



EXPLORING SCIENCE TEACHERS' PERCEPTION OF CLASSROOM ASSESSMENT IN SECONDARY SCHOOLS OF BANGLADESH

Md. Mehadi Rahmanⁱ

Institute of Education and Research (IER),
University of Dhaka,
Bangladesh

Abstract:

The study focused on exploring science teachers' perception of classroom assessment in secondary schools of Bangladesh. A mixed method approach was used to explore science teachers' perception of classroom assessment by identifying their concept about classroom assessment and how they conduct assessment activities in science classes. A total of thirty teachers (twenty male and ten female) were chosen randomly to collect quantitative data and twelve teachers were chosen purposively for qualitative data collection from six secondary schools in Dhaka. The study used a questionnaire and interview protocols as main sources of data collection. The study revealed that teachers are holding misconceptions about idea of classroom assessment. Majority of the teachers perceive classroom assessment as summative assessment and it should be through oral questioning. Analysis of quantitative and qualitative data exhibited that teachers perceive students should be assessed both lower and higher order learning using different techniques (self-assessment, peer assessment) and modes (oral, written) of assessment and at the same time they believe that it's difficult to use multiple techniques and modes of assessment in science classrooms. The overall findings of the study suggest that teachers don't have clear idea about classroom assessment that results in holding conflicting perception about science classroom assessment.

Keywords: perception, classroom assessment, teachers' perception, science teacher, secondary education

1. Introduction

Classroom assessment is an integral part of science teaching-learning. Classroom assessment is one of the tools teachers' can use to determine the degree of the progress made by a teacher in respect of making his students understand the topic he/she teaches. Assessment aims not only to measure student's performance, but also a

ⁱ Correspondence: email mehadirahman@gmail.com

teacher's performance in the classes. Miller, Linn and Gronlund (2009) have defined classroom assessment as a systemic process of determining the extent to which instructional objectives are achieved by students. The main emphasis in classroom assessment is on decisions concerning students learning and development. Hackling (2005) argued that assessment has a powerful influence over what is taught and learned in science as both teachers and students work towards assessments, especially tests at the end of topics. According to Fennema and Romberg (1999), the way teachers perceive assessment may influence the way they teach and assess their students. Research into teachers' beliefs generally show that teachers' have their own beliefs/ cognitions/ theories about teaching and learning which might have been influenced by their training, work experience and so on (Nga, 2009). Most of the research regarding to teachers' perceptions and beliefs indicated that teachers' practices were usually consistent with their beliefs and thoughts and were related to students' performance (Fuchs, Fuchs & Phillips, 1994; Johnson, 1992; Mangano & Allen, 1986; Rupley & Logan, 1984; Richardson, Anders, Tidwell & Lloyd, 1991; Wing 1989; Wood, Cobb & Yackel, 1990 cited in Jia, 2004, p.26).

The structure of teachers' conceptions is not uniform and simple; they appear to be multifaceted and interconnected (Brown, 2004). Delandshere and Jones (1999) argued that teachers' beliefs about assessment are shaped by how they conceptualize learning and teaching. In fact, the way teachers think about, understand, and values instruction influences their practices. The study of teachers' conceptions of assessment is important because evidence exists that teachers' conceptions of teaching, learning, and curricula influence strongly how they teach and what students learn or achieve (Pajares, 1992). All pedagogical acts, including teachers' perceptions and evaluations of student behavior and performance (i.e., assessment), are affected by the conceptions teachers have about many educational artefacts, such as teaching, learning, assessment, curriculum, and teacher efficacy (Brown, 2004).

Stiggins (2010) suggested that teachers need to develop a solid understanding of classroom assessment so that they can develop a balanced approach to assessment for learning and assessment of learning. Many teachers don't have clear conception about classroom assessment. Classroom assessment practices of teachers play a central role in determining the quality of education. Their perception as to the place of their classroom assessment practices in ensuring quality education is weak and fuzzy (Nenty, Adedoyin, Odili & Major, 2007). Danielson (2008) observed that although teachers are trained to develop sound and valid assessment measures, their perceptions and beliefs may affect the way they teach and assess their students.

The focus of teachers should be on enhancing students' ability to think rationally and creatively rather than their ability to score correctly on state mandated standardized test. However, this can only be achieved when teachers are prepared to actively engaged students in constructive discussion informed by sound classroom assessment strategies. Classroom assessment practice is the number one solution to students learning, enthusiasm, and interest in the classroom. But still a large number of mathematics and science teachers' perceive classroom assessment as the assignment of

grades and testing (Zacharos, Koliopoulos, Dokimaki, & Kassoumi, 2007). Similarly, Jarrett (2016) found that many secondary school teachers are struggling with the use of classroom assessment strategies because they perceived it to be ineffective, not beneficial for all students and difficult to deliver. Even sometimes, teachers reported favorable perception of assessment but they seem to be facing a conflict in effective assessment in their classroom (Ndalichako, 2015).

As limited literatures are exists about students' and teachers' perceptions of assessment (Mussawy, 2009), so we do not have enough knowledge about the secondary science teachers perception on classroom assessment in Bangladesh. This study targets to contribute this huge gap of knowledge base that needs to be filled-in.

2. Literature Review

2.1 Definitions of Perceptions

According to Munhall (2008), "*perception is a mode of apprehending reality and experience through the senses, thus enabling discernment of figure, form, language, behavior, and action*" (p. 606). Commonly perception is defined as a way of seeing things. Individual's perception of something indicates the way that he/she think about it or the impression she/he has of it. Munhall (2008) suggests, perception can be explained in terms of a set of lenses through which individuals view the reality around them. It allows the individual to recognize the sensory information from the environment around them and use the information to interact with the environment meaningfully. Individual's perceptions can be understood through their interpretations and behaviors. This means perception influences individual's opinion, understanding, meaning of an experience, judgment and the ways of responding to a situation. Perception about something depends on the context in which it is experienced. Perceptions vary and different people have different perception about the same object or situation.

Beliefs affect not only how people behave but also what they perceive (or pay attention to) in their environment (Nga, 2009). Pajares (1992) stated that beliefs are formed early; remain relatively stable, and are resistant to change. They are hierarchical in nature and arranged to correspond with their attachment to other beliefs. Through belief system teacher's process information from their experiences in the classroom, make sense of them, and modify or adapt subsequent actions (Pajares, 1992).

Putman and Duffy (1984) believed that as behavior is guided by thought, knowing teachers' perceptions and beliefs would help better understand teachers' behaviors in classrooms and provide a guide for improving teachers' practices and pre service teachers preparation. On the other hand, Jia (2004) suggested that research related to teachers' perceptions and beliefs respond to the calling for involving teachers in a discussion of educational research and policies. Pajares (1992) suggested that teachers' belief are understood as being organized into systems where in some beliefs are more central or primary and others may be derived or peripherally linked to those central beliefs.

2.2 Teachers Perceptions

Research into teachers' beliefs generally show that teachers' have their own beliefs/ cognitions/ theories about teaching and learning which might have been influenced by their training, work experience and so on (Nga, 2009). According to Johnson (1994, p.439) *“research on teachers' beliefs consists of three basic assumptions: (a) Teachers' beliefs influence their perception and judgment. (b) Teachers' beliefs play a role in how information on teaching is translated into classroom practices. (c) Understanding teachers' beliefs is essential to improving teaching practices and teacher education programs. Because teachers are the critical factor in the implementation of an appropriate approach so their values, attitudes, and beliefs about classroom practices are important.”*

According to Johnson (1994, p.439) *“research on teachers' beliefs consists of three basic assumptions: (a) Teachers' beliefs influence their perception and judgment. (b) Teachers' beliefs play a role in how information on teaching is translated into classroom practices. (c) Understanding teachers' beliefs is essential to improving teaching practices and teacher education programs”*. Because teachers are the critical factor in the implementation of an appropriate approach, so their values, attitudes, and beliefs about classroom practices are important.

Beliefs might be defined as one's personal views, perceptions, conceptions and theories (Thompson, 1992). Thompson (1992, p.130) also described conceptions *“as a more general mental structure, encompassing beliefs, meanings, concepts, propositions, rules, mental images, preferences, and the like”*. So, the concept of a conception includes knowledge and belief into a singular concept and provides a framework for describing teachers' overall perception and awareness of assessment. Similarly, the term “value” is also used to describe teachers' assessment-related beliefs. In James and Pedder's (2006) study, they designed an instrument around a set of theoretically identified assessment practices and beliefs, measured in terms of how much teachers value each practice. Barnes, Fives and Dacey (2015) argued that the focus of research in this area seems to be examining the gap between teachers' frequency of use and beliefs about the importance of each practice.

2.3 Teachers Conceptions of Classroom Assessment

G. T. L. Brown (2004) asserts that teachers' conceptions of assessment constitute four major beliefs about assessment: (a) Assessment improves teacher instruction and student learning by providing quality information for decision-making; (b) Assessment makes students accountable for their learning; (c) Teachers or schools are made accountable through assessment; and (d) Assessment is irrelevant to the work of teachers and the life of students.

Researchers found that teachers' beliefs about the effectiveness of different forms of assessments also may vary. Adams and Hsu (1998) found that elementary math teachers relied on classroom observations as their preferred assessment method. Teachers very rarely believed that essays were a useful assessment method, which may be reflective of a content area focus. On the other hand, Graham (2005) revealed that teachers are more likely to rely on traditional, paper-and-pencil assessments because

these are the types of assessments they experienced in school. Furthermore, Wang, Kao and Lin, (2010) found that pre-service teachers conceptions of assessing students content knowledge were limited to low-level, regurgitation of information covered in the textbook or during lecture.

The desire to ensure alignment of classroom assessment with teaching and learning process has led to growing interest to investigate teachers' perception of classroom assessment in many different ways. Most of the research on teachers' assessment beliefs or conceptions is driven by the view that beliefs influence practices and outcomes (Brown, 2008). Chester and Quilter (1998) believed that studying teachers' perceptions on classroom assessment is important as it provides an indication of how different forms of classroom assessment are being used or misuses and what should be done to improve the situation. More critical also is the fact that perceptions affect behavior (Lafontana & Cillessen, 2002). Therefore, to alter teachers' assessment practices it is necessary to change teachers' assessment beliefs or perceptions.

In Bangladesh, research related to assessment has flourished in recent years. Most of them focused on studying the application of certain assessment methods in classrooms or explore teachers' classroom assessment practice. However, only a few studies have been done in understanding teachers' perception of classroom assessment. Such as, Tarana (2011) explored secondary teachers and students perception about assessment. Therefore, by studying science teachers' perception of classroom assessment, different problems can be addressed related to the teachers' classroom assessment perceptions.

3. Material and Methods

3.1 Purpose and Research Question

The purpose of this study is to explore teachers' perception of classroom assessment in secondary science classes in Bangladesh. To achieve the purpose of this study, more specifically, intends to answer the following key questions:

1. What is the conception of secondary science teachers about classroom assessment?
2. How do secondary school science teachers perceive classroom assessment?

3.2 Research Design

The study is mainly depended on descriptive inquiry to elicit data related to teachers' classroom assessment perception of secondary schools in Bangladesh. It is carried out based on mainly quantitative with some qualitative approach.

3.3 Research Participants

The study was conducted in the secondary school situated in Dhaka City of Bangladesh. The study included only general secondary schools. The population of this study was consisted of in-service secondary science teachers who teach students studying Grade VI to Grade VIII in different secondary schools of Bangladesh. A sample of 30 science

teachers was selected from six schools which were located in Dhaka city using random sampling. Five science teachers were chosen from each school randomly. Two science teachers from each school were selected purposively for interview purpose.

3.4 Instrumentation

A questionnaire was used to collect quantitative data from science teachers' about perceptions of classroom assessment. A semi-structured interview schedules was used to collect qualitative data from selected 12 science teachers about their classroom assessment perception. The questionnaire had six closed items and a four point Likert type scale. The Likert type scale consisted by 45 statements. It was constructed with the help of existing international scales.

3.5 Data Analysis Technique

The quantitative data from the questionnaire were analyzed using quantitative or statistical approach. The analysis included descriptive techniques as percentages, mean and standard deviation. The frequency of responses of each item of questionnaire was categorized first. Next, the calculations of percentage of each response have been done to see the response of majority and minority. After analyzing the data results of quantitative data, findings were presented through tables. The data obtained from Likert type scale were analyzed based on the weighted mean of the statements (Grela, 2013).

The qualitative data obtained through interview was analyzed using thematic approach. Qualitative data helped the researcher to support quantitative data and also in triangulation of data.

The sources were coded for analyzing data. In this case, two types of coding were used: alphabetic coding for schools and alpha- numeric coding for participants. The table 1 shows the coding of the data.

Table 1: Coding of data

Categories	Coding Number
Schools (6)	S _A , S _B , S _C , S _D , S _E , S _F
Interview participant Teachers (12)	IT ₁ , IT ₂ , IT ₃ ,IT ₁₀ , IT ₁₁ , IT ₁₂

4. Results and Discussion

The results and discussion of this study are presented based on the research questions and major focuses of teachers' perception about science classroom assessment.

4.1 Teachers Conception of Classroom Assessment

The study demonstrates that teachers' conception about science classroom assessment was not clear and has conflicting ideas among them. Most of the teachers (93.33%) claimed that they were aware about science curriculum and use lesson plan in the classroom. Lesson plan is very essential to conduct the class well, according to the time

and planning. Without lesson, plan teachers cannot conduct effective classroom assessment and when they do that, the whole class goes out of control. Previous studies also found that teachers generally do not use lesson plan in the class (Saha, 2011; Babu, 2016).

Table 2: Practices that Teacher Identify as Classroom Assessment

Options	Percentages
Unplanned Observation	6.67%
Oral Question & Answer	90%
Students written work	76.67%
Essay Test	16.67%
Planned Observation	83.33%
Homework	60%
1-3 hour Examinations	13.33%
Others	6.67%

Maximum of them (56.67%) perceive classroom assessment as summative assessment. Teachers mentioned that annual exam/terminal exam is an example of classroom assessment. Two teacher described classroom assessment as a complex process that can't be always conducted in the science classes. Some teacher suggested classroom assessment to evaluate students overall situation which is done through annual exam and terminal exam. One teacher S_{EIT10} said that, *classroom assessment is a process of gaining information about their students' strength and weakness after a certain period of time through test or examinations*. It means teachers perceive classroom assessment as tests and they use tests to assign grade to the students' learning. Similarly, Yao (2015) found that teachers think classroom assessment just as a testing tool. Despite tests are part of classroom assessment and could be used to assess students' learning, they do not answer all questions that a teacher would ask about his/her students. Susuwele-Banda (2005) asserted that teachers that perceive classroom assessment as testing fail to understand the learning potentials and difficulties experienced by their students during the learning process. Yasmin (2012) also found that teachers are using classroom assessment to fulfil summative purpose. When teachers view classroom assessment as an end product, they are focused to assessment of learning instead of assessment for learning or assessment as learning. So, Teachers have lack of knowledge about classroom assessment. Similarly, researchers explored that teachers did not have clear idea about classroom assessment (Saha, 2011).

From the table 2, it is clear that most of the teachers (90%) thought of classroom assessment to be oral questioning. Besides this, a lot of teachers identified students' written work and planned observation as classroom assessment. Some teacher described that classroom assessment should be creativity test done in laboratory for making innovation in science. Three teachers said that they use mainly questioning method as classroom assessment because class time is limited. However, all the teachers said that students should be assessed using different techniques such as group work, peer work, project work etc. Similarly, researchers found that teachers mainly used oral

question and answer to assess their students in classroom (Rahman & Ahmed, 2010; Tarana, 2011). Teachers mostly used oral questioning followed by written tasks, individual works and conversations (Ahmed, Islam & Salahuddin, 2015). Frey and Schmitt (2010) found in a study that paper-pencil test remained the commonly used assessment formats that the teachers used. Similarly, Zhang and Burry-stock (2003) showed that teachers who taught language, arts, science and social science used written test more often than the teachers who taught mathematics. Additionally, Saha (2011) found that most of the teachers assess their students through group work in the classroom.

Classroom assessments is a part of the ongoing teaching process which enables teachers to promote students learning through identifying a student's current level of learning and adapting teaching to help the students in reaching their desired learning goal (Frey & Schmitt, 2010). Classroom assessments take a variety of forms, including observations, questioning strategies, discussion, self and peer assessments, graphic organizers, writing assignments, classroom quizzes and tests, homework, and projects (Black & Wiliam, 1998). In this study, teachers perceive to use different techniques such as group work, written tasks, practical work or investigation work to assess students. But Rahman and Ahmed (2010) found that teachers had very limited ways and methods of assessing their students. Teachers need to use different strategies to monitor students learning. Teachers should be employed a variety of assessment strategies to capture varied learning. No single strategies can be useful to all their students at the same time for the same purpose. Some strategies like written tasks, home works, quizzes, group works, peer works, assignments, probing questions, observation, clinical interview and thinking aloud may help teachers to understand the learning processes of students (Rahman & Ahmed, 2010; Ahmed et al., 2015). When teacher place meaningful assessment at the center of classroom teaching learning, they give insights into their own thinking and growth, and students gain new perspectives on their potential to learn (Susuwele-Banda, 2005).

Although classroom assessment should be conducted whenever it is needed during teaching learning process, majority of the teachers (83.33%) mentioned that they assess students at the end of lesson. During interview one teacher S_{BIT4} expressed that *'Classroom assessment is definitely important at the end of the lesson because how much they have learned or not, how much they have understand the topic can be measured then.'*

Most of the teachers mentioned that their purpose of classroom assessment is to provide guidance to the students learning (76.67%) and to ensure their participation in teaching learning (70%). But during interview, all the teachers told that they assess student to measure how much they have understood and learned the topic he/she discussed that day. But one teacher explained that her intention was to make students attentive to the class by creating enjoyable classroom environment even if they don't understand the topic. Similarly, although a lot of teachers mentioned that their purpose of classroom assessment is both assessing effectiveness of teaching learning activities and creating safe environment among students (60%), during interview no teachers told about any of the purpose of their classroom assessment. One teacher S_{EIT9} said that

classroom assessment helps them to identify students' problems in any topic and so they can solve it more easily and preciously during science classes. Some teachers (63.33%) also claimed that their purpose of classroom assessment is to manage/control the class. Four teachers advocated that they assess students to understand which level a student belongs to and judge their merit. During interview, another teacher SAIT₁ told that, *'classroom assessment is a good way to grade or give score to the students' performances.'* Similarly, Ndalichako (2015) found that teachers' purpose of assessment is to prepare them for final examinations. Another researcher Jony (2015) found that teachers' purpose of assessing a student is to promote them into next class or judge a student's achievement. Teachers rarely use assessment information to modify their teaching although this is an important purpose (Ahmed et al., 2015). So, it's clear that teachers are using classroom assessment as a tool to prepare students to pass examinations rather than enhancing students learning.

4.2 Teachers Perception of Classroom Assessment on Likert Type Scale

The analysis of this scale was conducted through determining frequency, mean and percentage. The frequencies of responses under strongly agreed and agreed were pooled together to stand for positive response-agreed, while the responses under disagreed and strongly disagreed were pooled for negative response-disagree.

4.2.1 Teaching-Learning Activities

Teachers possess favorable perception to ($WM=3.21$) to conduct different teaching learning activities in the science classes such as explaining learning objectives to the students, exploring students prior knowledge, misconception and connecting them with new knowledge. Most of the teachers agreed to using multiple teaching methods and teaching aids, and providing them scope to share their ideas.

Maximum teachers perceived that learning objectives of the lesson should be explained ($n=29$, 96.67%) and topic should be discussed according to the learning objectives ($n=30$, 100%). Teachers strongly agreed with both explaining learning objectives and discussing topic according to objectives respectively ($M=3.30$, 3.33; $SD=.535$, .479). During interview most of the teachers said that they always mention learning objectives before starting a topic but they don't always discuss topic accordingly rather they progress lesson as they preferred.

A large proportion of respondents ($n=26$, 86.67% both) agreed that students' prior knowledge ($M=3.13$; $SD=.73$) and misconception about science topic ($M=3.07$; $SD=.868$) should be explored. Most of the teachers ($n=29$, 96.67%) perceived that students prior knowledge should be connected with new knowledge ($M=3.37$; $SD=.556$). During interview one teacher SAIT₂ said that, *'students prior knowledge assessing is necessary to proceed to that lesson further but it's not always necessary to connect them with that lesson.'* Some teachers said that all students' prior knowledge can't be explored within the class time so they just review topic related to the prior knowledge and start new lesson. But, it is very important for both teachers and students to assess the students before presenting a new science topic in the class. It helps teacher to shape

their teaching learning activity and students can prepare them for the upcoming science topic. Similarly, Ahmed et al. (2015) found that teachers tried to make a connection between students' prior knowledge and new knowledge. Teachers mostly used oral questioning to assess students prior knowledge (Ahsan, 2009).

Table 3: Teachers' Perception about Teaching Learning activities

Statements	Percentage		Total	Mean (M)	SD	WM
	Disagree	Agree				
1. Learning objectives of the lesson should be explained to the students.	3.33%	96.67%	100%	3.30	0.535	
2. Topic should be discussed according to the learning objectives.	0%	100%	100%	3.33	0.479	
3. Students' prior knowledge exploration is necessary in science teaching learning.	13.33%	86.67%	100%	3.13	0.73	
4. Students prior knowledge should be connected with new knowledge.	3.33%	96.67%	100%	3.37	0.556	3.21
5. Students misconception about science topic should be explored.	13.33%	86.67%	100%	3.07	0.868	
6. Multiple teaching methods should be used in teaching learning activities.	0%	100%	100%	3.40	0.498	
7. Students should be provided scope to share their ideas about science.	3.33%	96.67%	100%	3.30	0.535	
8. Use of teaching aid is necessary in science teaching learning. .	0%	100%	100%	3.67	0.479	

Note. SD= Standard deviation, WM= Weighted mean

All the teachers (n=30, 100%) perceived that they should use multiple teaching methods (M=3.40; SD=.498) and teaching aids (M=3.67; SD=.479). During interview, all the teachers mentioned that use of teaching aid in science classes is very necessary but they can't use it due to large class size and small class duration. Only two teachers told that they use teaching aids sometimes but they have doubts about the effectiveness of their teaching aid use. Azim and Ahmed (2010) found that teachers perceive to use multiple teaching methods like demonstration, group discussion in the classes but they are illogical to use in Bangladesh. Similarly, Babu (2016) also found that every teacher reported using lecture methods in the science classes. Sometimes teachers used other methods, but lecturing was used simultaneously.

Most of the teachers perceived (n=29, 96.67%) that students should be provided scope to share their ideas (M=3.30; SD=.535). But, another teacher S_{FIT}₁₂ said that, 'Sometimes I provide scope students to share their ideas but it's not always possible because it kills time and I have to cover the whole syllabus. Rahman and Ahmed (2010) found that no teacher encouraged students to talk and share ideas in classroom. It's a common classroom picture that teachers ask questions and students replied. The particular features of the talk between teacher and students are the asking of questions by the teacher; this natural and direct way of checking on learning is often un-productive (Black & Wiliam, 1998).

4.2.2 Classroom Assessment Practices

Teachers possess favorable perception to (WM=3.1) to conduct different assessment activities in the science classes such as asking open questions, encouraging students to ask questions, providing sufficient time and equal opportunity to answer questions. Teachers have favorable perception to use different assessment techniques in science classroom like self-assessment, peer assessment, problem solving and practical work. Most of the teachers agreed to assess students both lower and higher order learning through both individual and group work.

All the teachers (n=30, 100%) perceived that students should be encouraged to ask questions (M=3.40; SD=.498). Almost all the teachers said that they try to encourage students ask questions the science classes but students rarely ask any questions to the teachers. But existing study found that students rarely received any chance for raising the questions to the teachers in the classroom (Ahsan, 2009) and even students didn't ask any questions if they failed to understand lesson or teachers' instructions (Rahman & Ahmed, 2010). Babu (2016) also found that teachers did not create scope for students to ask questions, and students asked minimum amount of questions in science classes. Every student should have the equal opportunity to reply the asked questions in classroom assessment. Rahman and Ahmed (2010) discovered that teachers favorite learners, high achievers and students sitting in front benches were typically asked questions by teachers and the number of these students was very poor. Most students were deprived from the benefits of classroom assessment.

Table 4: Teachers' classroom assessment practices

Statements	Percentage		Total	Mean (M)	SD	WM
	Disagree	Agree				
1. Students should be encouraged to ask questions in science class.	0%	100%	100%	3.40	0.498	
2. Open questions should be asked in science teaching learning.	3.33%	96.67%	100%	3.23	0.504	
3. Closed questions should be asked in science teaching learning.	36.67%	63.33%	100%	2.77	0.858	
4. All students should have equal opportunities to answer the questions	16.67%	83.33%	100%	3.03	0.615	
5. Students should be provided sufficient time to answer questions.	26.67%	73.33%	100%	2.90	0.662	
6. Students should be assessed through self-assessment technique.	0%	100%	100%	3.37	0.490	3.10
7. Students assessment through peer assessment technique is necessary in science classes.	0%	100%	100%	3.40	0.563	
8. Students should be assessed through problem solving/investigation work	6.67%	93.33%	100%	3.30	0.535	
9. All students should be kept active in assessment.	13.33%	86.67%	100%	3.17	0.648	
10. Students should be assessed orally.	30%	70%	100%	2.87	0.776	

Md. Mehadi Rahman
EXPLORING SCIENCE TEACHERS' PERCEPTION OF CLASSROOM ASSESSMENT
IN SECONDARY SCHOOLS OF BANGLADESH

11. Students should be assessed through written work.	13.33%	86.67%	100%	3.00	0.525
12. Students' knowledge should be assessed through individual work	26.67%	73.33%	100%	2.93	0.691
13. Students' knowledge should be assessed through group work	6.67%	93.33%	100%	3.13	0.571
14. Assessment of students' lower order learning is necessary in science class.	6.67%	93.33%	100%	3.03	0.718
15. Assessment of students' higher order learning is necessary in science class.	20%	80%	100%	3.03	0.615

Note. SD= Standard deviation, WM= Weighted mean

Most of the teachers expressed agreement (n=29, 96.67%) with the idea that open questions should be asked in science class (M=3.23; SD=.504). Quite a large proportion of the respondent (n=19, 63.33% both) agreed that students should be asked closed questions (M=2.77; SD=.858). Although some teachers have negative perception toward asking closed questions in the science class, during interview most of the teachers told that they always ask closed questions to the students. Additionally, they mentioned importance of open questions but they ask limited amount of open questions in the classes as students were not habituated with open questions in the classes. It was also found from the existing study that teacher assessed their students by mostly closed questions in the classroom (Ahsan, 2009; Rahman & Ahmed, 2010; Yasmin, 2012). But Ahmed et al. (2015) found that teachers were more focused to use open questions to evaluate students learning whereas close questions were hardly thrown in the class. Black and Wiliam (1998) states that good questions are hard to generate so teachers should collaborate and draw-critically on outside sources to collect such questions. But this is totally absent in the practices of teachers' classroom assessment. It is also found in a study that a balance and strategic use of classroom questioning prompts students to consider their response more thoughtfully listen to and evaluate the responses of others and evaluate their own understanding (Torrance, 2007).

Most of the teachers perceived that all students should have equal opportunities (n=29, 83.33%) and sufficient time (n=22, 73.33%) to answer the questions. Although teachers agreed with both providing equal opportunity and sufficient time to students for answering the questions (M=3.03, 2.90; SD=.615, .662 respectively), during interview they mentioned that it's literally impossible to provide equal opportunities and sufficient time to all the students. Some teachers told that sometime they try to provide sufficient time to the students to answer the question but as class time is limited, they fail to do that always. Another teacher ScIT₆ said that, *Equal opportunities to the students for answering questions can be possible in 20-25 students classroom, not in our context where class size is so huge (60-70 students)*. Sufficient time allocation for answering is important for students to prepare the anticipated answers. However, teachers do not allow enough time so that students could think out and offered an answer (Black & Wiliam, 1998). It was also found from the existing study that teachers did not allow enough time for replying every question (Rahman & Ahmed, 2010). Therefore, students do not try to

think for responding the asked question, even if someone knows that the answer, or another question will come after a few seconds, the students do not try (Black & Wiliam, 1998). Most of the students keep them silent to avoid answering because they felt they would not able to provide answers as quickly as selected students could and as the teachers were expecting.

All the teachers (n=30, 100%) perceived that students should be assessed through self-assessment (M=3.37; SD=.490) and peer assessment technique (M=3.40; SD=.563). Maximum respondents also perceived that students should be assessed through problem solving or investigation work (n=28, 93.33%) and they should be kept active in assessment (n=26, 86.67%). Teachers agreed to assess students through problem solving approach and keeping them active in the assessment (M=3.30, SD=.535; M=3.17, SD=.648 respectively). During interview teachers told that they hardly use self and peer assessment technique in classroom as it's not very helpful in assessing students learning. Another teachers S_{BIT}7 told that *students try to cover up one another mistake in the classroom. So, their assessing themselves or others can be detrimental to students learning*. Four teachers mentioned that they have confusion about new techniques of assessment (self and peer assessment), so they follow traditional ways to assess students. Similarly, other researcher found that self and peer assessment practice was absent (Rahman & Ahmed, 2010) or very rare in the classroom of Bangladesh (Yasmin, 2012). But self-assessment as well as peer assessment is essential to learning (Black & Wiliam, 1998).

A large proportion of respondent perceived the necessity of both oral (n=21, 70%) and written (n=26, 86.67%) assessment approaches and so they agreed to assess students both orally and written form (M=2.87, 3.00; SD=.776, .525 respectively). But some (n= 9, 30%) teachers disagreed to assess students orally. During interview, all the teachers said that they always assess students orally. Teachers also mentioned that sometimes they assess students written work because checking answer script of all the students is very difficult in limited class time.

A large proportion of respondent perceived the necessity of both individual (n=22, 73.33%) and group work (n=28, 93.33%) assessment approaches so they agreed with both assessing students individually and as a group (M=2.93, 3.13; SD=.691, .571 respectively). During interview, all the teachers told that they like to assess students individually rather than as a group. Because group activity is very noisy and hard for teacher to control the class.

Most of the respondents expressed agreement with the idea that students lower order learning (n=28, 93.33%) and higher order learning (n=24, 80%) assessment is necessary in science classrooms (M=3.03 both, SD=.718, .615 respectively). During interview, most of the teachers told that assessing students higher order learning is more important than lower order learning but they don't always able to do that. One teachers S_{BIT}4 said that, *assessing students' higher order learning in science class is not so easy task. We need more facilities like teaching aid, lab and many more things to do that*. Similarly, other researchers examined that student higher order learning was almost ignored or rarely focused by teachers through classroom questioning (Ahsan, 2009; Rahman & Ahmed, 2010). Yasmin (2012) also found that most of the time teacher asked recall type

questions to the students. All assessment devices were knowledge-based questions, with other cognitive sub-domains left unexplored by teachers (Babu, 2016). Ahmed (2002) argued that students study science but they do not develop investigation or experimenting ability. There is a need to formulate deep learning through the classroom assessment of students.

So, overall although teacher perceives positive thinking about classroom assessment practice, they have many confusion and conflict about the idea of classroom assessment.

4.2.3 Classroom Feedback

Classroom feedback is one of the most important elements for students learning. According to Black and Wiliam (1998), feedback should be about the particular qualities of students work, with advice what they can do to improve, and should avoid comparisons with others.

Teachers possess favorable perception to (WM=2.93) to provide different types of feedback in different modes in the science classes such as oral descriptive and evaluative feedback, written descriptive and evaluative feedback. Teachers showed disagreement in negative evaluative feedback to the students.

Most of the teachers (n=29, 96.67%) perceived that students should be provided correct answer instead provoking/punishing in their failure (M=3.40; SD=.563). Maximum respondents (n=29, 96.67%) perceived that students should be explained where they have mistaken or how to do better (descriptive feedback) in both orally and written form. Teachers agreed with both providing oral and written descriptive feedback respectively (M=3.30, 3.33; SD=.651, .547). During interview, teachers told that they mainly provide oral feedback to the students. They also suggest that descriptive feedback is good for students but they don't get enough chance to give that in classroom assessment. One teacher S₀IT₈ mentioned that, *they usually give oral evaluative feedback to the students because it's very difficult to tell each student what their mistakes are and how they can do better*. Similarly, Ahmed et al. (2015) found that teachers provide feedback through mainly oral form. But Yasmin (2012) found that teachers provide both oral and written form of feedback.

Table 5: Teachers' classroom feedback

Statements	Percentage		Total	Mean (M)	SD	WM
	Disagree	Agree				
1. Students should be provided correct answer instead of provoking/punishing students in their failure.	3.33%	96.67%	100%	3.40	0.563	
2. Students should be provided oral descriptive feedback	3.33%	96.67%	100%	3.30	0.651	
3. Students should be provided positive evaluative feedback	46.67%	53.33%	100%	2.73	0.74	2.93
4. Students should be provided negative evaluative feedback	100%	0%	100%	1.83	0.379	

5. Students should be given written descriptive feedback	3.33%	96.67%	100%	3.33	0.547
6. Students should be given written evaluative feedback	13.33%	86.67%	100%	3.03	0.669

Note. SD= Standard deviation, WM= Weighted mean

Half of the teachers (n=16, 53.33%) agreed that students should be entitled as good or very good based on their performance (M=2.73; SD=.74) but at the same time nearly half of the teachers (n=14, 46.67%) disagreed with this statement. All the teachers (n=30, 100%) disagreed with entitling students as bad or very bad based on their performance (M=1.83; SD=.379). Most of the teachers told that students should not be punished for their mistakes. All the teachers mentioned that students should be praised when they can answer properly during the classroom assessment. In the existing study it was found that teachers generally practice evaluative feedback in the classroom (Rahman & Ahmed, 2010; Ahmed et al., 2015) and descriptive feedback was absent or rarely practiced in classrooms of Bangladesh (Ahsan, 2009; Yasmin, 2012). Feedback should be timely, goal oriented, task oriented and precise. It explores the existing learning in details as well as informs students the ways to achieve goals by fostering learning stage (Rahman & Ahmed, 2010; Ahmed et. al, 2015).

A large proportion of respondents perceive that students should be given only tick or cross marks on their written work (n= 26, 86.67%). Teachers agreed that Students should be given written evaluative feedback (M=3.03; SD=.669). Teachers told that they sometimes provide comment in the classwork and homework scripts of the students. Another teacher SEIT₉ told that, *I don't get enough time to check classwork and homework of students so I write A, B, C etc. grade as comments in their scripts.* Most of the time written feedback includes making comments using 'good', 'very good', putting 'cross/tick mark' on the answers (Yasmin, 2012). Yasmin also (2012) found that teachers have emphasized on grades and marks as practice of feedback. Right-wrong answer feedback focuses on product of students learning rather than learning process. Like grades and marks, right-wrong answer feedback switches students' concentration 'how good I am' (Sadler, 2013).

The overall outcomes of the study suggest that teachers are holding conflicting and multiple perceptions about the classroom assessment. In self-report teachers are holding views that support classroom assessment for learning but in practice they are using classroom assessment to support the summative purpose of assessment.

5. Recommendations

This study has contributed to the literature on classroom assessment of secondary science classes. The current study may contribute to a better understanding of the teachers' perception of classroom assessment activities. This study reveals that teachers' perception is not clear enough to make teacher practice what they perceive. So the training in educational assessment may prove to be necessary and this research can help

educational assessment community to reconsider its training module to focus on teachers particular needs. This study tried to explain teachers' perception of classroom assessment which would be helpful for teachers to know what they need to do in assessing students in science classes. That will be ultimately beneficial to the students learning as well. The teachers' who would like to change their assessment strategy according to their own perception and the students learning need, might find this study approachable to support their passion on the basis of applying classroom assessment activities for facilitating students science learning. This study shows that although teachers are aware of different types of classroom assessment, they don't have clear conception to use them effectively in the science classes. For the better learning of the students, teachers should be efficient about different strategies of classroom assessment. So, this study will help school authorities and policy makers to make any changes in helping teachers using different techniques of assessment more efficiently in secondary schools of Bangladesh.

On the basis of the findings and discussion of the results following recommendations are made to improve teachers' classroom assessment perception in Bangladesh.

- Teachers have a huge misconception about classroom assessment as they perceive it as summative assessment. So, Government should provide more training on conception of classroom assessment for teachers.
- For effective classroom assessment, our textbook should emphasize more on formative assessment so that teachers may use classroom assessment in an appropriate way.
- Class time and class size is a common problem for all the teachers. So, teachers need to learn how they can use different modern techniques of assessment like self and peer assessment, problem solving and investigation strategy more effectively in the classroom.
- Classroom leadership and managing quality is needed to control the class. So, professional development program should be planned to the aim of preparing secondary school teachers for the effective classroom assessment in Bangladesh.
- Teachers need to understand immediate and meaningful feedback system which will help students learning. So, teachers training institutions need to take necessary steps for ensuring quality education in the country.

The outcomes from this study suggest that there are other areas for further research. The researcher strongly believes that further researches are required to investigate the following issues:

- Further research is essential that would investigate the causes and factors that teacher's face when they practice teachers' classroom assessment as they perceive it.
- It is assumed that perception of classroom assessment will differ from one subject to another. The same research can be replicated with teachers of different subjects at primary level, secondary level and also for trainee teachers in different teachers' training college of our country.

- The current study is conducted with a small sample that belonged to Dhaka city secondary schools only. In addition, adding more teachers in the sample from rural and urban areas will allow the researcher an in depth understanding of teachers' perception and practice of classroom assessment.
- Further research may be conducted investigating whether age, gender, teaching experiences are influencing teachers' classroom assessment perception or not.
- Further research is a needed to explore the effects of classroom assessment on students learning at different level of our country.

6. Conclusion

Teachers' perception towards classroom assessment is found favorable but in many cases, they are still telling that they follow traditional approach of assessment. Teachers still doesn't aware that classroom assessment is one kind of formative assessment, not summative assessment. Teachers are not very comfortable to use the new assessment techniques such as self-assessment and peer assessment in their science teaching. Teachers perceive to provide more evaluative feedback rather than descriptive feedback to the students. From the overall discussion, it can be concluded that teachers' misconception of classroom assessment is occurring due to their unwillingness of using new assessment strategy, burden of extra work load, short duration of class time, large class size and lacking of school authority. To overcome teachers' misconceptions about classroom assessment we need to focus on in service training program, relevant changes in curriculum and text book as well as changing teaching learning methods. As Bangladesh have been investing huge amount of money to bring changes in secondary education, we hope that ministry of education will frame policies and implement practices considering teachers perception about classroom assessment so that they reform our assessment system.

Acknowledgements

All praise to **Allah**, the Most Beneficent and the Most Merciful. First of all, I state my deep sense of gratefulness to my honorable supervisor Professor Hosne Ara Begum, Dept. of Educational Evaluation and Research, under whose sincere guidance, supervision and support I have been able to complete this study. I am grateful to Associate Professor Mr. Shah Shamim Ahmed, Chairperson, Dept. of Educational Evaluation and Research, who not only provided numerous opportunities for growth, unwavering support and critical feedback in my work but facilitated and prepared me for variety of life changes and challenges. This study would not have been possible without the significant contributions of my wife Monira Akter Mowsumi. I wish to express my appreciation for the help in data collection, raw data analysis, motivation and support provided by her.

About author



Md. Mehadi Rahman holds M. Ed in Educational Evaluation and Research by Institute of Education and Research (IER), University of Dhaka, Bangladesh. He achieved CGPA 3.99 out of 4 (1st position) in B. Ed (Honors) in Science Education from IER, University of Dhaka. His research interests include classroom assessment, secondary education, and science teaching-learning and different conflicting issues of education. He is currently working as Executive, Product & Course Development in Light of Hope Company. He has other publications in the area of classroom assessment. His one of the published research title is, "Teachers' Perceptions and Practices of Classroom Assessment in Secondary School Science Classes in Bangladesh" <https://doi.org/10.21275/ART20183034>.

References

1. Adams, T. L., & Hsu, J. W. Y. (1998). Classroom assessment: Teachers' conceptions and practices in mathematics. *School Science and Mathematics*, 98, 174–180. doi:10.1111/j.1949-8594.1998.tb17413.x
2. Ahmed, S. S. (2002). *The Effects of Public Examination on the Process of Students' Learning*. Unpublished masters' thesis, Institute of Education and Research, University of Dhaka, Bangladesh.
3. Ahmed, S. S., Islam, M. S., & Salahuddin, M. (2015). Classroom Assessment Practices in Urban Secondary Science Classes in Bangladesh. *NAEM Journal*, 10(19), 32-42.
4. Ahsan, S. (2009). Classroom Assessment Culture in Secondary Schools of Dhaka City. *Teacher's World*, Vol. 33-34, 231-244.
5. Azim, F., & Ahmed, S. S. (2010). Exploring Mathematics Teachers' Beliefs in Secondary Schools of Bangladesh. *Teacher's World*, Vol 35-36, 41-53.
6. Babu, R. (2016). Teaching Science in Bangladesh: Expectation versus Reality. *Journal of Education and Learning*, 10(3), 244-254.
7. Barnes, N., Fives, H., & Dacey, C. M. (2015). Teachers' Beliefs about Assessment. In H. Fives & M. G. Gill (Eds.), *International Handbook of Research on Teachers' Beliefs* (1st ed., pp. 284-300). New York: Routledge.
8. Black, P., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, 80 (2), 139–149. <https://doi.org/10.1177/003172171009200119>

9. Brown, S. (2004). Assessment for Learning. *Learning and Teaching in Higher Education*, 1, pp. 81-89.
10. Brown, G. T. L. (2004). Teachers' conceptions of assessment: implications for policy and professional development. *Assessment in Education*, 11(3), 301-318.
11. Brown, G. T. L. (2008). Conceptions of assessment: Understanding what assessment means to teachers and students. New York: Nova Science Publishers.
12. Chester, C., & Quilter, S.M. (1998). Inservice teachers' perceptions of educational assessment. *Journal for Research in mathematics Education*, 33(2), 210-236.
13. Danielson, C. (2008). Assessment for learning: for teachers as well as students. In C. A. Dwyer (Ed.), *The future of assessment: Shaping teaching and learning*, New York: Taylor & Francis, pp. 191-213
14. Delandshere, G., & Jones, J. H. (1999). Elementary teachers' beliefs about assessment in mathematics: A case of assessment paralysis. *Journal of Curriculum and Supervision*, 14(3), 216-240.
15. Fennema, E., & Romberg, T.A. (1999). *Mathematics classrooms that promote understanding*. New Jersey: Lawrence Erlbaum Associates.
16. Frey, B. B., & Schmitt, V. L. (2010). Teachers' classroom assessment practices. *Middle Grades Research Journal*, 5(3), 107-117.
17. Graham, P. (2005). Classroom-based assessment: Changing knowledge and practice through preservice teacher education. *Teaching and Teacher Education*, 21, 607–621. doi:10.1016/j.tate.2005.05.001
18. Grela, G. (2013). Does weighted average really work? SERVQUAL: review, critique, research agenda. *European Journal of Marketing*, 30(1), 8-32.
19. Hackling, M. W. (2005). *Working Scientifically: Implementing and Assessing open investigation work in science*. Department of Education & Training, Edith Cowan University, Western Australia. Retrieved December 02, 2016, from <http://www.rhodes.aegean.gr/ptde/labs/labfe/downloads/articles/workingscientifically.pdf>
20. Jarrett, M. G. (2016). *Teachers' Perceptions of Assessment Practices in Mathematics: Comparing Rural and Urban Secondary Schools in England*. Unpublished Doctoral Dissertations, Liberty University, Lynchburg, Virginia. Retrieved July 7, 2017, from <http://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=2317&context=doctoral>
21. James, M., & Pedder, D. (2006). Beyond method: assessment and learning practices and values. *The Curriculum Journal*, 17(2), 109 – 138. DOI: 10.1080/09585170600792712
22. Jia, Y. (2004). *English as a second language teacher's perceptions and use of classroom based reading assessment*. Unpublished doctoral thesis, Texas A&M University, USA. Retrieved from December 30, 2016, from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.117.2184&rep=rep1&type=pdf>

23. Johnson, K. E. (1994). Teaching and teacher education: The emerging beliefs and instructional practices of pre-service English as a second language teachers. *English Teaching Forum*, 10(4), 439-452.
24. Jony, M. S. (2015). Influence of Assessment Process on Students Higher Order Learning in Science Subjects in Bangladesh. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 5(6), 41-51. DOI: 10.9790/7388-05614151
25. Lafontana, K. M., & Cillessen, A. H. N., (2002). Children's perceptions of popular and unpopular peers: A multi method assessment. *Developmental Psychology*, 8(5), 635 – 647. DOI: 10.1037//0012-1649.38.5.635
26. Miller, M. D., Linn, R. L., & Gronlund, N. E. (2009). *Measurement and Assessment in Teaching* (10th ed.). Pearson. Upper Saddle River N.J.: Merrill Pearson Education International.
27. Munhall, P. L. (2008). Perception. In Given, L. M. (Eds.), *The SAGE Encyclopedia of Qualitative Research Methods* (Vol. 1 & 2, pp. 607-608). Thousand Oaks: SAGE Online.
28. Mussawy, S. A. J. (2009). *Assessment Practices: Student's and Teachers' Perceptions of Classroom Assessment*. University of Massachusetts, Amherst. Retrieved November 22, 2016, from http://scholarworks.umass.edu/cie_capstones/9/
29. Ndalichako, J. L. (2015). Secondary School Teachers' Perceptions of Assessment. *International Journal of Information and Education Technology*, 5(5), 326-330. DOI: 10.7763/IJIET.2015.V5.524
30. Nga, N. T. T. (2009). *Teachers Beliefs about Teaching Reading Strategies and their Classroom Practices: A Case Study of Viet Ba High School*. Vietnam National University, Vietnam. Retrieved December 30, 2016 from <http://www.asian-efl-journal.com/Thesis-N-Nga.pdf>
31. Nenty, H. J., Adedoyin, O. O., Odili, J. N., & Major, T. E. (2007). Primary Teacher's Perceptions of Classroom Assessment Practices as Means of Providing Quality Primary/basic Education by Botswana and Nigeria. *Educational Research and Review*, 2 (4), 74-81.
32. Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332. DOI: 10.3102/00346543062003307
33. Putnam, J., & Duffy, G. (1984). *A descriptive study of the pre-active and interactive decision making of an expert classroom teacher*. Research Series No. 148. Institute for Research on Teaching, East Lansing, MI: Michigan State University. Retrieved December 30, 2016, from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.923.5680&rep=rep1&type=pdf>
34. Rahman, M. M., & Ahmed, S. S. (2010). Classroom Assessment and Student Learning: An Exploration of Secondary School Teacher Practices. *NAEM Journal*, 5(10), 32-44.

35. Sadler, D. R. (2013). Opening up feedback: Teaching learners to see. In Merry, S., Price, M., Carless, D., & Taras, M. (Eds.). *Re-conceptualizing Feedback in Higher Education: developing dialogue with students*, (Ch. 5, 54-63). London: Routledge.
36. Saha, R. K. (2011). *Classroom Assessment: Teachers' Perceptions and Practices in Mathematics at the junior secondary level*. Unpublished masters' thesis, Institute of Education and Research, University of Dhaka, Bangladesh.
37. Susuwele-Banda, W. J. (2005). *Classroom Assessment in Malawi: Teachers' Perceptions and Practices in Mathematics*. Unpublished doctoral dissertation, Virginia Polytechnic Institute, State University, Virginia. Retrieved November 22, 2016, from https://theses.lib.vt.edu/theses/available/etd-02212005-131851/unrestricted/wjs_b_dissertation_JAN2005.pdf
38. Stiggins, R. J. (2010). Conquering the formative assessment frontier. In J. H. McMillan (Ed.), *Formative classroom assessment*, New York, NY: Teachers College, Columbia University, pp. 8-28.
39. Tarana, K. N. (2011). *Exploring the Perception of Assessment: What Assessment Means to Teachers' and Students' in Secondary School*. Unpublished masters' thesis, Institute of Education and Research, University of Dhaka, Bangladesh.
40. Thompson, A. G. (1992). Teachers' beliefs and conceptions: A synthesis of the research. In D. A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning*, New York: Macmillan, pp. 127-146.
41. Torrance, H. (2007). Assessment as learning? How the use of explicit learning objectives, assessment criteria and feedback in post-secondary education and training can come to dominate learning. *Assessment in Education*, 14(3), 281-294.
42. Wang, J.-R., Kao, H.-L., & Lin, S.-W. (2010). Preservice teachers' initial conceptions about assessment of science learning: The coherence with their views of learning science. *Teaching and Teacher Education*, 26(3), 522-529. doi:10.1016/j.tate.2009.06.014
43. Yao, Y. (2015). Teachers Perceptions of Classroom Assessment: A focus group interview. *SRATE Journal*, 24(2), 51-58.
44. Yasmin, N. (2012). *Exploring Secondary School Teachers' Attitude towards Classroom Assessment and its Implications for Students' Learning*. Unpublished masters' thesis, Institute of Education and Research, University of Dhaka, Bangladesh.
45. Zacharos, K., Koliopoulos, D., Dokimaki, M., & Kassoumi, H. (2007). Views of prospective early childhood education teachers, towards mathematics and its instruction. *European Journal of Teacher Education*, 30(3), 305-318. DOI: 10.1080/02619760701486134
46. Zhang, Z., & Burry-Stock, J. A. (2003). Classroom Assessment Practices and Teachers' Self-Perceived Assessment Skills. *Applied Measurement in Education*, 16(4), 323-342.

Md. Mehadi Rahman
EXPLORING SCIENCE TEACHERS' PERCEPTION OF CLASSROOM ASSESSMENT
IN SECONDARY SCHOOLS OF BANGLADESH

Creative Commons licensing terms

Authors will retain the copyright of their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Physical Education and Sport Science shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflict of interests, copyright violations and inappropriate or inaccurate use of any kind content related or integrated on the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).