

The Relationship between Bangladeshi Primary School Teachers' Classroom Assessment Literacy and Their Training on Classroom Assessment

Sumera Ahsan¹, Ayesha Mahmood²,
Jennifar Nusrat Sonia³

¹ sumera@du.ac.bd
Institute of Education and Research,
University of Dhaka
(Bangladesh)

² ayesha.mahmood@bracu.ac.bd,
BRAC-Institute of Educational Development,
BRAC University
(Bangladesh)

³ jennifar.nusrat.sonia@gmail.com
I.E.S School and College
(Bangladesh)

✉ Corresponding author

ABSTRACT: Teachers' knowledge and skills in assessment are important factors for improving the practice of Classroom Assessment (CA), which is a vital component of teaching and learning. There is ample research attempting to ascertain if training can contribute to increasing teachers' knowledge and skills in assessment. In Bangladesh, the new curriculum places significant emphasis on classroom assessment compared to summative assessment. This study aims to answer the following questions: What is the status of Classroom Assessment Literacy (CAL) among primary school teachers in Bangladesh? What is the relationship between teachers' training in assessment and their CAL? And what factors do teachers believe affect the translation of training in CA into CAL? The study followed a mixed-method research approach. Initially, quantitative data on teachers' CAL and their training in CA were collected from 100 primary school teachers in Dhaka city using a CAL Test. Based on the results of this test, eight teachers with different combinations of CAL levels and training were interviewed. The results showed that the mean score of the sample of primary school teachers was above the middle score but still not high. Their mean score varied across different components of the test. For example, teachers were found to be most competent in using assessment data to make decisions and least competent in selecting appropriate assessment tools. We found that the more hours of training in assessment the teachers had, the lower they scored on the CAL test. However, this relationship was weak. We also found that having a Master of Education (MEd) degree can make a significant difference in their CAL test score. Teachers with more years of experience appeared to score lower on the test and vice versa (though not statistically significant). Qualitative data revealed that each teacher followed their own unique CA styles with a combination of different CA techniques, and there was no pattern based on teachers' CAL test scores. However, teachers with higher CAL test scores seemed to provide feedback to their students in a more descriptive and meaningful way than teachers with lower CAL test scores. Data revealed that training is one of the sources of teachers' knowledge and skills in CA among others. However, various enabling and deterring factors work together to determine the effectiveness of training in bringing about sustainable change in teachers' knowledge and skills in CA. Among many factors, the "one shot" and "one size fits all" design of the trainings were found to be ineffective by teachers who have unique classroom contexts. Additionally, teachers' own perceptions of training, the school environment, and context are also factors that affect the translation of training in CA into sustainable CAL that they can apply in practice.

KEYWORDS: Classroom Assessment Literacy, primary education, teacher training.

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1. Introduction

Assessment has always been an indispensable part of the teaching-learning process. According to Miller et al. (2013), assessment is defined as obtaining students' performance-related

information through any means or procedures. It helps teachers evaluate the strengths and weaknesses of students' learning and motivates them. Assessments also provide teachers with useful feedback about students' learning

acquisition (Taras, 2005; Stiggins, 1992). This procedure allows teachers the opportunity to evaluate students' learning and then use that information to improve it. Researchers argue that if practiced in a formative way, classroom assessment has a greater influence on enhancing students' learning and academic motivation compared to summative or external assessment (Ahsan et al., 2012; Ahsan & Smith, 2016; Ismail et al., 2022).

To ensure effective learning through assessment, teachers need to have knowledge and understanding of assessment. Assessment Literacy (AL) was first coined by Richard Stiggins (1991) as the basic knowledge and skills of educational assessment. The specific term classroom assessment literacy (CAL) is referred to as the knowledge and understanding of assessment-related basic terminology, principles, its development, and application of various methods, strategies, and tools used in the classroom (Mertler, 2003). Similarly, other researchers (Yamtim & Wongwanich, 2014; Chappuis et al., 2012) have shared necessary knowledge and skills to compile students' achievement-related data through effective utilization of the assessment process and outcome in order to enhance teachers' quality of instruction and students' learning (Popham, 2009), which are also counted as components of CAL. Teachers' CAL is found to be related to teachers' attitude towards assessment (Quilter, 1998; Rothinam, 2023) and the practice of CA (Djoub, 2017; Zulaiha et al., 2020). In Bangladesh, the poverty of practice of CA in both primary and secondary levels (Ahsan, 2009; Rahman, 2018) may indicate teachers' low level of CAL and needs further exploration.

CAL is one of the crucial knowledge and skills (Mertler & Campbell, 2005) which a teacher should be well equipped with during the pre-service period, which can make them confident regarding assessment practices (Bayat & Rezaei, 2015). In Bangladesh, the present curriculum of the primary level focuses more on CA compared to summative assessment, whereas teachers' practice of CA is not found effective for students' learning (Rahman, 2018;

Ahmed et al., 2015; Yasmin 2012; Ahsan, 2009) due to factors such as lack of knowledge, skill, and attitude. There are trainings on assessment both separately and combined in other "subject-based trainings" that are expected to influence teachers CAL (Yasmin 2012). A study conducted by Rahman (2018) affirmed the insufficiency of training for practicing CA. In this regard, there is a gap found between the teachers' training and teachers' practice of CA. Therefore, if the trainings are efficiently translated into teachers' sustainable CAL development, it can lead to effective CA practice in classrooms. We could not find any studies related to CAL and its relation to training in the primary level of Bangladesh. A study (i.e., Dutta & Begum, 2020) focusing on secondary level teachers' classroom assessment literacy in Bangladesh suggested that teachers' professional training may enhance their CAL as the study revealed a low level of CAL among secondary school teachers. Rahman (2018) also suggested reconsidering the training module according to teachers' needs. The impact of training on developing sustainable CAL among teachers and the impact of CAL on the effective translation of CAL into practice depend on many factors. Among these factors, the quality and type of training the teachers are having play a significant role. In this regard, this study not only seeks to understand the CAL level of primary school teachers and available assessment-related trainings but also sheds light on the relationship between teachers' assessment-related training and their CAL.

The purpose of the study is to explore the level of teachers' classroom assessment literacy and its relationship with training on assessment. Therefore, the study focuses on the following research questions:

1. What is the status of CAL among primary school teachers in Bangladesh?
2. What is the relationship between teachers' training on assessment and their CAL?
3. What factors do teachers think affect their CAL and its relationship with training?

The findings of this study will provide insights into teachers' knowledge and understanding of classroom assessment and its relationship with

trainings, which will help educational stakeholders (e.g., policymakers, teachers, teacher educators, and students) design assessment-related training to help teachers develop the capacity to practice classroom assessment in their own context, and students will receive quality education through effective learning experiences.

2. Literature review

2.1. Classroom assessment and its significance

Classroom assessment is the central part of students' learning, used to determine performance in a valid, reliable, and useful manner (Miller et al., 2013). To ensure this, teachers must play a key role by acquiring necessary knowledge, skills, and understanding of assessment to accurately demonstrate students' achievements through instructional tools (Bayat & Rezaei, 2015). Without sufficient assessment-related knowledge, teachers cannot accurately assess learners (Popham, 2006), make effective decisions (Yamtim & Wongwanich, 2014), and therefore, cannot help students reach their full potential (Stiggins, 2001).

2.2. Classroom assessment practice in Bangladesh

Formative assessment is referred to as one of the effective assessments to continuously monitor the success level of students based on learning objectives (Stiggins, 2005). It scaffolds students' learning by providing feedback on strengths and assistance to help them overcome weaknesses. In this regard, formative assessment is widely used not only as classroom assessment but also as a powerful tool in the teaching-learning process. In Bangladesh, there is a scarcity of research in the field of assessment. Moreover, evidence shows that in Bangladesh, formative classroom assessment is not practiced at primary level schools (Sheesh & Mullick, 2008) or at secondary level schools (Ahsan, 2009). In a study in Bangladesh, Rahman (2018) found that teachers perceive classroom assessment as summative assessment and their current practice of classroom assessment is only to assess students' lower-order learning following traditional methods (e.g., oral questioning and written work) in classrooms, and they hardly

use peer assessment, problem-solving activities, and group work (Rahman, 2018; Ahmed et al., 2015; Yasmin, 2012; Rahman & Ahmed, 2010; Ahsan, 2009). Although some teachers have the concept of multiple assessment techniques, they rarely practice these, and as a result, students rarely get the chance to ask complex and critical questions (Ahmed et al., 2015; Yasmin, 2012). Even most students do not get the opportunity and encouragement to answer (Babu, 2016; Rahman & Ahmed, 2010) and benefit from CA as they believe they will fail to meet teachers' expectations (Rahman, 2018).

According to Black & Wiliam (1998), descriptive and specific feedback should be given on students' work to highlight strengths and weaknesses, provide advice on areas of improvement to enhance learning, rather than just giving scores, grades, or marks that do not benefit the students. However, in Bangladesh, teachers usually provide evaluative feedback orally (Rahman, 2018; Ahmed et al., 2015; Rahman & Ahmed, 2010; Ahsan, 2009) and rarely in written forms (Yasmin, 2012; Ahsan, 2009), using remarks such as "Good," "Very Good," and cross or tick marks (Rahman, 2018). Such practice of providing general feedback does not guide students to gain a clear understanding of subject knowledge, misconceptions, and areas to work on.

2.3. Classroom assessment literacy

Teachers' basic knowledge, understanding, and skills in CA, referred to as CAL, can influence their CA practice (Djoub, 2017; Zulaiha et al., 2020). According to the assessment literacy model of Abell and Siegel (2011), teachers' view of learning is the central phenomenon that gets transmitted into assessment-related values and principles guided by the four areas of knowledge: i) knowledge of assessment purposes, ii) knowledge of assessment strategies, iii) knowledge of assessment interpretation and action-taking, and iv) knowledge of what to assess. These components can also be used in classroom assessment, as it consists of i) designing assessment to meet specific needs, ii) developing assessment in terms of concrete and

appropriate achievement goals, iii) determining students' achievement accurately and ethically, iv) interpreting assessment results and sharing them with users, and v) involving students in self-assessment, goal-setting, monitoring, reflection, and demonstrating learning among students (Chappuis et al., 2012). To ensure these assessment practices in the classroom, teachers must have the knowledge, skills, attitude, values, and accountability (Schildkamp et al., 2020). Classroom assessment literacy is referred to as the knowledge and understanding of assessment-related basic terminology, principles, its development, and application of various methods, strategies, and tools used in the classroom (Mertler, 2003) to compile and use students' performance-related data (Yamtim & Wongwanich, 2014; Chappuis et al., 2012) to enhance teaching-learning processes, the quality of instruction, and students' learning. In a study, Rahman (2018) found that Bangladeshi teachers lack knowledge of CA, leading them to perceive the purpose as confined only to grading students' learning (Yasmin, 2012), ensuring their classroom participation, and punishing students who cause chaos and interruptions in the classroom to warn other students.

Classroom assessment literacy (CAL) has immense importance from diverse perspectives. Teachers can support themselves by perceiving, analyzing, and utilizing student data to improve instruction (Falsgraf, 2005); grading students accurately and ethically (Newfields, 2006); developing appropriate assessments to transform learning objectives into assessment activities (Mertler & Campbell, 2005; Stiggins, 2002); selecting relevant and useful assessment tools for specific learning objectives (Gottheiner & Siegel, 2012); and revising the curriculum content to facilitate students' needs and qualify them as efficient learners (Qualters, 2001). Therefore, teachers who do not have an adequate level of CAL cannot connect learning goals, instruction, and assessment, nor possess the knowledge, skills, and values necessary for assessment to improve the quality of education. A study (i.e., Jeong, 2013) on language assessment course instructors emphasized that a common

understanding of classroom assessment literacy is important for testing to ensure the needs of learners. Moreover, instructors' background in areas such as test specifications, test theory, basic statistics, classroom assessment, rubric development, and test accommodation influence content development and presentation. CAL makes teachers confident in their practice, and without knowing the basic aspects of CA, it is difficult for them to practice it efficiently in the classroom (Jeong, 2013). Hence, it can be argued that CAL influences teachers' CA practice.

Based on the American Federation of Teachers, the National Council on Measurement in Education (University of Nebraska-Lincoln, 1990), standards for teacher competence in the educational assessment of students are found in the following themes explored among primary level teachers under this study.

Standards Assessment Skills

Standard 1: Choosing assessment methods

Standard 2: Developing appropriate assessment methods

Standard 3: Administering, scoring, and interpreting assessment outcomes

Standard 4: Using assessment outcomes in decision making

Standard 5: Using assessment outcomes to determine the level of students' learning outcomes

Standard 6: Communicating assessment outcomes

Standard 7: Knowing unethical, illegal, and inappropriate assessment practices

These standards are mostly used in several studies (Xu & Brown, 2017; Yamtim & Wongwanich, 2014; Mertler, 2003) to measure teachers' CAL. In this regard, reliable and valid test items under these themes were used while testing primary level teachers' CAL in Bangladesh.

2.4. CAL Level among teachers around the globe

Teachers are found to obtain various scores in CAL at different contexts based on different cut scores. In Bangladesh, more than half of the secondary level teachers showed a low CAL level (Dutta & Begum, 2020). Similarly, another study

(Yamtim & Wongwanich, 2014) in Thailand revealed that teachers had a poor CAL level and need improvement. In Iran (Fard & Tabatabaei, 2018) too, the majority of the teachers showed a low level of CAL. Overall, teachers have insufficient knowledge in classroom assessment, which directly influences their practice and hampers the quality of education.

2.5. Classroom assessment literacy and training

Training is an integral part of teachers' professional development for ensuring quality education. As per Omar (2014), training is referred to as a process that provides professionals with different types of necessary knowledge, skills, and attitude for carrying out assigned responsibilities under the required standards and enables them to take preeminent and challenging roles. In another study, Plake and Impara (1997) found that few or no training on assessment led teachers to ill-practice activities related to assessment. Rahman (2018) opined that educational assessment training that teachers receive in Bangladesh is insufficient, leading to discrepancies between their perception and practice of CA. Studies (e.g., Dutta & Begum, 2020; Schildkamp, 2020) argue that teachers' CAL can be increased if they regularly attend training. Overall, assessment training will improve teachers' knowledge according to their needs (Rahman, 2018) and enhance their performance (Jahangir et al., 2012). Therefore, there is a connection between training and teachers' practice. However, other factors may also influence this connection, such as training design, duration, quality; trainees' motivation and attitude towards training; school context; and the overall education system of the country, and any combination of these factors. For these reasons, the relationship between training and CAL needs investigation, as studies (Dutta & Begum, 2020; Rahman, 2018) indicated the impact of training on teachers' assessment practice.

In Bangladesh, there is a shortage of trained and skilled teachers in schools (Sultana & Rahman, 2010). However, there are several training opportunities available to primary level teachers, such as Certificate in Education, Diploma in Primary Education, subject-based training, and

sub-cluster training through 67 government-led primary teachers' training institutes (BANBEIS, 2023) in Bangladesh (Ehsan et al., 2012; Sheesh & Mullick, 2008). In these training modules, assessment or evaluation-related contents were found overlapping in different subjects (Sheesh & Mullick, 2008). The majority of the contents were on techniques of formative and summative assessment; using strategies to mitigate problems while using different assessment techniques; test item development for assessing students' learning; and reflection on the improvement of assessment practice (Rahman et al., 2023). However, even after having training, teaching load and teaching experience accounted for some of the barriers in teachers' educational assessment practices in the classroom.

2.6. Research gap and objective

The situation of assessment practice in the primary level of education revealed the poor condition of classroom assessment, emphasizing traditional paper-pencil-based summative exams (Rahman, 2018; Ahsan, 2009). Moreover, primary level teachers are found to assess students using only oral question-answer and written exercises in classrooms (Sheesh & Mullick, 2008). Therefore, discrepancies in teachers' assessment-related knowledge, training, and real-life practices are evident. However, these researches were conducted a long time ago, and there have been a lot of changes in the assessment system in Bangladesh. Therefore, exploring teachers' level of CAL and its relationship with training needs exploration in the new context as we see changes in curriculum, assessment, and textbooks; more teachers have been trained too till now. Classroom Assessment Literacy of secondary school teachers in Bangladesh has been explored (Dutta & Begum, 2020). However, primary school teacher's classroom assessment literacy and its relationship with training are yet to be explored in this context.

3. Methodology

3.1. Research approach and design

The aim of this study was not only to get a general idea about the status of CAL among

primary school teachers of Bangladesh and the quantitative linear relationship between CAL and their training, which requires a quantitative approach, but also to understand how the teachers conceptualize this relationship and the factors that influence it, which requires a qualitative approach. Therefore, we used a mixed-method approach for this research (Teddlie & Tashakkori, 2009; Creswell & Plano Clark, 2011). As the teachers for the interview were selected from four different categories developed based on the quantitative data collected, the study followed an explanatory mixed-method research, in particular, where quantitative data were collected and analyzed in the first phase and then further built on qualitative data collection and analysis as the 2nd phase (Creswell & Clark, 2017) to answer the following research questions:

1. What is the status of CAL among primary school teachers of Bangladesh?
2. What is the relationship between teachers' training on assessment and their CAL?
3. What factors do teachers think affect their CAL and its relationship with training?

The first two research questions were addressed using a quantitative approach, while the last one was explored through a qualitative approach. Mixing quantitative and qualitative data can happen in different ways in mixed-method research. Here, the final mixing of the data happened in the findings and discussion part. Besides, in this research, the quantitative dataset was connected with qualitative as the sampling of the research participants was determined through the analysis of quantitative data (Plano Clark & Creswell, 2015).

3.2. Phase one: Quantitative strand

3.2.1. Research participants

Quantitative data on teachers' CAL and training on assessment were collected from 80 primary school teachers from 17 Government Primary Schools (GPS) in Dhaka city, Bangladesh. There are 342 government-run primary schools in Dhaka city, where more than 200,000 children are enrolled (The Daily Star, 2023). The sample of 17 schools was selected randomly from the list of primary schools in Dhaka city. All available

Table 1. Demographic information of the research participants

Variable	Categories	Frequency	Percent
Gender	Male	9	11.25
	Female	71	88.75
Age	25-34	18	22.78
	35-44	41	51.9
	45-54	20	25.32
Subjects Teaching	Social science, arts and language	54	67.5
	Science and Math	26	32.5
Years of Experience	1 - 10 years	31	38.75
	11 - 20 years	31	38.75
	21 -30 years	18	22.5
Educational qualification	Bachelor degree	16	81.01
	Masters degree	64	18.98
Professional Degree	No professional degree	10	12.66
	Bachelor of Education (BEd)	51	23.75
	Master of Education (MEd)	19	63.75

teachers in each school who were teaching in primary grades were invited to participate voluntarily. Finally, we got data from 80 teachers from these 17 schools. These teachers varied in their age, years of teaching experience, educational degrees attained, and their training experiences. These 80 teachers were a part of the total 7,260 primary school teachers working at GPSs in Dhaka city [Directorate of Primary Education (DPE), 2021]. Though the sample size is small compared to the population size, the specific location of the population (Dhaka city) might have decreased the variability in the sample. Due to resource and time constraints, this was the number of research participants we could include, and we are cautious that we might not be able to generalize the findings with strong statistical precision. Table 1 shows the demographic information of the sample.

3.2.2. Instrument for data collection

Quantitative data were collected using a questionnaire that had two parts. The first part contained questions related to demographic variables: gender, age, subject they teach, teaching experience in years, highest educational qualification, professional degree (if any), and hours of training received on assessment and/or CA. The second part was a Classroom Assessment Literacy Test (CALT). This test is a revised version of the original test developed by Dutta and Begum (2020) adapted from the Classroom Assessment Literacy Inventory (CALI) developed by Mertler (2004). We revised these items and added items to this CALT (Dutta & Begum, 2020) to make it suitable for primary school teachers.

Our CALT comprised 26 multiple-choice questions. All of the test items had four options, except one which had yes/no options. Among the 26 items, for two items the respondents could choose more than one option as there was more than one correct answer as options. These 26 questions were developed to assess teachers' knowledge related to the seven criteria described by Mertler (2003). Teachers were asked questions related to choosing assessment methods; developing appropriate assessment methods; administering,

scoring, and interpreting assessment outcomes; using assessment outcomes in decision making; determining the level of students' learning outcome; communicating assessment outcomes; and knowing unethical, reviewed the items qualitatively. The criteria for examining the internal validity were fitness to population, relevance and clarity. The tool was pilot tested among 10 primary school teachers of Dhaka city before final data collection. The questionnaire was delivered to the teachers in hand by in-person visit to schools and then collected at their convenient time. While correlating the training with CAL of the teachers we used the hours of training that the teachers had so far on CA or Assessment. However we acknowledge that using only the hours of training as a measure of teacher training is not a sophisticated but rough measure. There are other factors to consider such as content topics, quality of training, and how long back they got these trainings. Besides, we could not correlate the CALT score of the teachers with trainings particularly on CA as many did not have such training.

3.2.3. Data analysis

The highest possible score for the test was 34 and the lowest possible score was 0. We used IBM SPSS Statistics 20 for the statistical analysis of quantitative data. The total score was calculated for each participant and descriptive statistics were calculated with the score (mean, median, mode, standard deviation). Besides, correlation coefficient was calculated to see the correlation between teachers' CAL and training. The continuous variable (total hours of training on assessment) was correlated with CALT score (another continuous variable) using Pearson's product moment correlation. Inferential statistics were used to see if there were significant differences in CALT scores of the teachers based on their demographic variables.

3.3. Phase two: Qualitative strand

3.3.1. Research participants

Based on the CALT score and the hours of training on assessment, we identified four categories: i) teachers with high CALT score

and more hours of training, ii) teachers with high CALT score but fewer hours of training, iii) teachers with low CALT score but more hours of training, and iv) teachers with low CALT score and fewer hours of training. Two teachers from each of the categories were selected purposively, who agreed to further participate in the research for an in-depth interview totaling eight. We followed a stratified purposive technique of Sampling which is common for mixed method research (Teddlie & Tashakkori, 2009).

3.3.2. Instrument for data collection

Eight teachers were interviewed by the researchers using the interview guide approach (Johnson & Christensen, 2014). In this approach, specific topics and/or open-ended questions are asked in any order. Two of the teachers were interviewed twice to get more in-depth data. The teachers were asked about their practice of classroom assessment, what knowledge and skills do they use and what is the source of that knowledge and skills related to CA; What is their training experience regarding assessment and classroom assessment and how did it contribute to building their knowledge and skills on classroom assessment, if at all? Finally, we asked them to explain factors (if any) that explain the relationship between training and their CA related knowledge and skills, and its practice in the classroom.

We explained the nature of engagement and the rights of them to the research participants for each of the phases of data collection of our study. We used consent forms built within the questionnaire. Besides, consents were taken before each interview to maintain both procedural ethics and ethics-in-practice (Guillemin & Gillam, 2004). For ethics-in-practice, we followed the ethics of care (Rossman & Rallis, 2012), being mindful about the teachers' situation, opportunities, and constraints within the school context. We gave them the opportunity to schedule the interviews at their convenience in terms of time and place. If they wanted, we gave them a break between the interviews so that they can finish some of their immediate duties that arose at school.

3.3.3. Data analysis

We used thematic analysis (Rossman & Rallis, 2012) to develop codes and themes emerging from the qualitative data collected. We followed 8 steps, including report writing. At first, we organized the eight interviews with the data by reviewing those several times by all of the authors. After that, we identified categories such as methods of assessment used, purpose of using different assessment methods, feedback process, classroom and school context, relation with training, and challenge to implement training knowledge. Then we color coded all the data from all the interviews and put the same codes together. Finally, we generated themes by merging similar codes. Such as we merged methods of assessment used, purpose of using different assessment methods, feedback process and developed the theme "Teachers' Classroom Assessment Practice". Then we interpreted or made sense of these data as thick description. We also presented alternative possible interpretations whenever possible in our final report writing. Data were collected by all three researchers and preliminary analysis started during data collection. Data were transcribed and kept in a common accessible folder. At first three of us read the data individually to make sense of the data. Then we shared the categories we developed. After that, three of us together revised the categories, color coded the data and generated themes.

4. Results and findings

In this section, we present the results of the quantitative data analysis, and the findings from the qualitative data are presented in themes.

4.1. Results from quantitative data analysis

4.1.1. Training experience of the research participants

We collected data from 80 government primary school teachers in Dhaka city who teach students from grades one to five. Among them, only 9 were male, which limited our gender-wise statistical analysis. In the Government Primary Schools (GPS) of Dhaka District, the majority (78.15%) of teachers are female [Directorate of Primary Education (DPE), 2021, p.149]. The demographic information of the research participants is given below:

As we are correlating teachers' CAL with their training experience, the participants' training on assessment requires special focus. Out of 80 teachers, 11 did not have any training on assessment. Some (50) teachers had training specifically on assessment, and the others (30) did not have such specific assessment-focused training.

However, 58 teachers reported that they received training that included topics or modules on assessment. Teachers received, on average, 40.32 (SD 51.967) hours of training they had so far on any topics related to assessment such as how to prepare MCQs, essay type or structured questions (creative questions), concepts of summative and formative assessment, feedback, and classroom questioning techniques. However, the number of training hours on assessment varied from a minimum of 1 hour to a maximum of 200 hours.

Teachers also reported their approximate hours of training on assessment as a separate training or as sessions built into other trainings, as mentioned in Table 2.

Table 2. Assessment related training experience of the research participants

Training experience	Frequency
No training on assessment	11
Training exclusively on assessment	50
Not solely but assessment content was included in the training	58

4.1.2. Classroom assessment literacy of the primary school teachers

The total score of the CALT test was 34. The mean score of the teachers on the CALT test was 24.1125, with a median of 24 and SD 3.5. The mean score of the CAL test is higher than the middle score of 17. The minimum score was 16, which is higher than the median, and the maximum was 32. To test the basic competencies of the teachers on classroom assessment, the test was developed based on Standards for Teacher Competence in the Educational Assessment of Students (AFT, NCME & NEA, 1990). A total of 7 aspects of competency were measured through this test. Table 3 shows how teachers performed in specific aspects on the test.

To compare the means for each sub-test, we converted the mean into a percentage (out of 100). We found that teachers are more competent in using assessment data to make decisions and less competent in selecting appropriate assessment tools.

4.1.3. Relationship between teachers' CAL and professional development experiences

Relationship between teachers' CAL and hours of assessment training:

A Pearson correlation coefficient was computed to assess the linear relationship between the CAL test score and hours of training on assessment of the primary school teachers. There was a negative correlation between the two variables, $r(78) = -0.06$, $p = 0.621$. We observed a weak negative relationship between

Table 3. Teachers' comparative performance in the 7 aspects of classroom assessment

Aspects of Assessment	Total score assigned	Mean	SD	Converted mean (%)
Assessment purpose (item 1 to 6)	6	4.43	.99	73.83
Methods and tools of assessment (item 7 to 11)	9	5.66	1.55	62.88
Standard of assessment (item 12 to 14)	3	2.07	.85	69
Feedback and reporting (item 15 to 16)	6	4.45	1.12	74.16
Analysis of assessment data (item 17 to 20)	4	2.65	1.06	66.25
Fairness in assessment (item 21 to 23)	3	2.25	.86	75
Using assessment data to make decisions (item 24 to 26)	3	2.58	.54	86

the two variables, which was not statistically significant. Therefore, we can say that there is a weak relationship indicating that if the hours of training on assessment increase, then the CAL test score decreases and vice versa. However, this relationship is not statistically significant.

An independent samples t-test was performed to measure if there was a significant difference between the CAL test score of teachers who had specific training(s) on assessment and those who did not have such specific assessment-related training. The results indicated that there was no significant difference between the CAL test scores of teachers who had assessment training ($M = 24.13$, $SD = 3.21$) and teachers who did not have assessment training ($M = 24.09$, $SD = 3.68$), $t(78) = 0.04$, $p = 0.961$.

Teachers' CAL and their professional degree:

Statistical analysis shows that having a BEd degree does not make any significant difference in their CAL test score. An independent samples t-test was performed to measure if there was a significant difference between the CAL test score of teachers who had a BEd and those who did not have a BEd. The results indicated that there was no significant difference between the CAL test scores of teachers who had a BEd ($M = 23.90$, $SD = 3.36$) and teachers who did not have a BEd degree ($M = 24.48$, $SD = 3.76$), $t(78) = 0.71$, $p = 0.479$.

However, having an MEd degree seems to make a significant difference in their CAL test score. The independent samples t-test was performed to measure if there was a significant difference between the CAL test score of teachers who had an MEd and those who did not have an MEd. The results indicated that there was a significant difference between the CAL test scores of teachers who had an MEd ($M = 25.52$, $SD = 3.94$) and teachers who did not have an MEd degree ($M = 23.67$, $SD = 3.25$), $t(78) = 2.05$, $p = 0.043$.

4.1.4. Teachers' CAL and how it is related to demographic variables

Teaching experience:

A Pearson correlation coefficient was computed to assess the linear relationship between the CAL test score and teaching experience (in years) of the primary school teachers. There was a negative

correlation between the two variables, $r(78) = -0.31$, $p = 0.005$. There is a significant but weak relationship between years of experience and assessment literacy. Teachers with more years of experience seem to score lower on the test, and vice versa. However, the ANOVA result shows no significant difference in CAL test scores for the three groups based on years of experience (0 to 10, 11 to 20, and 21 to 30). The ANOVA was not significant at the 0.05 level, $F(27, 52) = 1.2$, $p = 0.206$.

Teaching subject:

An independent samples t-test was performed to evaluate if there was a difference between the CAL test scores of teachers who teach social science, arts, and language subjects and teachers who teach math and science. The results indicated that there was no significant difference between the CAL test scores of teachers who teach social science, arts, and language ($M = 23.87$, $SD = 3.55$) and teachers who teach science and math ($M = 24.61$, $SD = 3.40$), $t(78) = 0.89$, $p = 0.376$.

Age:

The ANOVA result shows no significant difference in CAL test scores of the three age groups (25-34, 35-44, and 45- 54). The ANOVA was not significant at the 0.05 level, $F(2, 76) = 1.6$, $p = 0.209$.

Highest Academic Degree:

An independent samples t-test was performed to evaluate if there was a difference between the CAL test scores of teachers who had a Bachelor's or degree (undergrad) and teachers who had a Master's degree as their highest academic degree. The results indicated that there was no significant difference between the CAL test scores of teachers who had only a bachelor's degree ($M = 24.62$, $SD = 2.57$) and teachers who had a Master's degree ($M = 23.98$, $SD = 3.70$), $t(78) = 0.65$, $p = 0.516$.

4.2. Findings and interpretation of qualitative data

This section presents the themes that emerged from the data collected through qualitative interviews.

4.2.1 Teachers' classroom assessment practice

During the interview, teachers talked about

their classroom assessment practice: why they assess in the classroom, what methods and techniques they use, their process of assessment, principles of classroom assessment that they follow, and their ways of giving feedback in the classroom. We found that every teacher, either with more training or less, with a high CAL test score or low, has their own unique general process or structure of assessing students. For example, Ms. Sanzida said, “My CA is based on frequent tests. I take class tests after teaching each chapter.” On the other hand, Ms. Shilpi described her assessment strategies as, “I usually assign reading to the students first. Then I encourage students to ask questions where they have faced difficulties. Then I try to solve it in a large class discussion. Finally, I ask the students to do the exercises given in the book, which are MCQ, short answer questions, and broad answer type questions.” It is notable that they all have a pattern of CA that they follow in most classes, and it usually does not vary based on the topics they are teaching or the difficulty level of the topics. The overall techniques that the teachers used in their CA varied (individual and group work; homework; class tests; quiz; oral questions and written classwork). They use several of these together in classrooms. The teachers did not mention any alternative assessment techniques such as games, debates, role-plays, and songs. There was no pattern seen in the use of assessment techniques in the classroom based on their training numbers or their CAL test scores.

Language teachers (4 of them were language teachers) processes were more similar because of the nature of the subject, as they need to assess students’ communication skills in terms of reading, writing, listening, and speaking. However, all of them focused on reading and writing. One teacher focused on speaking, and none focused on listening. It can be assumed that classroom assessment is seriously influenced by the final examinations and the public examinations which measure only reading and writing skills.

The major purpose of assessing students in the classroom was unison among all the teachers. All the teachers said that through assessing students in the classroom, we get to know if

the students have understood the lessons they teach. Mr. Akbar said, “I assess them so that I can understand if they have understood what I have taught.” However, they also mentioned other purposes of assessment such as the students getting motivated to study, being serious about their studies, paying attention in class, taking the teachers seriously, studying at home, attending classes regularly, growing interest in the topics that are assessed, developing a competitive attitude, developing inner qualities, and making them accountable. Teachers with high CAL test scores and more training added that CA helps to identify lagging behind students so that they can take extra care of them. They also mentioned that CA is helpful in case the students miss any tests, as CA can give those data on students’ overall progress collected throughout the year.

We found an interesting pattern in the feedback practice of teachers based on their CAL test scores. The four participants who had high CAL test scores saw feedback more as a meaningful two-way process of communication between teacher and students that helps not only the students to know their strengths, areas of improvements, and direction to improve but also helps teachers to modify their teaching. On the other hand, the teachers who scored low on the CAL test score explained feedback as a one-shot linear activity flowing from teacher to student(s). They gave examples which are less meaningful in terms of pedagogical significance (such as clapping, praising, saying positive things, letting them know if the answer is correct or not, and as a tool for classroom management). Only one of the teachers with a low CAL Test score told that the purpose of feedback is to help the students improve. Three of these teachers also explained the feedback as a process of classroom management as it would help them to tell some students to be more attentive in class and sometimes to ask the students who cannot answer to come and sit in the front benches. We see that these teachers’ assumption is that the only reason students might answer wrong was not being attentive in class. The reasons such as their teaching, students’ previous knowledge, effort level, motivation, and classroom environment

were not in their considerations. Ms. Fatema said, “If they cannot answer correctly, then I understand that they are not attentive. I give feedback by telling them - if you give attention only then you can answer correctly.” Observing teachers’ classroom assessment would reveal more about their CA practice which was not within the scope of this research.

4.2.2. Teachers’ source of knowledge and skills of CA

Teachers mentioned a total of six sources that helped them construct concepts of CA and acquire skills in CA. First, they mentioned the experience of their own educational assessment, the assessment system, and CA that they experienced in their childhood. Second, they considered their teaching experience as a source which taught them what CA works well in what context. Third, professional education, such as Bachelor of Education or BEd (one or two years), and Master of Education or MEd (1 year) was mentioned. Three of the teachers had both BEd and MEd, and one had only a BEd degree. Fourth, all of them participated in short-term professional trainings arranged by the Government, other non-government organizations, and their own schools (in-house trainings). Most of these trainings are on general pedagogical approaches, and subject-based where assessment was a part, only several were on assessment topics such as creative questions, MCQ and Essay type questions, grading, and moderation. Only one teacher had training specifically on Continuous Assessment. Fifth, they identified government circulars, and instructions on assessment as their source of knowledge which provides them knowledge on assessment, marking, and any reforms in education. Sixth, several teachers mentioned that teachers’ guides prepared by the National Curriculum and Textbook Board (NCTB) provide them instruction on assessment techniques to use for different lessons. Among the sources, teaching experience and trainings were the major source for all the teachers except those who had a BEd and/or MEd degree, which they told is the major source of their learning on CA. They told that these professional courses had a lot of content and they even had scope to practice

different skills of CA. As Nowrin said, “I have learned a lot on CA from my BEd and MEd. I had more scope to learn deeply about CA and had the opportunity to practice CA techniques through simulation and micro-teaching.”

4.2.3. Training as a source of teachers’ knowledge and skills of CA: Factors that influence effectiveness

Teachers reflected on the trainings they had: what enabling factors made them learn and practice knowledge and skills of CA from the trainings, and what constraints made it difficult for them to learn and practice knowledge and skills of CA from the trainings. Teachers who had less training were more positive about the effectiveness of the training than the teachers who had more training on assessment or CA. For example, Ms. Tuli who had only one training on assessment explained, “Training is a must for the teachers and the more training we get, the more efficient we will be in knowing and practicing CA.” The teachers who had more training were somewhat skeptical about the effectiveness of those trainings. It can be because they had more scope to reflect and critique the trainings. Though, Mr. Amin mentioned that there is a lot of repetition in content in different trainings, not all have seen it this way. Ms. Fatema told, “Sometimes we see similar and same topics on CA in different trainings. This helps us to reconceptualize the learning on CA and to reinforce our learning.” Sultana had little training on CA and she told, “The training not only teaches us new things but also reminds us of our duties and responsibilities related to CA. Many of the teachers are not aware and day by day, they may become lazy.” She also claimed, “The trainings get all of the teachers at least to a platform of basic core ideas and principles of CA, which is important.”

Teachers who had different trainings on assessment and CA at different times identified important factors related to training which affect teachers in gaining sufficient and important knowledge on CA. We categorized those into three aspects: trainer-related, training-related, trainee-related, and technical aspect related. All four of these teachers told that if the trainer is knowledgeable and can engage the participants

in the training in a meaningful way, then they can learn effectively from the training and it is sustainable. Ms. Shilpi said, "In my last training, the trainer was very experienced. He related the content with his own experiences and gave a lot of real-life examples. This made me learn more about CA." Two of the teachers told that sometimes the training does not teach them something new on CA, but the things that they are already doing. However, they think that it helps them to validate their previous learning on CA from other sources and the practices they had been doing. Ms. Shilpi mentioned, "I used to assess each day and give feedback. That was my practice, and not all teachers of my school were doing so. When I learnt from the training regarding continuous assessment and formative assessment, then I was assured that I am in the right path." The teachers also mentioned about what is taught in the trainings and in what way it affected their learning on CA. The teachers learnt mainly technical aspects of CA such as marking, moderation, and record keeping, new system and reforms in the system, not any critical aspects of assessment. If the training is conducted in a participatory way, and if the trainer gives the opportunity to the participants to relate training content with their previous experience, then they said they learn well. Ms. Sanjida said, "Some trainers just read and follow their training manual mechanically, and I could not learn much from those sessions on assessment." Mr. Abdullah told, "Some trainers are not sincere and they waste time in cultural activities mostly. We lose motivation in these trainings." Another aspect that the teachers mentioned was teachers' attitude towards participating in training in general and to that particular training. Ms. Shilpi said, "Many teachers believe that trainings are not worth participating in and it cannot bring any meaningful change. These teachers cannot gain much from trainings." She added, "Sometimes a teacher may not be interested to participate in a particular training on assessment, however, he/she attends it as the head teacher asked to do so or his/her name has been issued from the ministry as the participant of that training. In that case, that teacher attends the training, but does not participate or learn about assessment

much. Even if they learn, they forget soon." Mr. Amin thinks, "Senior and experienced teachers sometimes do not want to change their long-practiced CA style, even after getting training." Therefore, teachers' age and mindset about change in practice is an important factor. Sometimes the teachers get motivated as they get incentive as transport and other allowances from the government for participating in the trainings. However, as these are external financial rewards, how much it motivates to the teachers to participate and learn in training needs further exploration. There are technical aspects too. The trainings are of „one shot, „one size free for all“, and conducted sparsely. Ms. Fatema told, "The gaps between trainings are long. We forget after sometimes if we do not get scope to practice." Ms. Shilpi said, "There are too many changes regarding assessment and we are told to change our practices so often. It is difficult for us to cope up with such frequent changes". Many teachers mentioned that sometimes the trainings were not managed properly - schedule is not followed, trainers are late, not enough training materials, and other management issues, which makes them less able to learn about CA from the trainings. The teachers also identified different factors related to training which affect teachers in applying knowledge and skills of CA learnt from training - applicability of the training; and School context and head teacher; trainee's own perspective; and the old-fashioned education system. The mostly mentioned reason was the applicability of the content. They could apply the techniques of specific CA, specific marking and moderation skills, record-keeping skills for a new design of curriculum, but not how to troubleshoot CA related problems. As Ms Shilpi explained, "The trainings taught me general strategies to solve CA related issues, which are not suitable in my context and situation always. For example, if the student performs poorly in the assessment, I have learnt from the training that the student can be given a seat in the front to sit. However, this does not solve the problem always". This is very crucial as we know the reason for not learning can be very different for different students and even can be a combination of different reasons. Another important aspect repeatedly told by teachers

with both more training and less training is the issue of less or no monitoring or follow up of the training. Mr. Amin said, “We need mentoring so that we can apply the learning from trainings in the classroom, and get help if we face challenges in applying”. Many challenges were mentioned such as, class size and sitting arrangements not suitable for group work; having students of many different capacities and backgrounds in a single classroom; short class duration not suitable for hands-on activity-based CA. Teachers told that they manage the CA situation in their „own way“ ultimately. School context was also found as an important factor in determining if the teachers are going to apply their learning on CA from training or not. Most of the teachers told that the head teacher and the school context are supportive to apply what they have learnt from the trainings on CA. However, how their head teacher and context motivated them were not even clear to them. However, they could not give any example. When Ms. Fatema explained, “Our head teacher sometimes gives random feedback based on the CC TV camera monitoring”. However, we argue that this is also not mentoring, rather, monitoring. Moreover, it is a supervision system of the school where the teacher is just a part. She cannot ask for feedback, but can only receive feedback that the head teacher thinks are useful. Several teachers mentioned that even though they learn about communicating CA findings to parents, the parents are in a socio-economic struggle and refuse to maintain such communication with them. Ms. Sanjida said, “They think that by sending their children to school, they finish their responsibility. They are not aware of their children’s learning progress.” Two of the teachers told that sometimes they do not agree with the concepts taught in the trainings. For example, Ms. Sultana said, “The trainings instructed us to assign homework to the students. However, I do not agree with this. I think, for most of the students, their home environments are not suitable for doing homework. They do not even have anyone to help them in homework. This may also encourage private tutoring or coaching”. The teachers who had more training and more CAL test score, both of them and one teacher

from low CAL test and more training brought up an issue. They argued that the trainings teach us to make changes in classroom settings. However, there are no initiatives to make related changes in school, and national assessment system. Mr. Amin told, “When I tell the students to make models, posters and other printed materials as a part of CA, the school has no fund for this. I cannot provide those materials to the students”.

5. Discussion

The mean score of the sample primary school teachers on CALT test was 24.1125 with a median of 24 and SD 3.5 (the test was out of 34). The mean score of CAL test is more than the middle score of 17. This result seems better than the CALT score of the secondary school teachers in Bangladesh (Dutta & Begum, 2020). In our study, the primary school teachers’ mean score varied in different segments of the tests. For example, teachers were found to be more competent in using assessment data to make decisions and less competent in the area of selecting appropriate assessment tools. Qualitative data revealed complex interplay between teacher training and their knowledge and practice. Though different teachers had unique CA styles and followed similar CA techniques, the teachers with high CALT score seem to give their students more descriptive and meaningful feedback.

We revealed that when the hours of training increase, teachers’ CAL test scores decrease. This can be explained with the qualitative data that reveals that teachers with more training experience seem more dissatisfied with training qualities. Because of their dissatisfaction with training, they may have a repulsion in learning from trainings. Also, we found no significant difference between the CAL test score of teachers who had assessment training and teachers who did not have assessment training. The qualitative data also shows that except for the practice of feedback, other practices of assessment-related activities were more or less similar for teachers with more training and teachers with less training. However, we see that having an MEd degree can make a significant difference in their CAL test score. Qualitative data too found that the teachers

who had BEd and/or MEd degree told that these professional programs were the most useful source of their CALT knowledge. Teachers with more years of experience seem to score lower in the test and vice versa (not statistically significant though). In qualitative data, several teachers told that when teachers have long teaching experience they sometimes are not motivated to change their practice and know new techniques of assessment. The intersectionality among different enabling and deterring factors weakens the effectiveness of CA to have sustainable change in teachers' knowledge and skills on CA. Among many factors, the one-shot and one-size-fits-all design of the trainings were found to be ineffective by the teachers who have unique classroom context. Besides, teachers' own perception of training and the school environment and context are also

factors that affect effective translation of training on CA into practice.

6. Conclusions

Based on the findings which show the ineffectiveness of a general kind of training, we propose to develop school-based trainings that can help the teachers troubleshoot CA related issues in a regular manner within a safe space of mentoring, after a basic orientation or induction. Besides, changes in other parts of the school component and also in the whole education system aligned with expected changes in CA are needed, as we found that CA practice is influenced by the bigger assessment system and teachers face challenges to implement training when the school system and environment are not changed accordingly.

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