

Exploring Primary School Teachers' Conceptions of "Assessment for Learning"

Rosdinah Abdul Rashid¹ & Jainatul Halida Jaidin²

¹ Dato Othman Primary School, Ministry of Education, Bandar Seri Begawan, Brunei Darussalam

² Sultan Hassanah Bolkiah Institute of Education, Universiti Brunei Darussalam, Bandar Seri Begawan, Brunei Darussalam

Correspondence: Jainatul Halida Jaidin, Sultan Hassanah Bolkiah Institute of Education, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong BE 1410, Bandar Seri Begawan, Brunei Darussalam. Tel: 673-246-3001. E-mail: halida.jaidin@ubd.edu.bn

Received: June 9, 2014 Accepted: July 21, 2014 Online Published: August 17, 2014

doi:10.5539/ies.v7n9p69

URL: <http://dx.doi.org/10.5539/ies.v7n9p69>

Abstract

This paper presents primary school teachers' conceptions of 'assessment for learning' in government schools in Brunei Darussalam. The Ministry of Education in Brunei introduced a 21st century education system (codenamed SPN21) in 2007 and one of the initiatives brought by SPN21 was the implementation of School Based Assessment for Learning (SBAfL). Prior to SBAfL, assessment in primary government schools was highly examination oriented, which placed a great emphasis on 'assessment of learning' rather than 'assessment for learning'. The current study sought to explore teachers' experiences in implementing SBAfL in government primary schools in Brunei. A qualitative approach to research using phenomenographic methodology was applied to provide in-depth insights into the ways in which these teachers applied assessment for learning in their lessons, having been teaching for many years in an education system that was highly examination oriented. Semi-structured in-depth interviews were used as the main data collection instrument. Interviews were transcribed verbatim and analysed to form categories of description depicting the qualitatively different ways in which these teachers experienced assessment for learning (SBAfL). A total of four categories of description emerged from the data analysis, and the findings suggest variations in the ways in which assessment for learning is conceptualised by the teachers, which in turn, may affect the effective implementation of SBAfL in promoting a 21st century education system in Brunei.

Keywords: assessment for learning, phenomenography, primary education, teachers' conceptions

1. Introduction

1.1 Background of the Study

In order to understand the context within which this study takes place, this section outlines a brief discussion on Brunei's education system to set the background of the study. The education system for the 21st century (SPN21) was launched in 2009, aimed at equipping students with 21st century skills, and in so doing, for Brunei to meet the social and economic challenges in the 21st century (Ministry of Education, 2013). One of the reasons for introducing a 21st century education system was the need to align educational practices with a newly introduced Brunei Vision 2035, that states, Brunei Darussalam will be recognized everywhere for: (i) the accomplishment of its well-educated and highly skilled people; (ii) the quality of life; and (iii) the dynamic and sustainable economy (BEDB, 2014). The Brunei Economic Development Board or BEDB in short (2014) suggests that an education strategy that will prepare youth for employment and achievement in a world that is increasingly competitive and knowledge-based will help the nation achieve Brunei Vision 2035.

One of the changes that took place after the implementation of SPN21 was the launch of a new initiative called the School Based Assessment for Learning (SBAfL). The new assessment for learning is regarded as part of a new education system that features 21st century classroom practices. According to the Ministry of Education (2011), in SBAfL, assessment is integrated with teaching and learning, providing opportunities for students to evaluate their own learning and identify ways in which they could improve by obtaining feedback from teachers and peers. It is a form of formative assessment that focuses on individual student's development and

performance through constructive feedback. The Ministry of Education organized several workshops to provide professional development opportunities for teachers to have a better understanding of SBAfL and its effective implementation in various subject areas. The teachers involved in this study were involved in at least one of the workshops facilitated by the Ministry of Education. Teachers from a total of 21 government primary schools were involved in at least one of the workshops on SBAfL.

The current study focuses on exploring a group of teachers' conceptions of assessment for learning or SBAfL. Since the implementation of SBAfL, there has been very little attempt to examine the extent to which teachers understand what assessment for learning means in the context of Brunei, which in turn may affect its effective implementation in schools. Yatab and Shahrill (2014a, 2014b) on the other hand, conducted a small-scale study eliciting the views of teachers and students in the use of the Brunei Common Assessment Tasks (or BCATs) for the lower secondary Science subject. The BCATs was one of the assessment instruments used in SBAfL. From their study, they found that although students have positive perceptions towards BCATs, the Science teachers perceived them as insignificant. The teachers' perceived insignificance was mainly due to limited time frame allocated to complete the syllabus for a particular Science topic and the pressure of examinations.

The education system prior to SPN21 was highly examination oriented where teaching and learning practices were mainly aimed at scoring high marks and good grades in public examinations (Mundia, 2010a, 2010b, 2012; Pungut & Shahrill, 2014; Salam & Shahrill, 2014; Sarwadi & Shahrill, 2014; Shahrill, 2009; Shahrill & Clarke, 2014; Yatab & Shahrill, 2014a, 2014b). Indeed, the teaching and learning settings in Brunei have been described as predominantly didactic, traditional and teacher-centred (Attwood & Bray, 1989; Charleston, 1998; Hamid et al., 2013; Mahadi & Shahrill, 2014; Matzin et al., 2013; Morni, 2001; Nor & Shahrill, 2014; Omar et al., 2014; Scott & Fisher, 2002; Shahrill, 2009; Shahrill et al., 2013; Taha, 1997; Wahid & Shahrill, 2014). In a study on *The Impact of an In-Service Course for Primary Teachers in Brunei*, Scott and Fisher (2002) observed that children were mostly required to listen to their teachers' explanations and copy notes from the board. Teachers in Brunei, according to Scott and Fisher (2002) were the 'unquestioned authoritarian purveyors of accepted knowledge' (p. 3). Classrooms were commonly characterised by passive student activities, lacking 'minds-on' or expressive activities, with little development of thinking or communicative skills (Scott & Fisher, 2002).

At the preschool level, Morni (2001) observed that the children's curricular activities were dominated by formal work such as choral drills, repetitious copying, and worksheets. Activities such as play were considered unimportant and suitable only for leisure and fun (Morni, 2001). Attwood and Bray (1989), in a sociological study of Brunei and its education system, assert that teaching methods were typically book-based. Expatriate teachers from the Centre for British Teachers (CfBT) in Brunei have also noted that children are used to being firmly and clearly directed (Centre for British Teachers, 2006). Furthermore, in a phenomenographic study on children's conceptions of learning in Brunei, Jaidin (2009) noted three qualitatively different ways in which children experienced learning in Brunei, namely: (i) learning as acquiring information; (ii) learning as remembering information; and (iii) learning as doing hands-on activities. In other words, learning was mostly geared towards gaining more knowledge, remembering information to pass examinations and doing hands-on activities. There was no evidence in Jaidin's (2009) study to indicate that the children practiced self-assessment to evaluate their own learning performances.

The introduction of SBAfL necessitated a significant change in the ways in which teaching and learning were practiced in Brunei. The implication of traditional classroom practices in Brunei makes it important to explore teachers' conceptions of assessment for learning, as we need to learn and enhance further to more empirical researches in this area in Brunei. It has been argued that the conceptions held by teachers are powerful in shaping the quality of instruction (Brown, 2004). The findings of this study, therefore, has the potential to inform stakeholders about the ways in which teachers conceptualise assessment for learning and how these conceptions affect the implementation of SBAfL in their lessons.

1.2 Significance of the Study

Researchers such as Calderhead (1996), Clark and Peterson (1986), Pajares (1992), and Thompson (1992) argued that the study of teachers' conceptions of assessment is important because evidence exists to suggest that teachers' conceptions of teaching, learning and curricula have strong influences on how they teach and what students learn. The categories of description depicting the qualitatively different ways in which teachers experienced assessment for learning will provide valuable insights into how SBAfL can be implemented effectively, which in turn may promote better quality of instructions to support SPN21 in Brunei. Accordingly, this study will provide valuable information on the extent to which a group of primary school teachers have incorporated assessment for learning in their instructions. Such information could be used as a basis for further

steps of improvement in SBAfL.

The following research question guides the discourse of this study: *What are the qualitatively different ways in which assessment for learning (SBAfL) is understood and implemented by a group of teachers in government primary schools in Brunei?*

A review of relevant literatures on assessment for learning as a form of formative assessment and teachers' conceptions of formative assessment is presented next. This paper uses the terms SBAfL, assessment for learning and formative assessment interchangeably to describe the emphasis on continuous assessment to improve the development of learning in a 21st century education system.

1.3 Assessment for Learning: Making the Case for Formative Assessment

Formative assessment is defined as a systematic process to continuously gather evidence and provide feedback about learning while instruction is under way (CERI, 2008). Formative assessment can therefore be considered as a diagnostic method of assessing teaching and learning as it provides a platform for teachers and students to give and receive feedback before and during lessons. Formative assessment also allows teachers to monitor and guide students' performance over time in multiple problem-solving situations. Summative assessment, on the other hand, takes place after a period of instruction and requires making a judgment about the learning that occurred for example scoring a topical test or grading a monthly test paper.

Scholars generally agree that formative assessment is the process of using information about students' learning on the course of instruction to make decisions to improve learning (see for example, Atkin et al., 2001; Black, 1993; Black et al., 2003; Black & Wiliam, 2004; Bell & Cowie, 2001; Harlen et al., 1992; Harlen & James, 1996; Shepard, 2000). How the process of formative assessment is conceptualised and implemented by teachers is varied accordingly, but all of the recently mentioned scholars agree that regular testing and simply informing students of their scores do not constitute formative assessment. Instead, according to Black et al. (2004), the evidence of student understanding (and learning) as a result of one round of the formative assessment process should be used to adapt the teaching work to meet learning needs.

Reviews of research by Crooks (1988) have demonstrated that substantial learning gains are possible when teachers introduce formative assessment into their classroom practices. When teachers know how students are progressing and where they are having trouble, such information can be used to make necessary instructional adjustments, such as reteach, trying alternative instructional approaches, or offering more opportunities for practice. An essential feature of formative assessment is feedback. Black (1993) considers an assessment as formative when it provides feedback to students and teachers about the learning that is occurring, during the teaching and learning, not after the learning ends. Other researchers such as Clarke (2005) also agreed that feedback is seen to be the fundamental aspect of formative assessment interaction for the purpose to support learning. The main purpose of formative assessment as mentioned by McManus (2008) is to provide evidence that can be used by teachers and students to inform instructions and learning during the process of teaching and learning.

Sharkey and Murnane (2006) proposed that successful implementation of a formative assessment system requires a school culture that embraces the idea that achievement of all students is the responsibility of the whole teaching staff and that success depends on continued learning. Assessment needs to occur throughout instruction, and students are provided with more than one opportunity to learn and to demonstrate success. In addition, researchers such as Black and Wiliam (1998) argued that formative assessment has the potential to improve learning. They noted that,

The gains in achievement appear to be quite considerable and as noted earlier, among the largest ever reported in educational interventions. As an illustration of just how big these gains are, an effect size of 0.7, if it could be achieved on a nationwide scale, would be equivalent to raising the mathematics attainment score of an 'average' country like England, New Zealand or the United States into the 'top five' after the Pacific Rim countries of Singapore, Korea, Japan and Hong Kong (Black & Wiliam, 1998, p. 61).

With the implementation of SBAfL in government primary schools in Brunei, it was anticipated that all teachers embraced the idea of continuous assessment for learning providing a learning environment conducive for student learning. Assessment for learning as a form of formative assessment can therefore be argued as an essential part of the instructional process in a 21st century education system. When incorporated into classroom practices, it provides the information needed to adjust teaching and learning while they are happening. However, transitioning from an education system that values exam results to an education system that promotes continuous

assessment may have been challenging to most teachers in Brunei.

1.4 Teachers' Conceptions of Formative Assessment

In a study that explored teachers' conceptions of formative assessment, McManus (2008) focused on the issues of student efficiency and teachers' view in the mathematics classroom. A grounded theory approach was used to analyse data derived from teachers implementing formative assessment in the age of high stakes testing. Based on the analysis of the study, the following themes emerged from the data: (i) dialogic versus univocal discourse; (ii) collaboration and power; (iii) comments versus right or wrong; (iv) trying something new versus keeping with the status quo; (v) student-developed versus teacher-developed criteria; and (vi) peer- and self-assessment versus teacher assessment (McManus, 2008). Based on the findings of the study, McManus (2008) suggests that formative assessment can be used to increase students' motivation and attitudes towards learning with the presence of three essential elements, namely: (i) teachers must have a high level of content and pedagogical knowledge; (ii) the classroom environment must be an open and trusting environment where students are partners in learning process; and finally, (iii) discourse about the subject content must be dialogic.

This study seeks to explore the conceptions of formative assessment held by a group of teachers in several government primary schools in Brunei. Studies investigating the qualitatively different ways in which a phenomenon is experienced by a group of people typically use phenomenography as a research methodology. A discussion on phenomenography is presented next to provide a justification on its use to address the research question of this study.

2. Research Methodology: Phenomenography

Phenomenography emerged as a new approach to research in the 1970s. It was primarily developed by educational researchers in Sweden (Marton, 1986) as a research specialisation that aims to map the qualitatively different ways in which people experience, conceptualise, perceive and understand various aspect of, and various phenomena in, the world around them (Marton, 1986). Indeed, there are various ways in which people experience or understand a given phenomenon because different people experience a phenomenon in different ways and phenomenographers seek to identify the multiple conceptions that people have for a particular phenomenon.

2.1 Research Design

Phenomenography is an empirical research methodology, in which the researcher or interviewer is not studying his or her own awareness and reflection, but awareness and reflection of the subjects or participants (Orgill, 2002). The main source of data for phenomenography is the semi-structured interviews that are conducted to obtain data from a group of people participating in the study. A number of key questions are used in order to set the theme of the interview and make sure all members of the sample population are discussing the same phenomenon (Stamouli, 2007). The interview is then transcribed verbatim. The data obtained will be read repeatedly and grouped according to the different ways in which people experience the phenomenon. Initially the transcripts are seen as a whole and within the context of a particular subject. Then the interview excerpts that are relevant to an understanding are de-contextualised and compared to each other. The excerpts are grouped and regrouped as the researcher analyses and compares the quotations, until the data remain in a stable condition and the outcome space is formulated (Stamouli, 2007). The current study used the aforementioned steps to collect and analyse data that resulted in an outcome space depicting the qualitatively different ways in which formative assessment is understood and implemented by a group of teachers in Brunei.

2.2 Participants of the Study

A total of fifteen teachers were purposively selected from several government primary schools in Brunei as the participants of this study. These participants are those who have attended SBAfL workshops conducted by the Ministry of Education. As suggested by Trigwell (2000), the ideal number of interviews in phenomenographic research rests between fifteen to twenty participants.

This study is not focused only on one subject area, which means, each of the participants was teaching different subject areas. Most of them taught core subjects such as Mathematics, English Language, Bahasa Melayu, Science and Melayu Islam Beraja. The remaining participants taught other subjects such as Islamic Religious Knowledge, Art and Design, Social Studies and Physical Education.

2.3 Data Collection: Semi-Structured Interviews

A series of semi-structured interviews was conducted to obtain rich data from fifteen participants in the study. All interviews were audiotaped and transcribed verbatim, making the transcripts the focus of the analysis.

Interviewing is the most common method for collecting data in phenomenography (Marton, 1986; Walsh, 2000). According to Walker (1998), phenomenography focuses on the limited possible ways of experiencing a given phenomenon across a group of individuals. The result is a compilation of categories of description, which expresses the variation. As such, it is necessary to reach a balance between depth of description and breadth of experience among a group of individuals.

Phenomenographic studies strive to discover the different ways in which people understand or experience a certain phenomenon. Although many possible sources of information can reveal a persons' understanding or conception of a particular phenomenon, the method of discovery is usually an open, deep interview (Marton & Booth, 1997). A phenomenographic interview is to enable the teachers to reflect over the experience of a phenomenon. According to Bowden (1996), in order to obtain the required data, a researcher and participants need to establish a 'shared definition' of the phenomenon under discussion.

3. Findings of the Study

A total of four categories of descriptions to describe the qualitatively different ways in which the teachers experienced assessment for learning (SBAfL) in government primary schools in Brunei emerged from the data. Each category of description represents the teachers' conceptions of assessment for learning. Based on the data of this study, assessment for learning (SBAfL) is understood and experienced by the teachers as:

- 1) Students playing an active role in learning.
- 2) Making lesson objectives explicit and transparent to students.
- 3) A tool to continuously assess the students' understanding during lesson.
- 4) A directive from the authority.

3.1 Students Playing an Active Role in Learning

Prince (2004) defined 'active learning' as any instructional method that engages students in the learning process. It is also known as a student-centred approach. In active learning, teachers act as facilitators rather than the only one to provide information. The presentation of facts, often introduced through straight lecture, is less emphasised in favour of class discussion, problem solving, cooperative learning, and writing exercises that are both graded and ungraded. The following excerpt from Chickering and Gamson (1987) illustrates this point further.

Learning is not a spectator sport. Students do not learn much just by sitting in class listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, apply it to their daily lives. They must make what they learn part of themselves (p. 3).

In this study, the participants often make associations between assessment for learning and active learning, in which students play an active role in learning. Out of fifteen participants interviewed, eight of them mentioned SBAfL as an opportunity for students 'speak up in class', to do 'presentations' and to 'give feedback to their friends', which indicate a more student-centric type of teaching and learning. The participants acknowledged that a teacher's responsibility is to provide opportunities for students to play an active role in learning. Below are some examples of excerpts to illustrate this category of description:

"SBAfL is all about focusing on the students. What we usually did [before SBAfL] was to focus on the children's grades, and then after attending workshops on SBAfL, we were made to reflect on our teaching and made changes to improve the students' learning." (Teacher A)

"SBAfL is a student-centred learning and most of the time is spent on providing opportunities for students to speak up in class ..." (Teacher B)

"SBAfL more student-centred; the students give ideas and feedback to their friends' presentations." (Teacher C)

The participants also mentioned that SBAfL provides an avenue for teachers to give feedback on the students' performance during each lesson. Giving feedback is an element of assessment for learning as it helps to show the students where they are on their path to attaining the intended learning outcome. Shute (2008) suggested that appropriate descriptive feedback should be linked to the learning goal and criteria for success with elaboration. The elaborate component of feedback should be detailed and specific to how the student can improve the learning but not too complex. Below are examples of excerpts to illustrate this point.

"I encourage the childrento discover the knowledge themselves and discover the mistakes themselves,

and try to figure out the solution by themselves.” (Teacher D)

“When the children make mistakes, teachers need to give feedback on the spot.” (Teacher E)

“...SBAfL requires us to give immediate feedback as well. If we let the students know about what they need to correct during the lesson, then the students will be able to understand the concepts that they’re learning.” (Teacher F)

“Workshops on SBAfL trained us to give constructive comments as feedback on the children’s work in order to help them improve.” (Teacher G)

“Whatever the children’s answers are, we give them some feedback and if there is something that needs to be improved then we provide them with guidelines on how to make the corrections.” (Teacher H)

3.2 Making Lesson Objectives Explicit and Transparent to Students

Ideally, teachers should have a clear idea of what the learning objectives are before teaching a lesson. Teachers need to specifically mention what students should be able to do and understand as a result of the teaching process. Teachers also need to know what success criteria of performance are to be expected and teachers need to inform the students about the standard of performance required in order to meet the learning objectives. This is because the teachers’ role is not only to assess but also to give guidance to the students enabling them to improve their performances in class.

In this category of description, assessment for learning or SBAfL is experienced as a way of making the lesson objectives explicit to the students. The participants in this study mentioned that they would tell the students what they are expected to achieve during and at the end of the lesson. Making lesson objectives explicit is an important feature of SBAfL. This particular category of description is more focused on the teachers’ attempt to give a clearer picture on what students should learn and what they will be able to achieve during and at the end of the lesson. Prior to the implementation of SBAfL, some teachers in the study mentioned that the lesson objectives were never shared with students in the process of teaching and learning. Some examples of excerpts to illustrate this category of description are presented below.

“...We let the students know about the learning objectives, which means that they must know what they are going to learn and what they must achieve during the lesson.”(Teacher I)

“The interesting part of SBAfL is we get to introduce the learning objectives and the success criteria before we start our lesson. We are being transparent with the children, we want them to learn, and make explicit what they should know.” (Teacher J)

“In SBAfL there is an introduction of learning objectives in the lesson. Prior to the implementation of SBAfL, there was no such thing, the lesson objectives were only stated in our lesson plans and not shared with the students.” (Teacher K)

“Learning objectives are important. It helps the students to focus on what they are supposed to learn for that day.” (Teacher L)

Learning objectives for a lesson as defined by the Assessment Reform Group (2002a; 2002b) is a statement that describes clearly what the teacher wants the student to know, understand and be able to do in a lesson. Prior to the introduction of SBAfL, learning objectives are only used as a teacher’s references in their lesson plans, not to be shared with the students. Only the teacher knows why the students are engaged in the particular activity, but the students are not always able to differentiate between the activity and the learning that is meant to take place. Likewise, success criteria are intended to guide student learning (Heritage, 2007), providing a framework within which assessment for learning exists and makes possible the interpretation of evidence (Clarke, 2005). Good success criteria make the learning explicit and transparent for students and teachers alike. Glasson (2008) claimed that for lengthy assessment tasks, however, teachers often use rubrics, which will provide students with the success criteria and also with descriptions of a number of different levels of performance in relation to those criteria. As argued by Hattie (2012), “the teacher decides the learning intentions and success criteria, makes them transparent to the students, demonstrates them by modelling, evaluates if they understand what they have been told by checking for understanding, and re-telling them what they have told by tying it all together with closure” (p. 119).

Most of the participants in this study agreed that this particular feature of SBAfL is very interesting and important as they get the students to focus on what needs to be achieved during the lesson and this leads to a student-centric approach of learning. As such, students are encouraged to take ownership of their own learning

processes.

3.3 A Tool to Continuously Assess the Students' Understanding during Lessons

In this category of description, SBAfL is understood by the teachers as a tool to check students' understanding during the learning process. As such, SBAfL is used as a tool to provide teachers with useful information about students' progress in learning and make changes to teaching and learning during the lesson. It also serves as a guide that teachers can use in making decisions about future instructions or giving space for improvements and as a way to fill in the gap that occurred in the lesson. Questioning, presentations, observations and discussions are some examples of activities suggested by Earl and Katz (2006) that can be used during the formative assessment process with intentions to collect evidence of student learning. Moreover, the way a teacher uses questions during classroom teaching could also be a source of motivation in learning (Salam & Shahrill, 2014; Shahrill & Clarke, 2014; Shahrill & Munda, 2014; Shahrill, 2009; 2013a, 2013b).

Some examples of excerpts to illustrate this category of description are given below.

"I understand that SBAfL requires us to continuously monitor and assess the children's progress in learning. For example, one of the activities that I do with my students is 'spelling bee'. I usually give them thirty words. I noticed during previous spelling bee sessions, some students only managed to get six out of thirty. These were the students who needed more help. After a while, they managed to get eleven out of thirty, and soon after they managed to score up to thirteen out of thirty. It might not be that high, but they have shown some progress. So we can see their progress continuously happening." (Teacher M)

"SBAfL is a kind of assessment that we do continuously and for a long term. Long term here means that we need to monitor the students' progress from time to time. Most of the time, we give them projects and get them to discuss things and do presentations. Sometimes it is up to the students to assess their own work." (Teacher N)

"Let's say during the first term, this child is not quite engaged, not responding to questions, and because of this I spent more time with her, gave her some feedback, gave her some time to practice the necessary skills that she needed, and after a while we began to see a bit of improvement." (Teacher O)

In this particular category of description, there were instances that indicated confusion about what constitutes as formative assessment and what does not. Some participants were not sure whether formative assessment is a formal or informal type of assessment. This was an expected outcome as a majority of the participants are experienced teachers who have been teaching and preparing their students to score high marks and grades in public examinations. Some examples of excerpts to illustrate this point are as follows.

"I usually assess them in an informal way..." (Teacher P)

"Formative assessment is an informal assessment. It is only given at a certain time, not necessarily in every lesson. For example I teach them a topic from week one until week three, then I give them a written assessment." (Teacher Q)

"SBAfL, I think, is an informal kind of learning, it is on the spot kind of learning..." (Teacher R)

"From my own understanding, formative assessment is informal learning. During the lesson, you are assessing the children by questioning them, monitoring how they perform in quizzes, it is definitely not the one that is formal like exams or tests." (Teacher S)

"My understanding of formative assessment is that it is formal, like tests and exams." (Teacher T)

"Formative? Is it like topical tests? I forgot. I am not sure either it is summative or formative. We have been briefed about these already, but I am confused, is formative an exam oriented or summative is the one? If in class, I will do topical tests after a topic is covered. From the results, I would then be able to identify those who have understood the lesson or not." (Teacher U)

"I usually give assessment at the end of the topic, after I have finished one topic, then I assess them." (Teacher V)

"In one month, I think, I give them tests twice a month..." (Teacher W)

From the excerpts shown above, some teachers did not have a deep understanding of what constitutes a formative assessment. They seemed to have a sound understanding of what SBAfL requires them to do in lessons but some of them are not sure whether formative assessment can be done formally or informally. The fact is that, formative assessment can be either formal or informal. This is agreed by researchers such as Bell and Cowie

(2001) that formative assessment can be formal, which are well planned and designed to provide evidence about students' learning, or informal, where evidence of learning is generated in the course of the teacher's day-to-day activities. It should be done continuously with the main aim to observe the students' learning process and to identify what sort of ability they have achieved. Unlike what certain participants had claimed that a test should be done once the students have covered certain topic in order to identify the students' progresses. This is more likely that the participants are describing summative assessment.

In this study, thirteen out of fifteen participants mentioned that they were not sure if their approaches in implementing SBAfL or formative assessment are correct. They also mentioned that they need relevant resources that could provide further guidance on how to conduct formative assessment effectively within their subject areas. When mentioned about the workshops on SBAfL that they have attended, the teachers noted that the resources provided were not enough. Below are some examples of excerpts to illustrate this point.

"To me, we did not gain much useful information from the workshops, except that I learned how to design rubrics." (Teacher X)

"We were not being exposed much to this kind of SBAfL and we need more guidance. Not just giving us guidelines on designing rubrics." (Teacher Y)

"I hope we could get more local examples, if we follow the examples from other countries, the problem is that the ability of their students are not like ours. I wish to have local experts on SBAfL." (Teacher Z)

"If possible, we should have an expert from our own subject area, the one from primary schools, so we can just refer to them as our guide." (Teacher AA)

"We did gain something from the workshops, but it's not really helpful. What we have done during the workshop was making some checklists. We discussed on how to prepare the checklist, but once we returned to our respective schools, I became lost and overwhelmed, where do I start? How? I was not prepared to do the checklists by myself." (Teacher BB)

3.4 A Directive from the Authority

Some participants in this study noted that SBAfL is a directive from the authority that all teachers are required to integrate in their instructions. The participants understand that SBAfL is an important component of SPN21 but they are not able to associate assessment for learning with students' progress in learning. This particular category of description indicates a superficial understanding of SBAfL compared to the first three categories of descriptions found in this study.

These participants mentioned that they are only implementing SBAfL for the sake of carrying out the national policy. Such limited understanding of assessment for learning may affect the effective implementation of SBAfL in their lessons. Below are some excerpts to illustrate this category of description.

"We are still unsure how to implement SBAfL in a way that the authority wants us to do." (Teacher CC)

"If only I am able to understand this SBAfL really well, then I could probably consider the benefits, I don't really understand to be honest." (Teacher DD)

"Actually, I don't really understand what it is. What I know is that the teaching method is based on 'for' learning." (Teacher EE)

A number of participants in this study also admitted that they were unwilling to integrate SBAfL in their lessons. Below are some examples of excerpts,

"We need to know what the authority's long term goals are for SBAfL. There are some teachers who are reluctant to implement SBAfL, this is because they are unsure with the purpose of SBAfL." (Teacher FF)

"I think, the reasons for my reluctance to do it is, I don't know, I prefer to do the traditional methods of teaching." (Teacher GG)

These participants do not seem to understand that SBAfL is part of a teaching and learning process that has the potential to improve students' learning.

3.5 A Hierarchy of Categories of Descriptions

The categories of descriptions formed a hierarchy that extends from basic to a more complex understanding of

formative assessment in the context of government primary schools in Brunei. Nevertheless, it should be emphasised that the hierarchy is not an indication of a ‘negative’ or ‘positive’ way of experiencing formative assessment in government primary schools in Brunei. Rather, the hierarchy illustrates a logical relationship between each category of description that depicts the qualitatively different ways of experiencing formative assessment in a particular educational setting. Figure 1 illustrates the hierarchical relationship of the findings in this study.

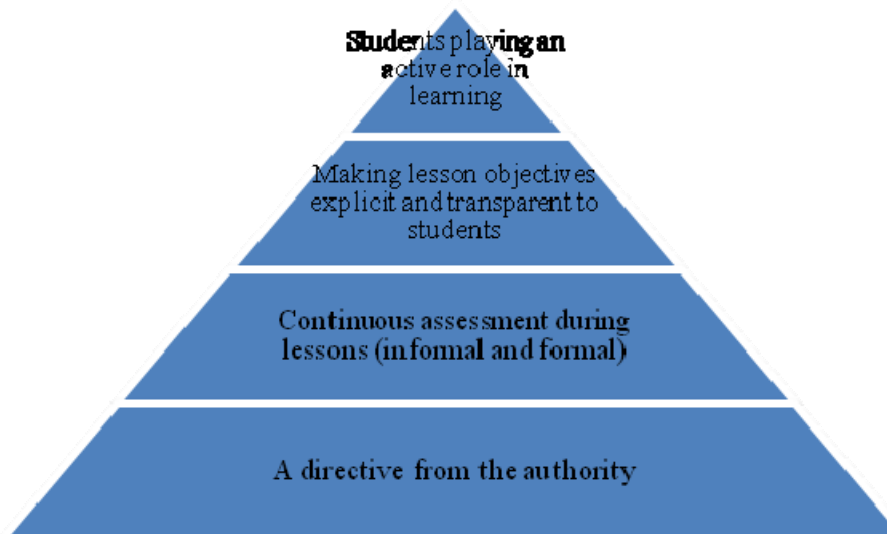


Figure 1. Hierarchical Relationship Between Each Category of Description

The base of the pyramid indicates a very basic understanding of formative assessment, that is, formative assessment experienced as just a directive from the authority. This particular way of understanding and experiencing formative assessment suggests that there are teachers who regard SBAfL as just another school program that they need to implement as instructed by the Ministry of Education. These teachers could not see the benefits of implementing formative assessment on the processes of teaching and learning, particularly the impact it has on students’ learning experiences. Some participants admitted that they were reluctant to use formative assessment in their lessons because they had no confidence in implementing it. This suggests that merely attending workshops on how to implement SBAfL is not enough for the teachers. There needs to be a continuous support for these teachers to implement SBAfL in their lessons post workshop. Support can come in the form of providing specific regular contact time with colleagues and experts to discuss issues pertaining to the implementation of SBAfL in subject areas and topics. In this way, teachers can openly discuss uncertainties, share experiences and come up with solutions to ensure a more effective implementation of SBAfL in their lessons.

The second layer above ‘a directive from the authority’ represents the next category of description that illustrates a slightly more complex understanding of formative assessment than the first layer. Some participants agreed that formative assessment is an important part of teaching and learning. They also understand that the purpose of conducting formative assessment is to identify the students’ progress in learning. However, some participants were not sure whether formative assessment could be done informally or formally in their lessons.

The third layer represents experiencing formative assessment as ‘making lesson objectives more explicit and transparent’, which is regarded as a more complex understanding of SBAfL than the previous category of description. In addition to understanding SBAfL as a way of assessing students’ progress in learning, some participants have an understanding that sharing the lesson objectives and being transparent to the students on what they need to focus on during the lesson could help them to achieve the desired results. It is argued that the sharing of learning intentions and success criteria enables teachers to guide their students on what learning areas are focused on during the lesson. Nevertheless, this process requires effective communication and collaboration between teachers and students in order to help the students achieve the desired learning goals during the process of learning. In so doing, teachers must provide the criteria by which learning will be assessed so that students

will know whether they are successfully progressing towards the goal or not. McManus (2008) argued that such crucial information should be communicated using language readily understood by students, and may be accompanied by realistic examples of those that meet and do not meet the criteria.

The final layer indicates the most sophisticated understanding of formative assessment, that is, 'students playing an active role in learning'. This is the highest order of understanding formative assessment in this study. Very few of the participant understand that in order to successfully implement formative assessment in their lessons, teachers need to get the students actively involved in the learning process, which means that they should be involved in monitoring their own progress and make decisions about their own learning. These participants agree that formative assessment provides a platform for the development of 21st century skills such as learning through discovery, collaboration (by giving constructive feedback to each other), ability to work independently, and so forth.

4. Discussion

Many studies have looked into the qualitatively different ways in which assessment is experienced by teachers (see for example, Brown, 2004), including a local research by Tan (2009) on secondary school Geography teachers' conceptions of assessment in Brunei, but not many have looked specifically into the conceptions of assessment for learning held by primary school teachers. A study by Abi Faraj (2011) from Lebanon is used to discuss the findings of the current study along with other studies on formative assessment done by McManus (2008).

Abi Faraj (2011) argued that formative assessment is conceptualised as a tool to check on students' understanding. Such notion is supported by the findings of this study. In addition, McManus (2008) mentioned that it is important for teachers and students to recognise when there is a gap in understanding the learning target. Abi Faraj (2011) emphasises the importance of formative assessment in being used to develop the students' learning needs through the use of different instructions in teaching and learning. This is confirmed with the current study where the participants also stressed the importance of being transparent to the students especially with regards to learning objectives in order to help them learn more meaningfully.

In the current study, the participants mentioned that they used questioning techniques in order to monitor the students' progress in learning. The participants understood that the process of questioning is an important component of assessment for learning. However, the use of feedback is still very limited as most of the participants were found to use evaluative (judgmental) feedback rather than descriptive and constructive feedback. Similarly, in Abi Faraj's (2011) study, she found that the participants neglected the role of students in the process of formative assessment, and they neglected the importance of feedback that they give to their students to promote further progress. The issue of giving descriptive feedback, therefore, can be argued as a universal issue across the world.

Arguably, there is a difference between the current study and those done by McManus (2008) and Abi Faraj (2011). In the current study, some participants experienced assessment for learning as a directive from the authority, which was not found by McManus (2008) and Abi Faraj (2011). In addition, while the findings of this study formed a hierarchical relationship, those found by McManus (2008) and Abi Faraj (2011) did not indicate any particular logical relationship. Table 1 outlines the similarities and differences of findings from the three studies.

Table 1. Comparison of Abi Faraj (2011), McManus (2008), and the current study

| | The Current Study Brunei | Abi Faraj (2011) Lebanon | McManus (2008) USA |
|--------------|--|--|---|
| Methodology | Qualitative method (structured interviews) | Qualitative (structured interview) & Quantitative (questionnaires) | Qualitative (grounded theory) |
| Participants | Fifteen teachers teaching various subject areas | Twenty four mathematics elementary teachers (twelve pre-service and twelve in-service) | Six algebra teachers |
| Findings | Formative assessment (SBAfL) experienced by the teachers as: <ol style="list-style-type: none"> 1. Students playing an active role in learning 2. Making lesson objectives explicit and transparent to students 3. A tool to continuously assess the students' understanding during lesson 4. A directive from the authority | Formative assessment experienced by the teachers: <ol style="list-style-type: none"> 1. As a tool to check students' mathematical understanding 2. As a tool to assign grade for students' Mathematical understanding 3. As a mean for ranking students 4. To decide on retention of students 5. For instructional purposes | Themes that emerged as teachers implemented formative assessment: <ol style="list-style-type: none"> 1. Dialogic vs. Univocal Discourse 2. Collaboration & power 3. Comments vs. Right/wrong 4. Trying something new vs. Keeping with the status quo. 5. Student-developed vs. Teacher-developed criteria 6. Peer- and self-assessment vs. teacher assessment |

As outlined in Table 1, most of the categories that emerged from the current study and Abi Faraj's (2011) support the five attributes of effective formative assessment identified by McManus (2008).

5. Conclusion

A total of four categories of description depict the conceptions of assessment for learning held by a group of fifteen primary schools in teachers from several government schools in Brunei. These conceptions range from a very basic understanding of SBAfL to a more sophisticated and deeper understanding of assessment for learning. A very superficial understanding of SBAfL may have a serious implication on the ways in which it is implemented in schools. A number of the participants expressed confusion and uncertainties in what assessment for learning entails and as a result they became less confident in integrating SBAfL in their lessons. The findings of study suggest that there needs to be a systematic and continuous support given to teachers as they make attempts in integrating SBAfL in their lessons. Assessment for learning has the potential in improving students' learning. As pointed out by McManus (2008),

Teachers, who attempted to use formative assessment daily, began to experience the power of students' ideas through dialogic discourse and the student roles changed. Students took more ownership and became partners in the learning process. As the classroom environment changed, teachers had to be willing to adapt their pedagogy and beliefs to this new environment. Teachers had to be better prepared for class in regards to the content. The importance of teacher content knowledge was essential in being successful in this new environment (McManus, 2008, p. 71).

Teachers, therefore, need to be open-minded and reflective in their practices (Jawawi, 2009, 2010). They need to be willing to accept and integrate SBAfL in their instructions. In order to achieve the desired outcome, formative assessment needs to be implemented consistently instead of applying it sparingly because the purpose of assessment for learning is to guide the students in their learning process and help them to identify the gaps in learning.

Acknowledgments

A special thanks goes to Dr Masitah Shahrill, the Programme Leader for Initial Teacher Preparation at the Sultan Hassanah Bolkiah Institute of Education, Universiti Brunei Darussalam, for her continuous support and guidance in producing this paper.

Our heartiest gratitude also goes to all of the teachers involved in this study, for their time and energy in answering the questions. This study would not have been possible without their generous cooperation.

References

- Abi Faraj, N. H. (2011). *Lebanese elementary mathematics teachers' conceptions of formative assessment and of its uses in the classroom* (Unpublished master dissertation). American University of Beirut, Lebanon.
- Assessment Reform Group (ARG). (2002a). *Research-based principles to guide classroom practice*. Cambridge: Assessment Reform Group.
- Assessment Reform Group (ARG). (2002b). *Testing, Motivation and Learning*. Cambridge: Assessment Reform Group.
- Atkin, J. M., Black, P., & Coffey, J. E. (Eds.). (2001). *Classroom assessment and the National Science Education Standards*. Washington, DC: National Academy Press.
- Attwood, J., & Bray, M. (1989). Wealthy but small and young: Brunei Darussalam and its education system. *Education Research and Perspectives*, 16(1), 70-81.
- Brunei Economic Development Board (BEDB). (2014). *Brunei Darussalam Long-term Development Plan, Wawasan Brunei 2035*. Retrieved from http://www.bedb.com.bn/why_wawasan2035.html
- Bell, B., & Cowie, B. (2001). *Formative Assessment and Science Education*. Dordrecht: Kluwer Academic Publisher.
- Black, P. (1993). Formative and Summative Assessment by Teachers. *Studies in Science Education*, 21, 49-97. <http://dx.doi.org/10.1080/03057269308560014>
- Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2003). *Assessment for learning: Putting it into Practice*. Berkshire, England: McGraw-Hill Education.
- Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working Inside the Black Box: Assessment for learning in the classroom. *Phi Delta Kappan*, 86(1), 9-21.
- Black, P., & Wiliam, D (1998). Assessment and classroom learning. *Assessment in Education*, 5, 7-74. <http://dx.doi.org/10.1080/0969595980050102>
- Bowden, J. A. (1996). Phenomenographic research: Some methodological issues. In G. Dall'Alba, & B. Hasselgren (Eds.), *Reflections on phenomenography: Toward a methodology?* (Vol. 109, pp. 49-66). Goteborg, Sweden: Kompendiet.
- Bowden, J. A., & Walsh, E. (Eds.). (2000). *Phenomenography*. Melbourne, Australia: RMIT University Press.
- Brown, G. T. L. (2004). Teachers' conceptions of assessment: Implications for policy and professional development. *Assessment in Education*, 11(3), 301-318. <http://dx.doi.org/10.1080/0969594042000304609>
- Calderhead, J. (1996). Teachers' Belief and Knowledge. In D. C. Berliner, & R. C. Calfee (Eds.), *Handbook of Educational Psychology*. New York, Simon & Schuster Macmillan.
- Centre for British Teachers. (2006). *Teaching in Brunei*. Retrieved from <http://brunei.cfbt.org/bn>
- Centre for Educational Research and Innovation (CERI). (2008). *Assessment for Learning (Formative Assessment)*. OECD/CERI International Conference: "Learning in the 21st century: Research, Innovation and Policy". Retrieved from <http://www.oecd.org/site/educeri21st/40600533.pdf>
- Charleston, R. (1998). Implementing a developmental perspective of learning in the first year of school: Brunei Darussalam. *Proceedings of the Australian Association for Research in Education Conference*, November 29-December 3, 1998, North Terrace, Adelaide.
- Clark, C., & Peterson, P. (1986). Teachers' Thought Processes. In M. Wittrock (Ed.), *Handbook of Research on Teaching*. New York, Macmillan.
- Clarke, S. (2005). *Formative assessment in the secondary classroom*. London: Hodder Murray.
- Crooks, T. J. (1988). The impact of classroom evaluation practices on students. *Review of Educational Research*,

- 58, 438-481. <http://dx.doi.org/10.3102/00346543058004438>
- Earl, L., & Katz, S. (2006). *Rethinking Classroom Assessment with Purpose in Mind*. Retrieved from http://www.edu.gov.mb.ca/k12/assess/wncp/rethinking_assess_mb.pdf
- Glasson, T. (2009). *Improving student achievement: A practical guide to Assessment for Learning*. Carlton South, Australia: Curriculum Corporation.
- Hamid, M. H. S., Shahrill, M., Matzin, R., Mahalle, S., & Mundia, L. (2013). Barriers to mathematics achievement in Brunei secondary school students: Insights into the roles of mathematics anxiety, self-esteem, proactive coping, and test stress. *International Education Studies*, 6(11), 1-14. <http://dx.doi.org/10.5539/ies.v6n11p1>
- Harlen, W., Gipps, C., Broadfoot, P., & Nuttall, D. (1992). Assessment and the improvement of education. *The Curriculum Journal*, 3, 215-230. <http://dx.doi.org/10.1080/0958517920030302>
- Harlen, W., & James, M. (1996). *Creating a Positive Impact of Assessment on Learning*. Paper presented at the annual meeting of the American Educational Research Association, New York.
- Hattie, J. (2012). The flow of the lesson—The Place of Feedback. In J. Hattie (Ed.), *Visible Learning for Teachers: Maximizing Impact on Learning* (pp. 115-137). London: Routledge.
- Heritage, M. (2007). Formative assessment: What do teachers need to know and do? *PhiDelta Kappan*, 89(2), 140-145.
- Heritage, M., Kim, J., Vendlinski, T., & Herman, J. (2009). From evidence to action: A seamless process in formative assessment? *Educational Measurement: Issues and Practice*, 28(3), 24-31. <http://dx.doi.org/10.1111/j.1745-3992.2009.00151.x>
- Jaidin, J. H. (2009). *Conceptions of learning held by upper primary children in government schools in Brunei Darussalam* (Unpublished doctoral thesis). Queensland University of Technology, Brisbane, Australia.
- Jawawi, R. (2009). *Conceptions of economics pre-services teacher's use of subject knowledge in teaching, economics and commerce at secondary schools in Brunei Darussalam* (Unpublished doctoral dissertation). University of London, London, United Kingdom.
- Jawawi, R. (2010). *Reflective practice in teaching economics and commerce: A case study of pre-service teachers in Brunei Darussalam*. Saarbrücken, Germany: VDM Verlag.
- Mahadi, M. A. H., & Shahrill, M. (2014). In pursuit of teachers' views on the use of textbooks in their classroom practice. *International Journal of Education*, 6(2), 149-158. <http://dx.doi.org/10.5296/ije.v6i2.5637>
- Marton, F. (1986). Phenomenography: A research approach to investigating different understandings of reality. *Journal of Thought*, 21, 28-49.
- Marton, F. (1994). Phenomenography. In T. Husén, & N. Postlethwaite (Eds.), *The International Encyclopedia of Education*, 8, 4424-4429.
- Marton, F., & Booth, S. (1996). The learner's experience of learning. In D. Olsen, & N. Torrance (Eds.), *The handbook of education and human development: New models of learning, teaching and schooling* (pp. 534-563). Cambridge, Massachusetts: Blackwell Publishers Limited.
- Matzin, R., Shahrill, M., Mahalle, S., Hamid, M. H. S., & Mundia, L. (2013). A Comparison of Learning Styles and Study Strategies Scores of Brunei Secondary School Students by Test Anxiety, Success Attributions, and Failure Attributions: Implications for Teaching At-risk and Vulnerable Students. *Review of European Studies*, 5(5), 119-127. <http://dx.doi.org/10.5539/res.v5n5p119>
- McManus, S. (2008). *Attributes of effective formative assessment*. Washington, DC: Council for Chief State School Officers. Retrieved from <http://www.ccsso.org/publications/details.cfm?PublicationsID=362>
- Ministry of Education. (2011). *School Based Assessment for Learning Brunei Darussalam: SBAfL, Guidebooks for Year 7 and 8 Core Subjects*. Curriculum Development Department, Ministry of Education, Brunei Darussalam.
- Ministry of Education. (2013). *The National Education System for the 21st Century: SPN21* (Revised ed.). Ministry of Education, Brunei Darussalam.
- Morni, A. (2001). *The quality of preschool education in Brunei Darussalam* (Unpublished doctoral thesis). University of Exeter, United Kingdom.

- Mundia, L. (2010a). Implementation of SPN21 curriculum in Brunei Darussalam: A review of selected implications on school assessment reforms. *International Education Studies*, 3(2), 119-129. <http://dx.doi.org/10.5539/ies.v3n2p119>
- Mundia, L. (2010b). Problems in learning mathematics: Comparison of Brunei junior high school students in classes with and without repeaters. *Journal of Mathematics Research*, 2(3), 150-160. <http://dx.doi.org/10.5539/jmr.v2n3p150>
- Mundia, L. (2012). Policy changes in Brunei teacher education: Implications for the selection of trainee teachers. *The Education Forum*, 76(3), 326-342. <http://dx.doi.org/10.1080/00131725.2012.682489>
- Nor, H. N. H. M., & Shahrill, M. (2014). Incorporating the use of poster and oral presentations as an alternative assessment in the teaching of secondary mathematics. *Proceedings of the 2nd International Conference on Social Sciences Research* (pp. 369-378). Kota Kinabalu, Sabah, Malaysia: ICSSR 2014.
- Omar, N. A., Matarsat, S. R., Azmin, N. H., Wei, V. C. A., Nasir, M. M. M., Sahari, U. K. S., . . . Mundia, L. (2014). The Ideal Psychology Teacher: Qualitative Analysis of Views from Brunei GCE A-Level Students and Trainee Psychology Teachers. *Asian Social Science*, 10(12), 184-194. <http://dx.doi.org/10.5539/ass.v10n12p184>
- Orgill, M. K. (2002). *Phenomenography*. Retrieved from <http://www.minds.may.ie/~dez/phenom.html>
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223-232. <http://dx.doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Pungut, M. H. A., & Shahrill, M. (2014). Students' English language abilities in solving mathematics word problems. *Mathematics Education Trends and Research*, 1-11. <http://dx.doi.org/10.5899/2014/metr-00048>
- Salam, N. H. A., & Shahrill, M. (2014). Examining classroom interactions in secondary mathematics classrooms in Brunei Darussalam. *Asian Social Science*, 10(11), 92-103. <http://dx.doi.org/10.5539/ass.v10n11p92>
- Sarwadi, H. R. H., & Shahrill, M. (2014). Understanding students' mathematical errors and misconceptions: The case of year 11 repeating students. *Mathematics Education Trends and Research*, 1-10. <http://dx.doi.org/10.5899/2014/metr-00051>
- Scott, R., & Fisher, D. (2002). The impact of an in-service course for primary teachers. *Proceedings of the Annual Conference of the Australian Association for Research in Education*, December 1-5, 2002, Brisbane: Australia.
- Shahrill, M. (2009). *From the general to the particular: Connecting international classroom research to four classrooms in Brunei Darussalam* (Unpublished doctoral dissertation). University of Melbourne, Melbourne, Australia.
- Shahrill, M. (2013a). Review of teacher questioning in mathematics classrooms. *International Journal of Humanities and Social Science*, 3(17), 224-231.
- Shahrill, M. (2013b). Comparing teacher questioning in American and Australian mathematics classrooms. *Journal of Applied Research in Education*, 17, 26-40.
- Shahrill, M., & Clarke, D. J. (2014). Brunei Teachers' Perspectives on Questioning: Investigating the Opportunities to 'Talk' in Mathematics Lessons. *International Education Studies*, 7(7), 1-18. <http://dx.doi.org/10.5539/ies.v7n7p1>
- Shahrill, M., Mahalle, S., Matzin, R., Hamid, M. H. S., & Mundia, L. (2013). A comparison of learning styles and study strategies used by low and high math achieving Brunei secondary school students: Implications for teaching. *International Education Studies*, 6(10), 39-46. <http://dx.doi.org/10.5539/ies.v6n10p39>
- Shahrill, M., & Mundia, L. (2014). The use of low-order and higher-order questions in mathematics teaching: Video analyses case study. *Journal of Studies in Education*, 4(2), 15-34. <http://dx.doi.org/10.5296/jse.v4i2.5318>
- Sharkey, N. S., & Murnane, R. J. (2006). Tough Choices in Designing a Formative Assessment System. *American Journal of Education*, 112(4), 572-588. <http://dx.doi.org/10.1086/505060>
- Shavelson, R. J., Black, P. J., Wiliam, D., & Coffey, J. E. (2003). On Aligning Formative and Summative Assessment. Paper presented at the National Research Council's Assessment In Support of Instruction and Learning: Bridging the Gap Between Large-Scale and Classroom Assessment Workshop, Washington, DC.
- Shepard, L. A. (2000). The Role of Assessment in a Learning Culture. *Educational Researcher*, 29(7), 4-14.

<http://dx.doi.org/10.3102/0013189X029007004>

- Shepard, L. A. (2009). Commentary: Evaluating the Validity of Formative and Interim Assessment. *Educational Measurement: Issues and Practice*, 28(3), 32-37. <http://dx.doi.org/10.1111/j.1745-3992.2009.00152.x>
- Stamouli, I. (2007). *Learning object oriented programming from the students' perspective* (Unpublished doctoral thesis). University of Dublin Trinity College, Dublin, Ireland.
- Taha, Z. (1997). Focus on the teacher: The transfer of knowledge from teacher education into the classroom. *Proceedings of the International Conference on Science, Mathematics and Technology Education*, January 1997, Hanoi, Vietnam.
- Tan, D. C. C. (2009). Secondary geography teachers' conceptions of assessment: A case study in a secondary school in Brunei Darussalam. In D. Boorer et al. (Eds.), *Proceedings of the 14th International Conference on Education* (pp.107-126). Gadong: Universiti Brunei Darussalam, Brunei Darussalam.
- Trigwell, K. (2000). Chapter 5: A phenomenographic interview on phenomenography. In J. A. Bowden, & E. Walsh (Eds.), *Phenomenography* (pp. 19-33). Melbourne, Australia: RMIT Publishing.
- Wahid, N. A., & Shahrill, M. (2014). Pre-university students' engagement towards the learning of mathematics. *Proceedings of the 2nd International Conference on Social Sciences Research* (pp. 379-388). Kota Kinabalu, Sabah, Malaysia: ICSSR 2014.
- Walker, C. (1998). Learning to learn, phenomenography and children's learning. *Educational and Child Psychology*, 15, 25-33.
- Walsh, E. (2000). Phenomenographic analysis of interview transcripts. In J. A. Bowden, & E. Walsh (Eds.), *Phenomenography*. Melbourne, Australia: RMIT University Press.
- Yatab, R. S., & Shahrill, M. (2014a). *Examining the effectiveness of common assessment tasks in lower secondary science*. Paper presented at the 14th Annual Conference ASIA Pacific Science & Technology Centre (ASPAC 2014), Bandar Seri Begawan, Brunei Darussalam, 5-8 May, 2014.
- Yatab, R. S., & Shahrill, M. (2014b). The differing views in using the common assessment tasks in secondary school science. *International Journal of Science and Research*, 3(7), 685-693.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).