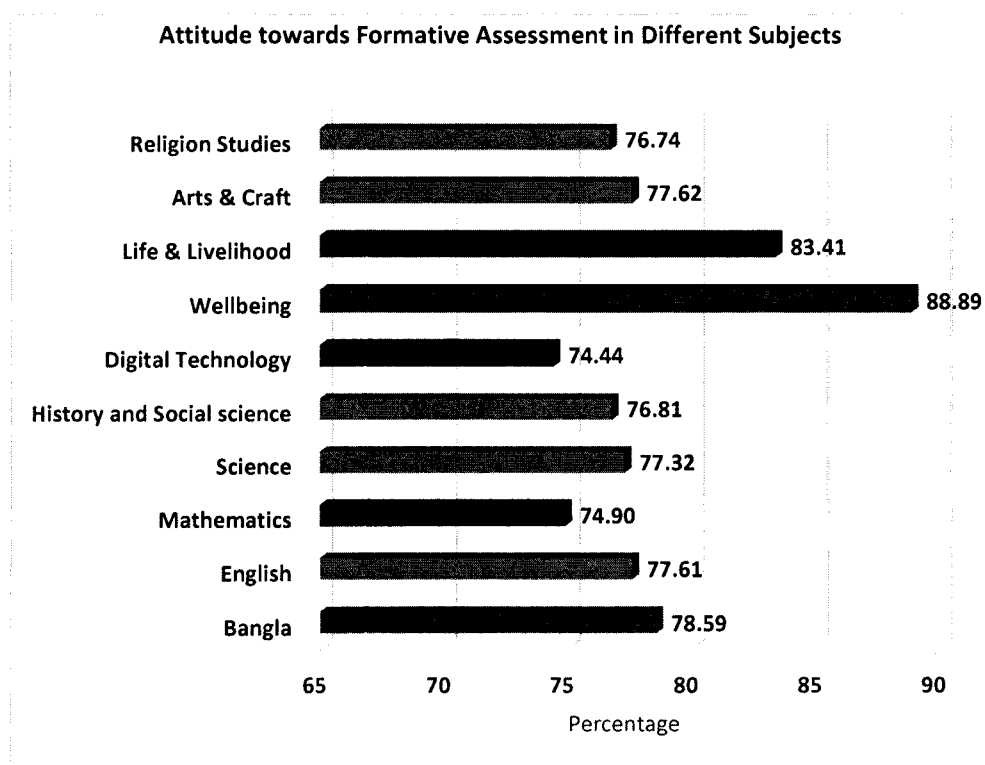


Figure-8: Subject Wise Attitudes towards Formative Assessment

4.1.11 TNA Scenario Based on Institution Type, Gender, and Curriculum Version

Group Statistics					
Types of Educational Institutions		N	Mean	Std. Deviation	Std. Error Mean
Overall Score of the Respondents	Government	51	72.1822	14.83731	2.07764
	Private	172	79.3951	12.09723	0.92241

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Overall Score of the Respondents	Equal variances assumed	3.788	0.053	-3.543	221	0.000	-7.21296	2.03587	-11.22517	-3.20075
	Equal variances not assumed			-3.173	70.848	0.002	-7.21296	2.27319	-11.74575	-2.68017

Since the P value is < 0.05 , it can be said the Training Need Assessment (TNA) is significantly varied based on the Govt. and Non-Govt institution type. That means, in addition to the Private Institutions, Government teachers need more intervention to increase their Knowledge, skill, and attitude towards formative assessment.

In the same way, the Independent Sample T-Test found that the Training Need Assessment (TNA) scenario does not vary significantly based on Male, Female Gender, and Bangla, English Curriculum Version.

4.1.12 Implementation Scenario Based on Training

Group Statistics					
Training on New Curriculum		N	Mean	Std. Deviation	Std. Error Mean
Overall Score of the Respondents	No	156	79.1066	12.76169	1.02175
	Yes	67	74.5764	13.41255	1.63860

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Overall Score of the Respondents	Equal variances assumed	0.194	0.660	2.393	221	0.018	4.53018	1.89296	0.79963	8.26074
	Equal variances not assumed			2.346	119.602	0.021	4.53018	1.93106	0.70669	8.35368

The independent samples t-test results indicate that teachers who received training obtained a mean score of 74.58, whereas those who did not receive training obtained a higher mean score of 79.11. Therefore, the present findings do not support the assumption that existing training has significantly improved teachers' readiness for formative assessment implementation.

Rather, this result suggests that the current training arrangements may be limited in relevance, duration, quality, or practical effectiveness. However, this finding should be interpreted

cautiously, as the difference may also reflect participant selection patterns, institutional variation, or differences in the contexts within which teachers received training.

This inconsistency has been corrected in the present analysis. The revised interpretation acknowledges that the quality, design, and delivery of training programs may be inadequate, leading to limited or even counterproductive outcomes.

4.1.13 Training Need Assessment based on Education Board

There are 10 Education Board. It was tried to investigate how the required combination of Knowledge, skill and attitude is varied based on the Education Board. Since there are 10 Boards, therefore this is tested through ANOVA.

Descriptive								
Overall Score of the Respondents								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Barishal	19	75.2274	16.75053	3.84284	67.1539	83.3009	29.33	94.67
Chittagong	49	77.1563	14.87902	2.12557	72.8826	81.4301	28.00	93.33
Cumilla	7	77.3329	9.65271	3.64838	68.4056	86.2601	60.00	89.33
Dhaka	30	77.5113	13.57645	2.47871	72.4418	82.5809	43.33	92.00
Dinajpur	41	81.3166	10.57509	1.65155	77.9787	84.6545	39.33	93.33
Jessore	17	77.8418	10.87162	2.63675	72.2521	83.4314	53.33	90.00
Madrasha	15	83.4653	7.72251	1.99394	79.1887	87.7419	70.67	94.67
Mymensingh	7	70.6686	20.47334	7.73820	51.7339	89.6033	34.00	90.67
Rajshahi	33	75.8176	11.00551	1.91581	71.9152	79.7200	44.67	92.67
Sylhet	5	70.9340	16.18475	7.23804	50.8380	91.0300	58.67	92.67
Total	223	77.7455	13.09674	.87702	76.0172	79.4739	28.00	94.67

ANOVA					
Overall Score of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1859.309	9	206.590	1.215	0.287
Within Groups	36219.162	213	170.043		
Total	38078.471	222			

From the ANOVA table, since the P value is > 0.05 , it can be said that the required combination of Knowledge, skill and attitude as TNA is not significantly varied based on the Education Board. Similarly, in terms of location, it is not varied. Therefore, it can be summarized that there is currently no significant variation in the required combination of Knowledge, skill and attitude for formative assessment training scenario based on the Education Board or urban-rural location.

That means, in all education board and urban-rural location, the training should be provided in the same way or with same importance. No Education board's teachers are significantly ahead and lacking behind compared to other.

4.1.14 Summary of Quantitative Data

The quantitative findings provide important insights into the training needs of secondary-level teachers in Bangladesh for implementing formative assessment. The overall Training Needs Assessment (TNA) score was 77.74 percent, suggesting a moderate to good level of readiness among teachers when knowledge, skills, and attitudes are considered together. However, the domain-wise analysis reveals important variation within this overall picture. Teachers demonstrated comparatively stronger performance in the skill domain, while knowledge remained the weakest area, indicating that many teachers may be engaging in assessment-related activities without sufficient conceptual clarity regarding formative assessment principles, processes, and alignment with competencies. Attitude scores were moderately positive, but not strong enough to suggest a uniformly high level of confidence and commitment toward formative assessment implementation.

Subject-wise analysis further shows that teachers of Well-being and Life & Livelihood performed relatively better, while teachers of subjects such as Digital Technology, Mathematics, English, Bangla, and Religion Studies showed comparatively weaker scores, particularly in knowledge. This suggests that the complexity, subject nature, and practical demands of assessment vary across disciplines and may require more targeted, subject-sensitive training support.

The findings also indicate that institutional context matters. Private school teachers obtained a higher overall mean score than government school teachers, suggesting differences in institutional support, accountability, or working conditions. By contrast, no statistically significant differences were found by gender, curriculum version, education board, or working location. These findings imply that although formative assessment training is broadly needed across the system, certain institutional groups may require more focused support. Overall, the

quantitative evidence suggests that effective training design should prioritize conceptual clarity, subject-specific application, and the contextual realities that shape teachers' ability to implement formative assessment meaningfully.

4.2 Findings of Qualitative Data

As part of qualitative data, two Focus Group Discussions (FGD) were conducted. One is with the Curricula & Training Experts and another one was with Secondary Level Teachers who took part in training and continued working in secondary level education institutions. Therefore, the findings section for the qualitative part is divided into two parts - one is for the FGD with Curriculum & Training Experts and another one for the FGD with Secondary Level Teachers. The findings are structured around the three research objectives, which align with these questions. A thematic analysis, following Braun and Clarke's (2006) six-phase approach, was conducted on the FGD data with the assistance of Grok (xAI) and NVivo (Version-15).

4.2.1 Findings from FGD-1 (FGD with Training Experts and Policy Makers)

This study was designed to develop a targeted training curriculum for secondary-level teachers in Bangladesh to effectively implement formative assessment (FA), focusing on their required knowledge, skills, and attitudes (KSA) while identifying additional influencing factors. To achieve this, a quantitative survey was initially conducted among teachers to assess their KSA related to FA. Subsequently, a Focus Group Discussion (FGD) was held with training experts, curriculum designers, and policy makers responsible for teacher development, including FA-related programs. This FGD served as the qualitative component of the research, aiming to validate the identified training needs and incorporate the experts' experiences in curriculum design and policy formulation, thereby enabling a comprehensive determination of TNA through a mixed-methods approach.

4.2.1.1 Participants of FGD -1 (FGD with Training Experts and Policymakers)

A Focus Group Discussion (FGD) was conducted with 12 leading experts in teacher training and formative assessment (FA), selected through purposive sampling to align with the study's objectives. Participants were chosen for their authoritative expertise in designing, coordinating, and delivering FA-related training and curriculum development, positioning them as ideally suited to provide critical insights into training needs for FA implementation in Bangladesh's secondary education system.

Predominantly affiliated with the National Curriculum and Textbook Board (NCTB), most participants also had extensive prior engagement with the National Academy for Educational Management (NAEM), the Directorate of Secondary and Higher Education (DSHE), and other training institutions, such as a2i. Their roles, including Chairman, Senior Specialists, Specialists, Research Officers, and other educators, reflect leadership in developing training manuals, facilitating continuous professional development, and shaping FA policy. The three-hour, in-person FGD, held in a modern, professionally conducive conference setting, was audio- and video-recorded with participants' consent.

Table-4.3: Demographic Profile of FGD Participants (Training Experts and Policymakers)

Participant ID	Gender	Organization	Role
TE-12	Male	NCTB	Chairman
TE-1	Female	NCTB	Senior Specialist
TE-2	Male	NCTB	Specialist
TE-3	Male	DSHE	Research Officer
TE-4	Male	NAEM	Former Assistant Director
TE-5	Male	a2i	Education Expert
TE-6	Male	NCTB	Research Officer
TE-7	Female	NCTB	Senior Specialist
TE-8	Male	NCTB	Senior Specialist
TE-9	Female	NCTB	Research Officer
TE-10	Male	NCTB	Specialist
TE-11	Male	NCTB	Specialist

4.2.1.2 Findings regarding First Research Question

The first part of the first research question is “What is the required Knowledge for implementing Formative Assessment?” The following themes were developed based on the answers heading to the above question. From the excerpts of FGD participants, the first theme developed is based on required Knowledge: -

4.2.1.3 Theme for Knowledge: Clear & Contextual Knowledge

For the effective implementation of formative assessment, this theme addresses the necessity teachers need a clear understanding of formative assessment, and school principals must also have a clear concept of it. It is also grounded in its pedagogical purpose and adapted to Bangladesh's educational constraints.

Table-4.5: Theme 1 and Sub Themes of FGD with Training Experts

Theme on Knowledge	Sub-Theme	Quotes
Need for Clear and Contextual Knowledge	Knowledge as a Foundation for Skills & Shaping Attitudes	“There is often confusion between formative assessment and classroom management Teachers treat [practical classes] like summative assessments, conducting them only at the course’s end, which undermines the purpose.” (TE-7)
	Updated & Extensive Knowledge on Textbooks	“Training should mirror how teachers will teach in the classroom, using the current curriculum’s textbooks to demonstrate how specific content can be taught using formative assessment techniques.” (TE-4)
	Pedagogical Grounding	“Trainees need to understand why formative assessment is implemented, grounded in pedagogical theories... They need to know why it’s globally prevalent, with discussions starting in the 1960s and widespread adoption in developed countries by the 1980s.” (TE-11)

To understand this theme in greater detail, several sub-themes can be identified to sharpen the knowledge domain and outline the areas that need attention. Below is an elaboration based on the context of formative assessment implementation, focusing on the need for clear understanding among teachers and school principals, as well as the necessary areas of focus for effective implementation:

Sub-Theme: Knowledge as a Foundation for Skills & Shaping Attitudes

While the majority of teachers possess a general understanding of formative assessment, a significant proportion requires a more comprehensive grasp of the concept. TE-11 noted,

Knowledge and skills are intertwined; without solid knowledge, skills cannot be developed.

Teachers’ belief in FA’s efficacy depends on their understanding. Teachers who lack a clear understanding of FA’s purpose struggle to develop skills like rubric design or diagnostic questioning, hindering effective implementation. TE-4 highlighted,

Teachers' subject knowledge, particularly at the secondary level, where there is a significant gap, is critical... Without deep subject knowledge, teachers cannot implement formative assessment effectively.

TE-11 further added his observation,

Teachers revert to their usual methods in the classroom because they lack confidence that applying formative assessment will yield better results.

Clear knowledge fosters positive attitudes, which training must reinforce. Furthermore, certain teachers hold the misconception that formative assessment entails conducting occasional small-scale tests in the classroom, with the results aggregated at the end of a semester or academic year to determine a final grade for students. Participants emphasized that teachers often misunderstand FA, conflating it with summative assessment or classroom management. TE-7 stated,

There is often confusion between formative assessment and classroom management... Teachers treat [practical classes] like summative assessments, conducting them only at the course's end, which undermines the purpose. (TE-7)

This highlights the need for addressing this issue in training to clarify FA's role in providing continuous feedback to enhance student learning at the secondary level.

Sub-Theme: Updated & Extensive Knowledge on Textbooks

Teachers require updated and extensive knowledge of the subject matter covered in textbooks to effectively implement formative assessment (FA) in the classroom. This is essential because, through various questioning techniques, teachers must facilitate brainstorming among students on topics discussed in the textbook, encouraging them to connect the textbook content to real-life contexts rather than confining their understanding to the text alone. Experts in group discussions have noted that providing such real-world examples necessitates a level of subject-specific knowledge that is often lacking among secondary-level teachers. However, this deficiency is not primarily the fault of the teachers themselves; rather, it is largely attributable to the existing socio-economic context in Bangladesh. Therefore, to address this issue, targeted interventions for teachers are necessary. So, TE-4 suggested making FA knowledge tangible through current curriculum textbooks:

Training should mirror how teachers will teach in the classroom, using the current curriculum's textbooks to demonstrate how specific content can be taught using formative assessment techniques. (TE-4)

For instance, training should illustrate how FA can be applied to a Grade 9 Bangla lesson on recitation or a Physics lesson on waves, ensuring relevance for secondary-level teaching.

Sub-theme: Pedagogical Grounding

Implementation of FA requires grounding in pedagogical theory and its application in real life teaching. It is disclosed that in Bangladesh, the majority of teacher training programs focus extensively on disseminating information about a given topic but often fail to provide hands-on learning experiences that could fundamentally shift trainees' beliefs. Therefore, alongside improving training modules, it is imperative to establish a clear pedagogical foundation to support effective implementation. During teacher training, when imparting knowledge about formative assessment (FA), it is essential to clearly explain why this approach is effective. The training must be designed in a manner that not only enables teachers to comprehend the importance of FA but also transforms their understanding into a deep-seated belief in its value.

Trainees need to understand why formative assessment is implemented, grounded in pedagogical theories... They need to know why it's globally prevalent, with discussions starting in the 1960s and widespread adoption in developed countries by the 1980s.
(TE-11)

4.2.1.4 Theme for Skills: Development of Subject-Specific and Practical Skills

The socio-economic conditions of educational institutions in Bangladesh significantly contribute to the lack of requisite skills among secondary level teachers for implementing formative assessment (FA). However, setting aside these external factors, specific measures are necessary to enhance teachers' skills. If these measures are incorporated into training programs and implemented appropriately, it is reasonable to expect that FA implementation will yield significantly improved outcomes, emphasizing hands-on training over theoretical instruction.

Table-4.6: Theme and Sub Themes on Skills

Theme on Skills	Sub-Theme	Quotes
Development of Subject-Specific and Practical Skills	Subject-Specific Rubric Design	“Bangla teachers need training on using rubrics for their subject, as rubrics differ across subjects like English or Physics.” (TE-4)
	Diagnostic Questioning	“When teaching waves in Grade 9, the teacher might ask, ‘What kind of motion is the fan above you?’ (TE-4)
	Digital Literacy for FA	“In today’s AI-driven era, digital tools can help teachers quickly create rubrics and assess students’ pre- and post-learning states.” (TE-4)
	Practice-Oriented Training	“Training on FA often involves discussing guidelines without practical demonstrations, so teachers learn theoretically but cannot implement effectively.” (TE-11)

Sub-Theme: Subject-Specific Rubric Design

One of the most challenging aspects of implementing formative assessment for teachers is developing rubrics. Due to their inability to create rubrics effectively or their lack of understanding, many teachers are reluctant to adopt FA methods in the classroom. Another significant issue is that in most training programs the discussion goes on how to make rubrics on an average for all subjects. But, subject-specific rubrics vary widely and it is not trained.

Bangla teachers need training on using rubrics for their subject, as rubrics differ across subjects like English or Physics. (TE-4)

Therefore, it is essential to include separate subject-specific sessions on rubric development, where teachers can gain hands-on experience in creating rubrics tailored to their respective subjects. So, there should be two different sessions on the Overall Rubrics Development which is the same for all teachers and another is for the Subject-specific Rubrics Development. Participants stressed the importance of tailoring FA tools to secondary subjects to ensure skills are relevant to subjects like Mathematics, English, or Physics taught at the secondary level and participant TE-7 reinforced,

Training should be twofold: one part covering the overall concept of formative assessment and another tailored to specific subjects.

Sub-Theme: Diagnostic Questioning

A primary objective of assessment for learning (AfL) is to diagnose the learner's current state of understanding and enable teachers to determine the necessary instructional inputs for the students. To this end, diagnostic questions not only help gauge the learner's condition but also facilitate student brainstorming. The ability to pose substantive questions to diagnose student understanding is critical. As diagnostic questions TE-4 provided an example:

When teaching waves in Grade 9, I might ask, 'What kind of motion is the fan above you?' or show a spring's motion to prompt discussion.

These questions are part of formative assessment, allowing the teacher to diagnose students' understanding without formal records. Training must equip teachers with this skill to assess secondary students dynamically.

Sub-Theme: Digital Literacy for FA

When formative assessment was introduced in Bangladesh under the name SBA, it involved extensive record-keeping requirements for teachers, significantly increasing their workload. However, if teachers acquire proficiency in digital literacy, this record-keeping burden can be reduced. Moreover, strong digital literacy skills can enhance teachers' enthusiasm for implementing formative assessment effectively. One participant highlighted digital literacy's role:

In today's AI-driven era, digital tools can help teachers quickly create rubrics and assess students' pre- and post-learning states. (TE-4)

Incorporating digital tools that support teaching and assessment across various subjects into training programs is highly desirable. This approach will make teaching and learning more specific and effective. Digital tools will also assist in managing large classrooms and assessing a higher number of students than typically expected. This is particularly relevant for secondary teachers managing large classes, where digital tools can streamline FA tasks.

Sub-Theme: Practice-Oriented Training

Current training was criticized for being theoretical. In most training sessions, there is a greater emphasis on delivering lectures or presenting through slideshows rather than providing hands-on practice. One of the former trainers at NAEM criticized the training by following remark NAEM's training on SBA often involves discussing guidelines without practical demonstrations, so teachers learn theoretically but cannot implement effectively. (TE-11)

As a result, while teachers undergoing training gain some understanding of formative assessment (FA), but, it does not significantly impact their thinking or skill development. Another participant disclosed frustration regarding the training sessions,

The training sessions themselves do not follow FA practices. This leads teachers to perceive FA as mere rhetoric. Without observing practical applications of FA, their skills in this area remain underdeveloped. (TE-3)

Therefore, training programs need to be practice-oriented. Training manuals and designs should be structured to enable trainee teachers to understand what FA is and how it is implemented through various activities facilitated by trainers during sessions. Additionally, participants recommended teachers should have ample opportunities to practice FA through microteaching and simulations to build skills like rubric design and practical activity integration for secondary classrooms.

4.2.1.5 Theme for Attitude: Fostering Positive Attitudes and Beliefs

This theme focuses on the need to cultivate positive attitudes among secondary teachers and institutional leaders toward FA, addressing skepticism and fostering belief in its efficacy.

Table-4.7: Theme and Sub-Themes for Attitude from FGD with Training Experts

Theme for required Attitude	Sub-Theme	Quotes
Fostering Positive Attitudes and Beliefs	Teacher Skepticism and Confidence	"Training curricula should not only impart knowledge but also foster the belief that using formative assessment enhances teaching and learning outcomes, cultivating a positive attitude." (TE-11)
	Interdisciplinary Respect	"Teachers often believe their subject and its assessment methods are superior... To foster a holistic view in students, teachers must first adopt a holistic perspective, respecting other subjects." (TE-5)
	Role of Institutional Leaders	"Attitude change is critical, starting with institutional leaders. Leaders must be trained first to support formative assessment implementation effectively." (TE-1)

Sub-Theme: Teacher Skepticism and Confidence

Due to a lack of hands-on experience with formative assessment (FA), teachers develop a negative perception that FA is neither feasible nor suitable for implementation in Bangladesh. One participant highlighted the following reason for this perception:

Teachers learn a lot during training but revert to their usual methods in the classroom because they lack confidence that applying formative assessment will yield better results. (TE-11)

To address this perception, TE-11 suggested,

Training curricula should not only impart knowledge but also foster the belief that using formative assessment enhances teaching and learning outcomes, cultivating a positive attitude.

Training must demonstrate FA's benefits for secondary student outcomes. Trainers should conduct sessions by actively applying formative assessment (FA) practices and demonstrate, through specific activities, how these activities shape trainees' attitudes, while also explaining how similar activities can influence students. However, a participant emphasized that training must also convince teachers that adopting FA will enhance their own professional skills.

Trainee teachers must be convinced that if they conduct classes following FA principles, he/she will eventually become great teachers. (TE-4)

Sub-Theme: Interdisciplinary Respect

Some teachers do not consider other subjects and their assessment methods to be particularly important. For instance, a physics teacher may believe that their subject is more challenging and significant. TE-5 emphasized attitudinal barriers:

Teachers often believe their subject and its assessment methods are superior.

As a result, when a Bangla teacher in an adjacent classroom attempts to conduct a pronunciation-focused class, the physics teachers complain to the principal or head teacher that such teaching methods create excessive noise.

Conversely, Bangla teachers may perceive their subject as less important or prestigious, leading them to avoid conducting pronunciation classes at a higher volume due to fear of criticism from other teachers. This results in students failing to develop proper pronunciation skills. Changing such attitudes is absolutely essential. Heading to change the attitude - it is imperative to foster a holistic view in students, teachers must first adopt a holistic perspective, respecting other

subjects. This is crucial at the secondary level, where interdisciplinary learning supports FA's holistic goals.

Sub-Theme: Role of Institutional Leaders

At the secondary level, the role of school principals is substantial, as working beyond their guidance is somewhat challenging for teachers. Institutional leaders' attitudes are critical. TE-5 stated citing issues like noise complaints during recitation lessons.

Without institutional support, teachers cannot implement formative assessment effectively.

TE-1 added,

Attitude change is critical, starting with institutional leaders. Leaders must be trained first to support formative assessment implementation effectively.

Training must target leaders to create a supportive environment for secondary teachers. The training should focus on the positive attitude building and ensuring a supportive environment in the school with the proper leadership of the leaders.

4.2.2 Findings regarding Second Research Question

The second research question is: **Besides Knowledge, skill, and Attitude, what other factors influence formative assessment that need to be addressed in designing training curricula of teachers for formative assessment?** The data from FGD was transcribed and then analysed with thematic analysis method. The following themes and subthemes were made out of the data

Theme for Other Factors: Systemic and Contextual Factors Influencing Formative Assessment

This theme captures the systemic and contextual factors beyond knowledge, skills, and attitudes that influence FA implementation at the secondary level and must be addressed in training curricula.

Sub Theme: Institutional Leadership

The leadership of head teachers is critically important. Most head teachers lack comprehensive knowledge of formative assessment (FA), often finding it a confusing concept. Training experts noted that head teachers receive minimal training on FA, and such training is typically not standalone but rather a small component of broader training programs. Hence, when head

teachers observe teachers implementing assessments differently across subjects, they become increasingly confused. This confusion fosters a negative attitude toward FA. Additionally, pressure from parents to achieve strong academic results further drives head teachers to prioritize syllabus completion and favorable semester-end examination outcomes. As a result, they design classes, exams, and other academic activities to meet these objectives. This environment hinders teachers who wish to implement FA, leading to discouragement and a lack of enthusiasm for its adoption.

To address this situation, most training experts recommend comprehensive FA training programs specifically designed for head teachers to build their confidence in the approach. They advise incorporating measures in these training sessions to ensure head teachers develop trust in FA.

Head teachers must be trained on FA, and this training should involve practical application of FA so that they can effectively monitor its implementation later. (TE-3)

Sub Theme: High Student-Teacher Ratio & Improper Class Time

Secondary school classrooms are typically large in size and accommodate a comparatively high number of students. Implementing the components of formative assessment in a classroom with so many students simultaneously is challenging. The number of students in a classroom often exceeds the ideal capacity by several times. Moreover, the structural design of classrooms and other logistical aspects are generally below standard. Consequently, arranging seating for group work or teamwork, even when desired, is not easily feasible. Thus, large class sizes limit FA's feasibility. TE-6 stated,

Large class sizes make it impossible to manage formative assessment effectively, as diagnosing and providing feedback to many students is challenging.

TE-4 added,

The current school ecology in Bangladesh, with limited teacher numbers and high workloads, makes formative assessment implementation challenging.

For this reason, teachers often become overwhelmed and begin to believe that implementing formative assessment (FA) is not feasible. Therefore, the training curriculum must include strategies on how to manage the large classrooms and effectively implement FA.

Sub Theme: Excessive Workload with Low Incentives

Secondary-level teachers are inherently busier than those in other educational tiers, often required to conduct five to six classes per day. Consequently, they remain heavily occupied with teaching responsibilities alone. Additionally, they are tasked with various national and regional duties outside the classroom. Implementing the diverse components of formative assessment (FA) further increases their workload. As a result, even if they wish to engage sincerely with FA, it becomes challenging to do so. Excessive documentation was a significant barrier. Regarding this issue TE-4 informed,

Formative assessment requires documenting evidence of learning, but excessive documentation, as seen in SBA, increases teachers' workload, leading to disengagement. (TE-5)

In light of this situation, the record-keeping aspects of formative assessment (FA) should be organized in a way that eliminates unnecessary documentation, retaining only those elements that are absolutely essential.

Record-keeping should be minimal to reduce workload. Training must teach streamlined rubric use to balance effectiveness and workload. (TE-6)

Furthermore, consideration should be given to alternative methods, such as relying on teachers' observational memory, in place of extensive documentation. These alternatives should be explored and incorporated into the training curriculum.

Another issue is that secondary-level teachers receive comparatively low financial incentives. As a result, they often take on additional work alongside teaching. This low remuneration naturally reduces their motivation to engage in extra tasks, impacting their enthusiasm for implementing additional responsibilities like formative assessment. Formative assessment (FA) requires preparation before and after classes, as well as additional work, which adds to the workload of teachers. This extra effort can be particularly challenging for secondary-level teachers, further reducing their motivation to implement FA effectively.

Teachers often feel overburdened, thinking, 'Why do I need to fill out so many forms for a low salary?' (TE-4)

Sub Theme: Inadequate Training Environments

Participants highlighted significant shortcomings in the current training environments for formative assessment (FA), which hinder effective teacher preparation and implementation. TE-7 criticized the cramped training rooms, noting that overcrowding disrupts the learning atmosphere and diminishes engagement. Additionally, short training durations, such as three to six days, are ineffective because much of the time is consumed by travel, leaving little room for substantive content after introductions and ancillary activities, ultimately failing to achieve the training's core objectives.

In some cases, the absence of travel allowances (TA/DA) further exacerbates this, as it discourages participation, especially for teachers from distant areas, who weigh the financial costs against minimal honorariums and lost income from private tutoring in subjects like Bangla, English, Math, Physics, or Chemistry.

To address these issues, it was recommended shifting from one-off sessions to a continuous, follow-up-based model, ensuring ongoing support as teachers apply learnings in their classrooms.

Instead of one-off sessions, continuous training with follow-ups, possibly through a hybrid online-offline model, is necessary. (TE-4)

A hybrid online-offline approach could enhance accessibility, while incorporating context-specific modules tailored to urban versus rural settings would make training more relevant. Adequate incentives, including proper recognition of intellectual labor and financial support, are essential to sustain motivation and ensure high-quality, sustained engagement in FA training.

4.2.3 Summary of FGD-1 (FGD with Trainer Experts and Policy Makers)

The thematic analysis addresses both research questions comprehensively. For the first question, the findings outline the necessary knowledge, skills, and attitudes for implementing formative assessment (FA) at the secondary level. Teachers require clear, subject-specific knowledge, emphasizing the need for training to align with classroom teaching using current curriculum textbooks. Essential skills include designing rubrics, using diagnostic questioning, and employing digital tools, with stressing the importance of practice-oriented training to apply FA in daily classroom activities. Positive attitudes are also vital, with a focus on fostering belief in FA's benefits. For the second question, systemic factors such as workload, student-teacher ratios, inadequate training environments, gaps in subject knowledge, and institutional support

were identified as critical areas needing attention, with teachers advocating for continuous, context-specific training. The findings illustrate how deficiencies in knowledge impact skills and attitudes, worsened by systemic barriers. Thus, the findings highlight the need for a holistic training curriculum and offer a strong foundation for developing an evidence-based, contextually relevant training program to improve FA implementation in Bangladesh's secondary education system.

4.3 Findings of FGD- 2 (FGD with Secondary Teachers)

4.3.1 Participants

Following the quantitative survey of secondary-level teachers and the Focus Group Discussion (FGD) with training experts and policymakers, an online FGD was conducted via Zoom to validate survey findings and explore nuanced, hands-on experiences and complex challenges related to formative assessment (FA) implementation.

The purpose was to gain in-depth insights into teachers' practical perspectives, complementing the numerical data and expert viewpoints. The FGD involved 12 secondary-level teachers who had received FA training, with several also serving as master trainers, and possessed at least five years of teaching experience. Participants were informed about the research objectives and invited to a 90-minute online session, with those providing consent included. Thematic analysis of the discussion elucidated critical aspects of teachers' knowledge, skills, attitudes, and contextual factors influencing FA, contributing to a comprehensive understanding of training needs for effective FA implementation in Bangladesh's secondary education system.

Table-4.8: Demographic Profile of FGD Participants (Secondary-Level Teachers)

Participant ID	Gender	Years of Teaching Experience	Subject Taught	Institution Type
T-1	Female	25	Social Science	Government
T-2	Male	16	English	Government
T-3	Male	10	Islamic Studies	Private
T-4	Female	15	Bangla	Government
T-5	Female	12	Science	Government

T-6	Female	10	History	Government
T-7	Male	20	English	Government
T-8	Female	11	English	Government
T-9	Male	7	Art & Craft	Private
T-10	Female	6	Religion Studies	Government
T-11	Male	9	Digital Technology	Private
T-12	Female	8	Life & Livelihood	Government

4.3.2 Findings Regarding the First Research Question

In the focus group discussion (FGD), participants primarily discussed systemic factors, leading to the identification of a theme that integrates the coding of knowledge, skills, and attitudes (KSA). Additionally, since quantitative data was initially collected from secondary-level teachers, the insights from that data were used to delve deeper into unclear areas, aiming to clarify them through further exploration.

Enhancing Teachers' KSA

The lack of clear understanding about how to create or use rubrics prevents teachers from implementing FA effectively. Therefore, the training curriculum should be designed to ensure that school headmasters and all teachers receive subject-specific training to enhance their capacity for FA implementation.

To implement formative assessment effectively, teachers must enhance their personal competencies. For instance, teachers need strong observational skills to easily assess students' conditions and identify areas for intervention. This requires improving teachers' knowledge, skills, and attitudes related to assessment. In essence, teachers must develop themselves in line with FA guidelines to successfully implement it. Moreover, FA should be implemented by the teachers in a way that enables students to develop self-learning capabilities, allowing them to analyze their own needs and acquire skills through study or other means.

A specific skill that needs emphasis is the inclusion of content in training programs that equips teachers to build rapport with local communities and explain how innovative approaches like FA accelerate student learning. One participant noted:

A key reason for the negative perception of FA in Bangladesh is that teachers have failed to adequately inform parents and community members about it or build confidence in its value. As a result, people have easily developed adverse perceptions about FA and this new change. (T-7)

4.3.3 Findings Regarding the Second Research Question

Training for School Head Teachers on Formative Assessment (FA)

It is imperative to provide training on formative assessment to school principals or headmasters. When headmasters or principals lack a clear understanding of FA, they often do not allow teachers to implement it properly or create obstacles to its adoption.

The Head Sir instructs us to complete the syllabus quickly and emphasizes teaching in classes to prepare for exams, ensuring students achieve good results. (T-1)

Another significant aspect is that the role of school headmasters is crucial in dispelling the misconceptions about FA in Bangladesh. Because headmasters or institution leaders frequently interact with parents and local community leaders, who tend to place significant trust in their opinions. Correspondingly, when school headmasters lack detailed knowledge of FA, they themselves fail to develop confidence in it and are unable to explain its benefits to parents and other community members.

Since parents and local community leaders primarily communicate with school headmasters and trust their opinions, if Head Sir had a deeper understanding of FA, negative public perceptions about it in Bangladesh would not have emerged. (T-7)

More critically, without a comprehensive understanding of FA, they are unable to effectively monitor or supervise its implementation. Training is crucial for Head Teachers to support effective formative assessment (FA) implementation. A tailored training program should be designed specifically for them, focusing on creating an institutional environment conducive to FA across various subjects. The training must include hands-on instruction on essential administrative responsibilities, such as ensuring necessary resources and support systems. This will empower Head Teachers to assist their teaching staff effectively and raise awareness among parents and the local community, fostering a collaborative educational ecosystem.

A dedicated training program must be arranged exclusively for Head Teachers, as they are responsible for managing the administrative duties of an institution. (T-1)

Adverse Impact of Severe Teacher Shortages

The initial quantitative survey revealed that teachers of certain subjects, such as well-being education, demonstrate relatively stronger knowledge, skills, and attitudes toward FA compared to teachers of subjects like Bangla, English, or history. The lowest scores were observed among ICT and mathematics teachers.

Does this suggest that teachers' competencies in FA vary by subject? When asked about the reasons, teachers explained that there is a significant shortage of ICT and mathematics teachers at the secondary level. In most government schools, alongside shortages in these subjects, there are fewer teachers overall than needed. Consequently, one teacher often handles multiple subjects. That is why subjects like mathematics and ICT are typically taught by teachers from other disciplines, who may be proficient in their primary subject but do not dedicate sufficient time to these additional subjects, resulting in limited knowledge, skills, and attitudes in those areas. One teacher shared his hurdle

I am a teacher of Bangla language. Our school has 17 sections (classes). It is not feasible for one teacher to handle all these 17 classes a day. Therefore, in our school, two social science teachers also teach Bangla. If you investigate schools across Bangladesh, you will find similar situations. (T-7)

Textbook Content Matters

The quantitative analysis revealed that Well-Being teachers possessed higher knowledge, skills, and attitudes (KSA) related to formative assessment (FA) compared to teachers of other subjects. To understand why Well-Being teachers excel in this area, one teacher explained that the content of the Well-Being textbook is closely tied to real-life experiences and is structured sequentially to facilitate FA implementation effortlessly. This teacher noted personal benefits from studying the book and expressed joy in teaching it, speaking with a confident tone and evident optimism about the subject.

The textbook integrates psychology and biology, with content easily relatable to real-life scenarios, fostering mental resilience and supporting effective FA application. (T-9)

It highlights that the training manual for formative assessment (FA) should incorporate real-life examples and be designed to enable trainers to deliver classes or sessions that seamlessly follow FA principles. The content should be structured to facilitate easy implementation of FA practices, ensuring accessibility and practical application in training settings.

Unrealistic Design of the Class Timing and Activities

At the secondary level, classroom time is often insufficient for implementing formative assessment effectively, particularly for classes scheduled toward the end of the day, where even 30 minutes may not be available for the class. Naturally, classrooms are crowded with students, and within such limited time, implementing FA activities is challenging and, in some cases, seems impossible to teachers.

The limited class duration, particularly with some sessions as short as 30 minutes at the end, combined with large class sizes of 60 to 70 students, makes implementing formative assessment (FA) seem nearly impossible to me. (T-3)

This time shortage creates a dilemma in teachers that should teachers prioritize completing the syllabus or focus on implementing FA thoroughly? In most cases, teachers prioritize syllabus completion, as both school headmasters and parents place greater emphasis on this. Consequently, despite teachers' willingness, the lack of sufficient time hinders the full implementation of FA.

Absence of Efficient Trainers

In FA-related training and other government training programs, it is often observed that trainers lack effective communication skills or a clear understanding of the subject matter. In some cases, trainers' qualifications and competencies seem lower than those of the trainees. As a result, trainees become disillusioned and fail to concentrate in the training and cannot receive the knowledge, skills, and attitudes learned during training in their professional lives.

I personally know many teachers who cannot deliver training and perform better than ours. However, we know some trainers who are fare better but do not get the opportunity to train and they are generally reluctant to ask to train in such programs. (T-11)

Therefore, trainers with expertise and knowledge must be selected to conduct training. Otherwise, regardless of how well-designed the training curriculum and content are, achieving the desired change will not be possible.

Anomalies in Trainee Selection for Training

It is often observed that senior teachers, including those nearing retirement, are sent for such training programs. As a result, when these teachers retire, the remaining staff, who may lack adequate training, struggle to implement FA effectively. To address this, a tiered approach to selecting teachers for training could be adopted, categorizing them into senior, mid-level, and junior groups. By sending teachers from these three tiers for training in phases, the number of untrained or minimally trained teachers can be reduced.

It is also observed that teachers who maintain good relations with the school principal are frequently sent to training programs in Dhaka or divisional cities, either to stay in these locations or for the modest financial incentives provided by the training. These teachers often persuade the principal with misleading justifications to attend training, and it is typically the same group of teachers who repeatedly participate. Conversely, teachers who teach specific subjects are rarely sent for training relevant to their expertise. As a result, their competence in formative assessment (FA) or other educational matters does not develop significantly. Therefore, a centralized system is necessary to ensure equitable access to teacher training. One teacher expressed the frustration below

Many of us apply for training, but the head sir does not grant our permission; instead send the common faces who are seemingly nearer to them. (T-12)

Public & Private School Performance

Preliminary survey findings indicate that private school teachers exhibit comparatively higher knowledge, skills, and attitudes toward FA than their government school counterparts. The teachers opined that this difference may be due to greater accountability in private schools.

In government schools, job security and the lack of absolute authority by school head masters result in teachers being less motivated to learn new methods. Conversely, in private schools, high accountability creates a sense of uncertainty, compelling teachers to adapt. (T-9)

They also gave an example that if a government school teacher behaves inappropriately with a student, they may be transferred to another school, whereas in a private school, such behavior could lead to immediate resignation. Therefore, the teachers disclosed that sometimes these kinds of features hinder the adaptation of new and better efforts for teaching learning process.

4.4 Conclusion

The mixed-methods study revealed critical insights into the training needs for implementing formative assessment (FA) in Bangladesh's secondary education system. For Research Question 1, quantitative findings (TNA score: 77.74%) indicated stronger teacher skills than knowledge and attitudes, with Well-being and Life & Livelihood teachers outperforming those in Science, Mathematics, and Digital Technology due to simpler, context-relevant content. Qualitative findings from the expert FGD emphasized the need for clear, subject-specific knowledge, practical skills such as rubric design, diagnostic questioning, and positive attitudes fostered through practice-oriented training. The teachers' FGD highlighted the importance of enhancing teachers' observational skills and community engagement.

For Research Question 2, systemic barriers- excessive workload, high student-teacher ratios, inadequate training environments, and limited institutional support- significantly hinder FA implementation, particularly in government schools. Thematic analysis underscored the need for context-specific, continuous training addressing knowledge gaps, skill application, and attitudinal barriers, while mitigating systemic constraints to ensure effective FA adoption.

Chapter-5: Discussion

5.0 Introduction

The purpose of this study was to conduct a training needs assessment for secondary-level teachers in Bangladesh to effectively implement formative assessment, addressing their current knowledge, skills, and attitudes, as well as identifying influencing factors and causal explanations for gaps in practice. The research was driven by the need for educational transformation in Bangladesh, particularly in shifting assessment practices to integrate formative approaches alongside traditional summative methods, as highlighted in the research background. The findings, derived from focus group discussions (FGD) with experts from the National Curriculum and Textbook Board (NCTB), National Academy for Educational Management (NAEM), and Directorate of Secondary and Higher Education (DSHE) and another FGD with School Teachers, along with the survey data from teachers, revealed critical insights into teachers' competencies, contextual challenges, and training requirements.

This discussion chapter synthesizes these findings in the context of the research questions and objectives, which aim to explore teachers' existing capabilities, identify barriers to implementing formative assessment, and propose tailored training strategies. By examining the themes of knowledge gaps, skill deficiencies, attitudinal barriers, and systemic constraints such as large class sizes and exam-focused culture, this chapter connects the empirical data to existing literature on formative assessment and teacher professional development. It also considers the implications of these findings for curriculum design, teacher training programs, and policy reforms in Bangladesh's secondary education system.

5.1 Discussion on the First Research Question

The first research question of this study is what are the teachers' required knowledge, skills, and attitudes to implement formative assessment at the secondary level?

5.1.1 Need for Subject-Specific Training for Transforming Knowledge to Expert Level

The quantitative findings reveal that a majority (71.7%) of the 223 surveyed secondary-level teachers in Bangladesh demonstrated above-average knowledge scores on FA practices. This suggests a reasonable grasp of FA concepts, such as providing constructive feedback, using student-centered assessment techniques, and monitoring progress in real time, most of teachers correctly identifying core FA components in the survey. However, despite this above-average

knowledge, the scores still fall short of expert-level proficiency, indicating room for improvement in deeper theoretical understanding or consistent application of FA principles.

Qualitatively, the focus group discussions (FGDs) with experts and teachers highlight a critical need for clear, subject-specific knowledge to enhance FA implementation. The interplay between these findings indicates a nuanced challenge: quantitative data suggests teachers have a foundational understanding of FA and a readiness to adopt FA, but the qualitative data points to a gap in contextualizing this knowledge within the classroom's subject-specific demands.

The FGDs further revealed that teachers often revert to traditional summative methods due to the exam-focused curriculum and lack of training on integrating FA into subjects like science or Bangla, which may explain why knowledge scores, though above average, do not translate into effective practice.

To address this, training programs should build on teachers' existing knowledge by focusing on practical, textbook-aligned FA strategies, enabling teachers to incorporate real-world examples relevant to students' lives that are not limited to fixed textbook examples. For instance, workshops could demonstrate how to embed formative tools like real-time questioning in literature classes or diagnostic assessments in physics into daily lessons. This approach would leverage teachers' above-average knowledge while addressing the qualitative call for subject-specific training, ultimately enhancing FA implementation in Bangladesh's secondary schools.

5.1.2 Skills Development through Practical Application

The quantitative findings indicate robust skill levels among secondary-level teachers in Bangladesh for implementing formative assessment (FA), with 39.5% rated as excellent and 43.9% as good in skills such as providing feedback, designing assessments, and monitoring student progress. These scores suggest that a significant majority (83.4%) of the 223 surveyed teachers possess strong practical capabilities in FA, likely reflecting some exposure to skill-based training or classroom experience. However, the gap between good/excellent ratings and expert-level proficiency indicates that further refinement is needed to ensure consistent and effective application of these skills.

Qualitatively, focus group discussions (FGDs) with teachers and experts highlighted the need for subject-specific rubric design and diagnostic questioning to enhance these skills. These insights suggest that while teachers demonstrate strong general FA skills, they require tools like subject-specific rubrics and training in diagnostic questioning to make their skills more

precise and contextually relevant. This aligns with the quantitative data, as the strong skill scores may reflect broad competencies but lack the subject-specific depth needed for expert-level FA implementation.

These findings resonate with literature on practice-oriented FA training, notably Wiliam (2011), who argues that effective FA requires teachers to develop adaptive skills through practical, context-specific strategies. Wiliam emphasizes that tools like rubrics and diagnostic questioning are critical for translating general FA knowledge into actionable classroom practices, particularly when tailored to specific subjects. For example, Wiliam's work highlights how subject-specific rubrics help teachers provide clear, structured feedback, while diagnostic questioning enables real-time adjustments to instruction- both of which address the qualitative needs. The combination of strong skill scores and the call for subject-specific tools suggests that teachers are well-positioned to benefit from Wiliam's practice-oriented approach, provided training programs incorporate these elements.

Additionally, the FGDs revealed teachers' emphasis on observational skills and community engagement as critical for effective FA. These qualitative insights underscore the importance of non-traditional skills, such as observing student dynamics and fostering community involvement, which complement rubric design and questioning techniques. Observational skills enable teachers to gather real-time, qualitative data on student progress, aligning with advocacy for responsive teaching. Community engagement, meanwhile, extends FA beyond the classroom, creating a supportive ecosystem for student learning, though it requires training to integrate effectively.

In summary, the strong skill scores (83.4% good or excellent) indicate a solid foundation in FA practices, but the qualitative emphasis on subject-specific rubrics, diagnostic questioning, observational skills, and community engagement highlights areas for further development. By aligning training with a practice-oriented framework, programs can refine teachers' skills through subject-specific tools and strategies, such as tailored rubrics for science or literature and workshops on diagnostic questioning. Additionally, incorporating training on observational techniques and community collaboration can enhance teachers' ability to implement FA holistically. These steps would bridge the gap between strong skills and expert-level proficiency, ensuring effective FA integration in Bangladesh's secondary schools.

5.1.3 Attitudes and Behavioral Change

The quantitative findings regarding attitude, reveal that only 22.9% of the 223 surveyed secondary-level teachers in Bangladesh exhibited outstanding attitudes toward formative assessment (FA). This relatively low proportion of outstanding attitudes suggests that while many teachers acknowledge the value of FA, a significant portion harbor reservations or lack the enthusiasm needed for full adoption. This attitudinal gap is critical, as positive attitudes are essential for translating knowledge and skills into consistent FA practices in the classroom.

Qualitatively, focus group discussions (FGDs) with teachers and experts highlighted specific attitudinal barriers, notably skepticism and a lack of interdisciplinary respect. These insights suggest that attitudinal barriers stem from entrenched beliefs about assessment priorities and a siloed view of FA's applicability, which hinder its integration across diverse subjects.

These findings align with literature on attitudinal barriers to FA adoption, particularly Bennett (2011), who argues that teachers' attitudes significantly influence their willingness to adopt FA practices. Bennett (2011) highlights that skepticism often arises when FA is perceived as misaligned with high-stakes testing environments, as seen in the findings about Bangladesh's exam-driven system. Additionally, Bennett notes that a lack of understanding of FA's adaptability across disciplines can foster resistance, mirroring interdisciplinary respect. The low outstanding attitude score (22.9%) corroborates Bennett's assertion that attitudinal barriers, such as skepticism and subject-specific biases, must be addressed through targeted professional development to foster behavioral change.

The FGDs also underscored the pivotal role of institutional leaders in fostering positive attitudes toward FA. School leaders must model FA enthusiasm and create an institutional culture where teachers feel supported to experiment with it. Similarly, when head teachers prioritize FA in meetings and observations, it motivates other teachers to take FA seriously. These qualitative insights highlight that institutional leadership is crucial for shifting attitudes, as leaders can legitimize FA through policy, encouragement, and resource allocation. By fostering a supportive environment, leaders can counter skepticism and promote interdisciplinary respect, encouraging teachers to view FA as a universal tool applicable across subjects.

In summary, the low outstanding attitude score (22.9%) and qualitative findings on skepticism and lack of interdisciplinary respect reveal significant attitudinal barriers to FA adoption. Drawing on Bennett (2011), these barriers reflect misalignments with the exam-focused system and subject-specific biases, which training programs must address through targeted

interventions, such as workshops that demonstrate FA's efficacy across disciplines. Furthermore, the emphasis on institutional leadership underscores the need for school leaders to champion FA through visible support and cultural change initiatives. By addressing attitudinal barriers and leveraging leadership, training programs can foster the behavioral changes necessary for effective FA implementation in Bangladesh's secondary schools.

5.2 Discussion on the Second Research Question

The second research question is "Besides knowledge, skills, and attitudes, what other factors influence formative assessment that need to be addressed in designing training curricula for teachers?"

The quantitative findings indicate that secondary-level teachers in Bangladesh possess relatively strong competencies for formative assessment (FA), with an overall Training Needs Assessment (TNA) score of 77.74%, comprising knowledge (19.8% outstanding), skills (39.5% excellent, 43.9% good), and attitudes (54.7% good, 22.9% outstanding). However, significant differences in FA implementation exist between government ($M = 72.18$, $SD = 8.2$) and private schools ($M = 79.40$, $SD = 7.9$, $p < 0.05$). Qualitative findings from focus group discussions (FGDs) identify large class sizes, shorter class durations, lack of institutional support through improper selection for training, teacher shortages, and excessive workloads with improper recognition of intellectual labour as critical barriers that undermine teachers' ability to apply their KSA effectively. Therefore, the findings of quantitative and qualitative data suggest that systemic socioeconomic factors present greater barriers to FA implementation than KSA deficiencies in Bangladesh.

5.2.1 Institutional and Systemic Barriers (Institutional Support & Leadership)

The implementation of formative assessment (FA) in Bangladesh's secondary education system is significantly hindered by institutional and systemic barriers, which overshadow teachers' relatively strong knowledge, skills, and attitudes (KSA). Institutional barriers within schools, such as limited leadership support, inadequate teacher training, resource constraints, and resistance to change, significantly restrict FA implementation. School leaders often prioritize exam-focused outcomes, discouraging teachers from adopting FA due to its perceived misalignment with institutional goals, as noted by Leithwood et al. (2004), who emphasize that transformational leadership is critical for fostering educational reforms like FA.

Training opportunities are often insufficient, lacking the sustained, practical focus needed to build teachers' assessment literacy, as highlighted by Darling-Hammond et al. (2017). Resource limitations, including insufficient materials and technology, while large class sizes

and short class durations (30–35 minutes) make individualized feedback logistically challenging. Resistance to change is also prevalent, as teachers accustomed to traditional summative practices view FA as an additional burden, particularly in exam-centric institutional cultures, a pattern supported by Bennett (2011).

Systemic barriers operate at the broader educational system level, exacerbating institutional challenges. Misalignment between FA and national assessment policies, which prioritize high-stakes summative exams, creates inconsistencies that discourage teachers from adopting formative practices, as noted by Wiliam (2011). Large class sizes and short class durations limit opportunities for interactive FA strategies, forcing teachers to focus on syllabus completion to meet accountability demands. Teacher shortages, particularly in subjects like mathematics and ICT, where KSA scores are lower, result in non-specialist teachers handling multiple subjects, reducing their capacity to implement subject-specific FA strategies. Excessive administrative workloads, driven by FA's documentation requirements, further erode teacher motivation, especially given low salaries, as Guskey (2002) identifies in resource-constrained settings. Inequitable access to training, often influenced by favoritism rather than need (p. 73), restricts professional development, particularly for rural teachers, perpetuating disparities between government ($M = 72.18$, $SD = 8.2$) and private schools ($M = 79.40$, $SD = 7.9$, $p < 0.05$, p. 46). These systemic issues align with OECD's (2013) findings that high student-teacher ratios, time constraints, and staffing shortages hinder FA adoption in developing nations.

5.2.2 Teacher Shortages and Subject-Specific Challenges

The scarcity of qualified educators, particularly acute in rural educational institutions, constitutes a considerable impediment to the effective deployment of formative assessment methodologies, resulting in an amplified workload for the existing faculty (Almahal et al., 2023). Teacher shortages, particularly in mathematics and ICT, exacerbate FA implementation challenges, as non-specialist teachers often handle multiple subjects, leading to weaker KSA in these areas.

Quantitative data shows lower knowledge scores in mathematics, ICT, and English compared to Well-being and Life & Livelihood, where content aligns naturally with. This reflects a systemic issue, as teachers lack the time or expertise to master subject-specific FA strategies, such as technology-integrated assessments for ICT or project-based tasks for mathematics. Pryor and Crossouard (2008) emphasize that in low-resource contexts, teacher shortages

necessitate training that addresses subject-specific gaps, ensuring teachers can adapt FA tools to diverse disciplinary demands despite limited specialization.

5.2.3 Excessive Workload and Lack of Financial Recognition

The implementation of formative assessment is significantly hampered by the excessive workloads that teachers in Bangladesh routinely face, arising from a confluence of administrative responsibilities, stringent curriculum demands, and participation in extracurricular activities (Almahal et al., 2023). FA's documentation demands, such as recording evidence of learning, significantly increase teachers' workloads, particularly in the context of low salaries, leading to disengagement. Teachers perceive these tasks as unrewarded burdens, undermining their motivation to adopt FA. Similarly, trainers face low financial honorariums, reducing their willingness to deliver high-quality FA training. Guskey (2002) highlights that excessive workloads and inadequate remuneration erode teacher motivation for educational reforms, a pattern evident in Bangladesh where FA's time-intensive nature lacks sufficient incentives. Training must introduce streamlined record-keeping systems, such as digital tools or simplified rubrics, to reduce workload pressures and enhance teacher buy-in.

5.2.4 Inequitable Access to Training

The accessibility of professional development opportunities is markedly uneven, with teachers in urban, privately-managed educational institutions benefiting disproportionately from such initiatives, while their counterparts in rural, government-operated schools often face significant limitations in accessing similar resources, thus exacerbating existing disparities in pedagogical knowledge and practical skills related to formative assessment methodologies (Goertzen et al., 2023). Access to FA training is often inequitable, with opportunities allocated based on favoritism rather than need, particularly limiting a big number of teachers' exposure to professional development.

Short, cramped training sessions (3–6 days) further hinder meaningful engagement, as travel time consumes much of the schedule. Darling-Hammond et al. (2017) stress that effective professional development must be accessible, sustained, and contextually relevant, suggesting hybrid online-offline models to overcome logistical barriers in Bangladesh. This study finds that inequitable access exacerbates disparities between government and private schools, as private school teachers demonstrate higher TNA scores, likely due to better access to resources and training.

5.2.5 Cultural Resistance and Exam Centric Expectations

The adoption of formative assessment strategies encounters significant resistance due to deeply entrenched cultural values that prioritize traditional pedagogical approaches, with both educators and parents often emphasizing rote memorization and high-stakes summative examinations as the primary indicators of academic achievement and preparedness for future educational pursuits.

Cultural norms favoring rote memorization and high-stakes exams create resistance to FA's student-centered approach, as parents and school leaders prioritize summative outcomes. This misalignment between FA and societal expectations limits its perceived value, as noted by Wiliam (2011), who argues that high-stakes accountability systems discourage formative practices. Training must include community engagement strategies to build awareness of FA's benefits among parents and leaders, fostering a cultural shift toward valuing continuous feedback and student autonomy.

5.3 Conclusion

This study explored the training needs of secondary-level teachers in Bangladesh for implementing formative assessment (FA), addressing two research questions: (1) What are the required knowledge, skills, and attitudes (KSA) for FA implementation? and (2) What other factors influence FA implementation that training curricula must address?

The results indicate that teachers possess robust KSA, particularly in skills and attitudes, though knowledge requires further development. However, institutional and socioeconomic barriers- large class sizes, short class durations, teacher shortages, excessive workloads with lower financial incentives, inequitable training access, and cultural preferences for exam-centric practices- significantly hinder FA adoption, especially in government schools. Training must prioritize practical, low-resource strategies, such as quick feedback or peer assessments, to navigate these constraints (Black & Wiliam, 2011). Policy reforms, including teacher recruitment with proper financial incentives and FA integration into national assessments, are essential to reduce systemic barriers and enhance motivation (Guskey, 2002). In FA training, alongside KSA, strategies to deal with other factors need to be taught in training practically.

Chapter-6: Conclusion

6.0 Introduction

The Formative Assessment (FA) implementation in Bangladesh has faced considerable impediments, culminating in misconceptions among stakeholders, encompassing parents and educators, who perceived it as a reduction of scholarly rigor and a long-established systematic evaluative practice. This concerning reaction pointed out systemic flaws in educator preparedness and the backing from institutions, accentuating the requirement for an exhaustive Training Needs Assessment (TNA) to steer professional development actions. This study seeks to rectify this notable deficiency by undertaking a mixed-methods TNA centered on secondary-level educators' knowledge, skills, and attitudes (KSA) regarding Formative Assessment, simultaneously elucidating contextual elements that affect its efficacious implementation. Utilizing quantitative metrics gathered from 223 educators together with qualitative observations collected in Focus Group Discussions (FGDs) with training experts and secondary educators, this study presents evidence-backed suggestions for bettering the implementation of Formative Assessment. Through the reconciliation of policy objectives and classroom realities, the research contributes to the ongoing reform of training curricula, enabling teachers to be better equipped through actionable training within Bangladesh's existing context and accelerating the overall implementation of Formative Assessment.

6.1 Summary of the Findings

This study provides a nuanced examination of the training needs for secondary-level teachers in Bangladesh to implement formative assessment effectively, guided by two primary research questions. The first research question explores the essential knowledge, skills, and attitudes required for Formative Assessment implementation.

- 1) Quantitative data from 223 teachers indicated an overall TNA score of 77.74%, with skills scoring highest at approximately 80-85% across subjects, suggesting a willingness and baseline ability among teachers to engage with Formative Assessment techniques.
- 2) The knowledge gaps were noticeable, particularly in understanding core components like performance indicators, behavioral indicators, and alignment with competencies, with only 19.8% of teachers achieving an outstanding level and 11.4% at a lower level. This was especially evident in subjects like Digital Technology, Mathematics, English,

Bangla, and Religion Studies, where teachers struggled with conceptual clarity and procedural elements, often confusing Formative Assessment with summative practices or informal testing.

- 3) Attitudes, scoring around 75-80% on average, showed moderate positivity, with 54.7% at a good level but only 22.9% outstanding, indicating skepticism rooted in perceived burdensomeness and misalignment with exam-centric priorities.
- 4) Qualitative insights from FGDs with training experts and teachers deepened this analysis, emphasizing that knowledge serves as a foundation for skills and attitudes; for instance, without clear, contextual understanding- grounded in pedagogical theories and adapted to Bangladesh's constraints- teachers revert to traditional methods, undermining Formative Assessment's potential for continuous feedback and adaptive instruction.
- 5) Experts highlighted the need for updated textbook knowledge and interdisciplinary respect to foster holistic attitudes, while teachers in FGDs echoed the importance of practical skill-building to build confidence, revealing an interconnected KSA dynamic where attitudinal barriers perpetuate knowledge and skill gaps.
- 6) The second research question delves into additional factors influencing Formative Assessment beyond KSA, uncovering systemic and contextual barriers that must be integrated into training designs. Quantitative findings showed no significant variations in TNA scores across education boards or urban-rural locations, but institutional type mattered, with private school teachers (79.4% TNA score) outperforming government counterparts (72.2%).
- 7) Qualitative data illuminated these influences: high student-teacher ratios (often exceeding ideal capacities), improper class timing, and overcrowded classrooms limit diagnostic questioning and individualized feedback, as noted by both experts and teachers. Excessive workloads-compounded by non-teaching duties and low incentives- further erode motivation, with documentation demands exacerbating burnout.
- 8) Institutional leadership emerged as a pivotal factor; head teachers' limited Formative Assessment knowledge leads to unsupportive environments, where noise from interactive activities or interdisciplinary conflicts discourages implementation.

Collectively, these findings portray Formative Assessment implementation as not merely a technical endeavor but a socio-institutional process, where contextual factors such as teacher shortages, large classroom and excessive workload with low financial incentives overshadows KSA deficiencies, necessitating holistic reforms to bridge the gap between policy intent and classroom reality.

6.2 Policy Implications & Recommendations

The findings of this study carry significant implications for enhancing Formative Assessment (FA) implementation in Bangladesh's secondary education system, with the following recommendations spanning state-level systemic reforms and targeted revisions to training curricula design-

- 1) Policy revisions should integrate Formative Assessment more robustly into the national curriculum framework, aligning it with summative evaluations to reduce the dominance of high-stakes exams and incorporate incentives for Formative Assessment adoption, such as recognition in teacher performance appraisals or financial rewards to alleviate workload burdens and ensure proper recognition of intellectual labour.
- 2) For addressing institutional support, it is crucial to reduce student-teacher ratios through targeted recruitment drives, particularly in government schools where TNA scores were lower. Additionally, state-led awareness campaigns targeting parents, students, and communities are essential to dispel misconceptions about Formative Assessment.
- 3) The heads of institutions should be trained separately on Formative Assessment in such a way that they can practically participate in Formative Assessment classes and gain a complete understanding related to Formative Assessment including how to deal with other factors that influence implementing Formative Assessment in secondary level. Training for head teachers should be mandatory and parallel, focusing on monitoring Formative Assessment and creating supportive school ecologies.
- 4) Equitable access to training must be ensured by revising trainee selection processes to prioritize underrepresented groups while investing in scalable online modules to overcome geographical barriers.
- 5) In terms of training curricula design, the study advocates for a comprehensive, context-sensitive overhaul to address identified KSA gaps and influencing factors. Curricula should adopt a modular structure, beginning with foundational knowledge sessions that clarify Formative Assessment's pedagogical purpose, using current textbooks for subject-specific examples to ensure relevance for secondary-level teaching.

6) Skills development must emphasize hands-on, practice-oriented approaches, including microteaching simulations for rubric design, diagnostic questioning, and digital tool usage, with separate modules for technical subjects like Science and Mathematics to build proficiency in complex assessments.

7) Attitude-building components should demonstrate Formative Assessment's benefits through real-classroom scenarios, fostering belief in its efficacy and interdisciplinary respect via collaborative exercises.

8) To incorporate other factors, curricula must include dedicated sections on large-class management strategies, workload mitigation techniques, and advocacy skills for engaging institutional leaders.

Overall, curricula should be evidence-based, drawing from TNA results. By embedding these elements, training programs can empower teachers to navigate contextual challenges, ultimately enhancing Formative Assessment's impact on student outcomes.

6.3 Scopes for Future Research

The findings of this study open avenues for further investigation to deepen understanding of formative assessment in Bangladesh's secondary education. Longitudinal studies could assess the long-term impact of revised Formative Assessment training curricula on classroom practices, tracking changes in teacher KSA and student outcomes over multiple academic years to evaluate sustainability. Comparative research across urban and rural contexts would explore location-specific barriers, such as infrastructure disparities and access to digital tools, providing nuanced insights into contextual adaptations. Additionally, pre- and post-training studies on trainees and trainers could examine shifts in knowledge, skills, and attitudes, identifying effective training components and areas for ongoing refinement to enhance professional development efficacy.

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Appendix-A: Survey Questionnaire

Bangladesh Public Administration Training Centre

Savar, Dhaka-1343

www.bpatc.gov.bd

Research on Training Need Assessment (TNA) of Teachers to Implement Formative Assessments at the Secondary Level in Bangladesh

Dear Teacher,

Greetings. A research study titled "Training Need Assessment of Secondary-Level Teachers for Implementing Formative Assessment in Bangladesh" is being conducted with the financial support of Bangladesh Public Administration Training Centre (BPATC).

Your honest and sincere opinions in response to the following questions will play a vital role in the successful completion of this study. It may take you around 3 to 5 minutes to complete the questionnaire. Please note that your responses will be kept strictly confidential and used only for academic research purposes. No personal information such as your name, phone number, or workplace name is being collected.

Thank you for your valuable cooperation.

Part 1: Demographic Information

- 1) What type of institution do you work in?
 - a) Government
 - b) Non-Government
- 2) Gender:
 - a) Male
 - b) Female
- 3) How many years have you been in the teaching profession?
 - a) 1-5
 - b) 6-10
 - c) 11-15
 - d) 16-20
 - e) 21-25
 - f) 26-30
 - g) More than 30
- 4) Location of your workplace:
 - a) Union
 - b) Municipality
 - c) City Corporation
 - d) Upazila Town
 - e) District Town
 - f) Divisional City
- 5) Which subject(s) do you teach? (You may select multiple):
 - a) Bangla
 - b) English
 - c) Mathematics
 - d) Science Inquiry & Practice

- e) History and Social Science f) Digital Technology g) Health Protection
h) Life and Livelihood i) Arts and Culture j) Others

6) Which version do you teach in?

- a) Bangla b) English

7) Which education board is your institution under?

- a) Dhaka b) Chattogram c) Rajshahi d) Jashore
e) Cumilla f) Barishal g) Sylhet h) Dinajpur
i) Mymensingh j) Technical k) Madrasa

8) How many years of teaching experience do you have?

(Please write in numbers only, e.g., 1, 2, 3...)

Part 2: Opinion-Based Questions (Training Need Assessment – TNA)

Instructions:

Please indicate your opinion by choosing the most appropriate option on the following scale:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

A. Knowledge (*Understanding of principles, components, and processes of formative assessment*)

1. I clearly understand the purpose and principles of formative assessment.
2. I know that assessing student competency involves evaluating knowledge, skills, values, and attitudes.
3. I am aware that behavioral indicators should be assessed alongside performance indicators.
4. I understand how to interpret performance indicators such as student behavior, teamwork, interest, and cooperation.
5. I can correctly interpret the symbols (Δ , $\bigcirc$, etc.) used to represent students' performance levels.
6. I understand how to collect and utilize evidence from student learning activities for assessment purposes.
7. I am familiar with the structure and purpose of both learning and summative assessments in relation to student progress.
8. I have a clear understanding of key components involved in formative assessment (e.g., competency, learning experience, performance indicator, task, final evaluation).

9. I can report student performance by integrating information from ongoing learning assessments and periodic evaluations.
10. I understand how to prepare and maintain accurate assessment records and student transcripts.
11. I am able to identify and document student performance levels using behavioral indicators.

B. Skill (Ability to apply Formative Assessment in Practice)

12. I regularly apply formative assessment strategies in my teaching practice.
13. I follow standard guidelines or instructions while conducting student assessments.
14. I can design and use appropriate tasks aligned with competencies, learning experiences, and performance indicators.
15. I am able to manage and schedule assessments effectively as part of classroom planning.
16. I conduct preparatory learning sessions before assessments to support student readiness.
17. I systematically collect and preserve student work as evidence for assessment.
18. I use rubrics or checklists to conduct and evaluate formative assessments.
19. I have the technical skills to use digital tools (e.g., computer, multimedia, educational software) for assessment and classroom purposes.
20. I can input and manage students' performance data using digital or institutional platforms.
21. I can analyze assessment outcomes to improve teaching strategies and address students' learning needs.

C. Attitude (Perceptions, Motivation, and Institutional Support Related to Formative Assessment)

22. I believe formative assessment improves student learning outcomes.
23. I prefer using formative assessment over traditional examinations.
24. I find formative assessment to be inclusive and student-friendly.
25. I am confident that formative assessment can be effectively implemented within my institution.
26. I receive helpful support from colleagues when facing challenges in student assessment.

27. I feel motivated to engage in continuous professional development related to assessment practices.
28. I believe the current teacher-student ratio in my institution is conducive to implementing formative assessment.
29. I believe my class load and administrative responsibilities allow sufficient time for effective assessment.
30. I am interested in receiving further training to improve my formative assessment practices.
31. I am committed to using assessment feedback to support students' learning and growth.
32. Students in my courses are assessed through the following methods (select all that apply):
- a) In-class questioning b) Quiz c) Class test d) Assignment
 - e) Group work f) Individual presentation g) Group presentation
 - h) Case study i) Peer assessment j) Project work k) Others
33. Which training(s) have you received on formative assessment?
- a) Masters Training b) Basic Training c) In-house Training
 - d) Muktopaath (Online)
34. Do you have any additional opinion regarding the implementation of formative assessment? (if yes, please mention)
- a)
 - b)
 - c)
 - d)
 - e)

Appendix-B: FGD Check List for Group-1 (Training Experts & Policymakers)

Bangladesh Public Administration Training Centre

Savar, Dhaka-1343

www.bpatc.gov.bd

Research on Training Need Assessment (TNA) of Teachers to Implement Formative Assessments at the Secondary Level in Bangladesh

FGD Group 1: Training Experts & Policymakers

I. Introduction & Context

1. Thank you for joining us today. To start, could you briefly share your primary role within the education system in Bangladesh, particularly as it relates to secondary education and assessment?
2. From your perspective, what is the intended role and importance of formative assessment in Bangladesh's secondary education curriculum and overall assessment framework?

II. Current Implementation & Challenges

3. Based on your knowledge and observations, to what extent do you believe formative assessment is currently being effectively implemented in secondary schools across Bangladesh?
4. What do you see as the primary policy-level or systemic challenges that might be hindering the widespread and effective implementation of formative assessment by teachers at the secondary level?
5. How well do you think the current teacher training policies (pre-service and in-service) address the specific knowledge, skills, and attitudes required for teachers to implement formative assessment effectively?
6. Regarding the high-stakes nature of public examinations, how do you believe this influence (positively or negatively) teachers' willingness and ability to integrate formative assessment into their daily practice?

III. Gaps and Causal Explanations

7. Our quantitative data suggests some areas where teachers might be struggling with implementing formative assessment. From your viewpoint, what are the underlying reasons or 'causal explanations' for these gaps in teachers' knowledge, skills, or attitudes regarding formative assessment?
8. How do you perceive the interaction between curriculum design, assessment guidelines, and actual classroom practice? Where are the disconnects that might lead to an implementation gap?
9. Are there specific resources, support structures, or policy changes that you believe are most critical to bridge the current KSA gap in teachers concerning formative assessment?

IV. Future Directions & Recommendations

10. Looking ahead, what policy adjustments or new initiatives are currently being considered, or should be considered, to strengthen formative assessment practices in secondary schools?
11. How can we ensure that any new training or policy initiatives related to formative assessment are sustainable and effectively reach all secondary-level teachers?
12. Is there anything else you'd like to add regarding formative assessment in Bangladesh's secondary education that we haven't covered?

Appendix-C: FGD Check List for Group-2 (Secondary Level Teachers)

Bangladesh Public Administration Training Centre

Savar, Dhaka-1343

www.bpatc.gov.bd

Research on Training Need Assessment (TNA) of Teachers to Implement Formative Assessments at the Secondary Level in Bangladesh

FGD Group 2: Secondary-Level Teachers

I. Introduction & Context

1. Thank you for joining us today. Could you briefly introduce yourselves and mention the subject(s) you teach at the secondary level?
2. In your own words, what does 'formative assessment' mean to you in your daily teaching practice?

II. Current Practice & Challenges

3. How often and in what ways do you currently use formative assessment strategies in your classroom? Could you give us some examples?
4. What are the main benefits you observe when you apply formative assessment with your students?
5. What are the biggest challenges you face when trying to implement formative assessment effectively in your classroom?
6. How adequate do you find the training you've received (both pre-service and in-service) on formative assessment? What was most helpful, and what was missing?

III. Gaps and Causal Explanations

7. When you think about the 'ideal' way to use formative assessment, and then look at your current practice, where do you feel there are gaps in your knowledge, skills, or even your confidence/attitude?
8. Thinking about these gaps, why do you think they exist? What are the underlying reasons that make it difficult to gain the necessary knowledge, develop the skills, or feel fully confident in implementing formative assessment?

9. How does the pressure of public examinations influence your approach to assessment throughout the year? Does it make it harder or easier to focus on formative assessment?
10. Do you feel supported by your school administration or colleagues in trying to implement formative assessment? How does this support (or lack thereof) impact your practice?

IV. Training Needs & Recommendations

11. If you could design a training program specifically for secondary teachers on formative assessment, what key knowledge areas, practical skills, and attitudinal shifts would you prioritize?
12. What kind of ongoing support (e.g., mentoring, resource materials, peer learning communities) would be most helpful for you to sustain and improve your formative assessment practices?
13. Is there anything else you'd like to share about formative assessment in Bangladesh's secondary education that we haven't discussed?