

Assessment that impacts learning

Summary

In the previous issue of the Digest, we explored differentiated instruction, looking at how the teacher could adjust the learning programme to maximize the possibilities for every student in the classroom. In this first issue of Volume 6 of the ELIS Research Digest, we look at how formative assessment (FA) can impact teaching and improve learning if it is effectively integrated into teachers' classroom practices. This issue first briefly presents an overview of the research done on FA since the 1960s. It then outlines how FA has been implemented in Singapore, teachers' perceptions of its impact on teaching and learning, and the challenges that come along with it. It also details the competencies and pedagogic practices that teachers need in order to be able to enact effective FA in the classroom. Following this, the discussion highlights examples of how formative assessment can be enacted in the English Language classroom and the challenges faced by teachers when integrating various FA practices into their teaching.

Introduction

The notion of how assessment can enhance learning is not new. Good assessment information provides accurate estimates of student learning and performance, and enables teachers and other decision makers to make appropriate decisions about teaching and learning. The Singapore Curriculum Philosophy underscores assessment as being central to the learning process to help children become self-directed learners (Ministry of Education, 2017).

Formative assessment (FA) offers great promise as the next best hope in stimulating gains in student achievement. An extensive research base has validated the efficacy of FA practices, establishing the possibility of significant learning gains when FA is effectively integrated into teachers' classroom practices (Black & Wiliam, 1998; Brookhart, Moss, & Long, 2009; Carless, 2012; Heritage, 2007; Leahy & Wiliam, 2012; Natriello, 1987; Wiliam, 2011; Wiliam & Leahy, 2015). Wiliam (2011) presented a number of studies from the 1990s onwards that had explored the concept of integrating assessment into instruction, and where efforts had been made to link classroom practice to research studies related to mainly 'feedback, motivation, attribution, and self-regulated learning' (p. 22). The results of the studies demonstrated that integrating FA with instruction might well have great impact on student engagement and learning outcomes.

The underlying assumptions behind effective FA implementation in the classroom as postulated by Bennett (2011) and Schneider, Egan, and Julian (2013) were: (i) teachers possessed the necessary content knowledge and pedagogy skills to be able to create effective assessment in order to understand and assess student learning, and (ii) they were able to apply effective assessment construction principles with content aligned to the national curricula standards.

However, research revealed that most teachers were lacking in the fundamental knowledge and skills needed to construct and conduct high quality FA (Campbell, 2013; Heritage, Walqui, & Linquanti, 2013; Schneider et al., 2013; Stobart, 2008). Studies that investigated the evaluation practices of classroom teachers consistently reported concern about the sufficiency of teachers' assessment knowledge and skills (Hamm & Adams, 2009).

Undergirded by the motivation to provide clarity on how FA can be operationalised in the classroom, this issue of the ELIS Research Digest begins with a short overview of the research done on FA since the 1960s. The overview defines what FA is and its value, and the subsequent sections look at how FA has been implemented in the Singapore classrooms, the teachers' perceptions of its impact in teaching and learning, and the knowledge and skills teachers need to have in order to enact effective FA in the classroom. The issue then presents

some of the challenges that come along with FA implementation in Singapore. To demonstrate the applicative aspect of FA practices, the issue includes some examples of good FA pertaining to EL teaching and learning.

Development of Formative Assessment (FA)

The earliest definition of FA can be traced back to Scriven (1967), who first coined the term formative evaluation. This term was grounded in programme evaluation in which the effectiveness of school programmes and the school curricula was the object of inquiry. The objective of information gathering was related to and primarily focussed on the evaluative aspect of student achievement.

Bloom (1969) re-evaluated the term summative evaluation that Scriven (1967) had created, expanding the idea of evaluation beyond the programme evaluation context. Bloom (1969) argued that evaluation could serve a different purpose, that is, it could also be perceived not only as relevant to the assessment of learning and to individual students, but also as helpful toward the aim of improving teaching and learning. Bloom (1969) also made a distinction between summative and formative evaluation in terms of their purpose and impact of implementation. While the former was implemented at the end of a term, course, or programme for purposes of grading, certification and evaluation of the effectiveness of a curriculum, the latter used systematic evaluation *during* the process of curriculum implementation, teaching and learning for the purpose of enhancing any of these three processes.

As summative evaluation was an act of judgement made about the student, teacher and curriculum, Bloom (1969) highlighted that it had created much anxiety in students, teachers and curriculum planners. On the other hand, formative evaluation strove to seek the most useful information on the impact of any curriculum implementation on student learning and to look for ways to reduce the impact of the negative feelings associated with evaluation.

Foreshadowed by the work of Bloom (1969) that had made the important distinction between summative and formative evaluations, Cizek (2010) highlighted how formative evaluation had evolved

into the concept of FA, and had been widely accepted and characterized by the absence of an evaluation aspect. FA was also broadly conceived as a collaborative process that teachers and students engaged in for the purpose of understanding student learning so that teachers could use this understanding as a source of information to improve their instructional planning and students could use it to enhance their learning and achievement (Cizek, 2010; Sadler, 1998).

The various sources of information-gathering activities could range from traditional pen-and-paper tests, lesson observations, oral questioning, performance tasks, and peer group discussions. However, Cizek (2010) emphasized the importance of not focussing mainly on the format of the assessment, but rather, in congruence with what Black and Wiliam (1998) had proposed, looking at FA both as an embodiment of every activity undertaken by teachers and by learners during their instructional and self-assessment process, and as a process of improving teaching and learning through the engagement of both teachers and learners.

As this definition implied, Cizek (2010) noted that the locus of FA had typically been at the classroom level. Although the author concurred that the primary focus of FA was that of information gathering in support of teachers' instruction and student learning, he believed that the definition of FA should incorporate the notion of student engagement and empowerment, responsibility and self-assessment to a greater extent.

Brookhart, Moss, and Long (2008) pointed out how the FA process had also illustrated the shift of the role of teachers from being the traditional mere transmitters of knowledge to being in a shared partnership of knowledge creation among learners, teachers and peers. In parallel, Thompson and Wiliam (2007) described this mutual responsibility as 'part of everyday practice by students, teachers and peers that seeks, reflects upon and responds to information from dialogue, demonstration and observation in ways that enhance ongoing learning' (p. 264).

Characteristics of FA

While it would be impossible to provide a universally agreed definition of FA, Wiliam and Leahy

(2015) provided one that they perceived as all-encompassing:

An assessment functions formatively to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have made in the absence of that evidence. (p. 43)

There are seven important characteristics of FA that Wiliam and Leahy (2015) delineated in this definition.

The first point is that the term *formative* is used to describe the function that evidence from the assessment serves, rather than the assessment task itself.

The second point pertains to the agents of formative assessment. In most instances, assessment is carried out by the teacher but the definition emphasizes the need to involve individual learners or their peers as agents in making such decisions.

The third point is the focus on the decisions implemented instead of the intentions of those who are involved in the assessment because evidence that is collected with the intent of it being used but which is never used is unconstructive. Good (2011) emphasizes the importance of teachers acting *promptly* and *accurately* on the evidence of learning elicited during instruction.

The fourth point correlates with the third and focuses on how the decisions made after the gathering of the evidence should improve learning. However, Wiliam and Leahy (2015) warned that it would be unrealistic to assume that better learning would immediately follow on a single occasion of assessment because even ‘the best designed interventions will not *always* result in better learning for *all* students’ (p. 44).

The fifth point relates to the next steps in *instruction*. As opposed to the transmission mode of teaching, instruction here refers to both teaching

and learning, or any activity that ‘forms’ or improves learning.

The sixth point posits that ‘decisions are either better or better founded than decisions that would have been made without the evidence elicited as part of the assessment process’ (p. 44). Wiliam and Leahy (2015) postulated that it is possible that FA does not result in the adjustment of instruction as teachers might discover that the students actually understand what has been taught well enough for no adjustment being needed. FA might not alter the course of action but simply confirm that what the teacher has been doing is appropriate.

The last point addresses the design of the assessment process. Wiliam and Leahy (2015) asserted the importance of designing FA tasks with a clear decision in mind. They shared how national assessment data was usually revealed weeks after the assessment was administered and reported in terms of whether students had reached a certain proficiency level of knowledge and skills. The information was, however, un-

helpful to the teachers because data was given to the teachers without them knowing what to do with it and how to make use of it.

So they proposed a possible way of designing the assessments ‘backward from the decisions’ (p. 45), that is, teachers could look at the relevant sources of evidence that would help them make any decision in a more effective way.

Brookhart and ASCD (2015) added that the data teachers needed in order to monitor the results of their decision would depend on what their decision was intended to accomplish. If the intention was to improve student learning, then teachers could progress to the next stage: deciding on the types of data to be collected in order to monitor and evaluate the results of the decision. For example, if teachers concluded from a large scale writing assessment that students did not write as well as they had expected, they could proceed to look at classroom grades on specific writing tasks which could reveal some specifics such as what types of writing students do, and with what levels of proficiency. It might be, for example, that students’ narrative writing was better than their expository writing because they were more exposed to the

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former during instructional time. Teachers could follow up by designing instruction that helped students learn more about expositions, and integrating assessments that helped them move towards the goal of writing better expositions. The focus for FA is classroom-centred while summative assessment is situated in a large-scale context.

The discussion thus far has established two core characteristics of FA:

- i. Any form of assessment can be formative provided that it enhances instructional decisions made by all agents (teachers, individual learners or their peers) in the assessment process; and
- ii. All decisions made during the assessment process can be ‘immediate, on-the-fly decisions or longer term’ (William & Leahy, 2015, p. 45).

The next section will discuss how FA has been translated into the Singapore classrooms and the teachers and parents’ perceptions and responses to it.

FA implementation in Singapore schools

The Singapore education system formally introduced FA only in 2009, with the establishment of the Primary Education Review and Implementation (PERI) Committee to address the overemphasis on testing and examination, particularly at lower primary levels (Leong & Tan, 2014; Ratnam-Lim & Tan, 2015). PERI aims to adopt a more holistic approach in primary education so as to ‘balance the acquisition of knowledge with the development of skills and values, through increased use of engaging pedagogy, a stronger emphasis on non-academic aspects within the curriculum and more holistic assessment to support learning’ (Lee, Oh, Ang, & Lee, 2014, p. 2). The Committee recommended Holistic Assessment (HA) that supports student learning be progressively introduced into all primary school classrooms.

HA implementation is anchored on the principles of FA, assessment balance and quality, and student-involvement. It is defined by the Ministry of Education as:

Holistic Assessment (HA) is the ongoing gathering of information on the different facets of a child from various sources. A key

purpose of HA is to provide feedback to support and guide the child’s development. To achieve this, the PERI Committee recommended that for HA implementation, teachers be equipped with the skills (e.g. to use rubrics) to assess and provide pupils with richer and more holistic feedback on their development and skills acquisition. Schools are also encouraged to provide parents with a more comprehensive “Holistic Development Profile” which captures a fuller picture of their child’s progress and learning throughout the year. (Lee et al., 2014, p. 2)

The implementation of FA In Singapore was conceptualized from the work of Black and William (1998) in which the four key activities of FA listed below formed the central tenet of implementation:

- Sharing success criteria with learners
- Classroom questioning
- Comment-only marking
- Peer- and self-assessment

The four key activities were underpinned by a theoretical grounding for FA by Ramaprasad (1983). This constituted three key processes in learning and teaching, namely, establishing:

- i. Where the learners are in their learning;
- ii. Where they are going; and
- iii. What needs to be done to get them there.

Some of these key processes and activities will be explored in the next section.

To ensure effective and sustainable implementation, schools implemented HA one grade level at a time, beginning with the lower primary levels in 2011, after prototyping various HA practices in some schools between 2009 and 2010. Teachers’ knowledge of FA was deepened with professional development programmes such as national seminars, teacher learning communities and subject-specific sharing workshops on how different modes of assessment could be appropriately integrated into the various subject domains. The efforts aimed to introduce teachers to more varied and rigorous forms of assessment to boost learners’ confidence in learning and enhance their love for learning beyond academic achievements.

Following this, the *English Language Syllabus 2010*

(*Primary and Secondary*) (Curriculum Planning & Development Division, 2008) aligned all assessment approaches and outcomes with the aims and learning outcomes of the syllabus. Assessment was positioned as an integral part of the teaching and learning process and the syllabus emphasized the need for assessment, and, more specifically, FA to be carried out effectively by the teachers in order for teaching and learning to be effective. The syllabus spells out three core FA strategies that are pertinent to enhancing student learning: identifying and monitoring students' changing needs, abilities and interests so that teachers can modify or adapt their instruction to help pupils improve their learning, providing timely and effective feedback to students, and providing the students with opportunities to act on the feedback to improve their learning.

In summary, FA is made up of the processes of diagnosing students' needs, abilities and interests, monitoring students' learning progress, and feeding-forward to enhance learning.

Perceptions of FA

What is worth noting is a study conducted by Ratnam-Lim and Tan (2015) that investigated teacher experience and parent perceptions of HA implementation in 30 Singapore primary schools. The survey results demonstrated that the introduction of bite-sized assessments (what teachers perceived as formative) at primary one and two levels to reduce the stress of taking summative examinations had not changed pedagogy. Teachers still taught to the tests, drilling the students to prepare them for the various mini-tests throughout the year. The teachers and parents felt that the frequent testing had placed immense stress on them. The findings of the study revealed the overwhelming backwash effects of the high-stakes national examination, the Primary School Leaving Examination, on the interpretation of HA practices in schools. While the teachers and parents were supportive of the intent of HA implementation as timely and crucial action to alleviate stress in a high-stakes examination culture, the study highlighted the great challenges and reality of implementation. Ratnam-Lim and Tan (2015) recognised

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that the barriers to this assessment reform had largely to do with the teachers and parents' 'dominant belief(s) in the ultimate and sovereign importance and merit of high-stakes assessment' (p. 72). The authors noted that this belief had underscored parents' resistance to the assessment reform and 'teachers' continued subservience to being valued in terms of students' academic achievement' (p. 72).

What teachers need to know and be able to do

Heritage (2010) argues that implementing FA requires teachers to have specific knowledge and skills. Randel, Apthorp, Beesley, Clark, and Wang (2016) also recognize that an important first step to improved practice in FA is to enhance teachers' literacy in FA. According to Heritage (2010), this involved four fundamental types of teacher knowledge delineated below:

- i. domain (subject content) knowledge;
- ii. pedagogical content knowledge;
- iii. knowledge of students' previous learning; and
- iv. knowledge of assessment.

Domain knowledge comprises the concepts, knowledge, and skills to be taught within a domain

or content area, the prerequisites necessary for students to attain them, and what a successful performance in each looks like. The assumption is that when teachers are equipped with this knowledge, they will be able to design a good learning framework that can guide assessment and instruction.

Pedagogical content knowledge (PCK) is essentially the ability of the teachers to adopt and adapt instruction to suit the students' learning styles and learning. This is congruent with Shulman's original definition of PCK in which it 'represents the blending of content and pedagogy into an understanding of how particular topics, problems or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction' (Shulman, 1987, p. 8). Heritage (2010) states that teachers need to adopt classroom practices and management styles that

incorporate activities with more open-ended outcomes. This is to encourage more learner interaction. Teachers also need to adopt a wider repertoire of teaching approaches to promote more student autonomy. They would also need to establish a classroom climate where learners are encouraged to be active contributors to learning.

In the domain of assessment knowledge, teachers need to equip themselves with a range of FA strategies in order to capitalize on the opportunities to gather evidence of learning. Heritage (2010) cautioned that teachers needed to be aware that the evidence obtained from formative strategies must be of sufficient quality to enable them to know where the learner is in relation to the learning goal and the success criteria.

To ensure accurate gathering of the evidence of learning, there are four factors to consider in selecting the appropriate FA strategies:

- i. First, the strategies have to be aligned to the learning goal and success criteria;
- ii. Second, the FA strategies have to provide adequately detailed evidence to allow the teacher to act on it because the purpose of assessment is to 'form' new learning, either by continuing with the planned lesson or by making modifications to teaching and learning in light of the evidence;
- iii. Third, the strategies must take into account the students' varying levels of understanding and abilities so that they enable students to demonstrate where they are in their learning; and
- iv. Fourth, it is critical that teachers know how to use more than one strategy to elicit how far students are away from the success criteria. For example, teachers can ask a variety of questions to elicit explanations, allow students to explain a concept through illustrations, or provide students the opportunities to conduct peer discussions to demonstrate where they are in their learning. Not only will a variety of different strategies provide multiple avenues for teachers to assess learning, but they will also allow students to demonstrate what they understand and can do in various ways.

William and Leahy (2015) believed that what really mattered in FA was the kind of processes teachers valued and practised, and not what we called it.

They cautioned against the oversimplification of FA as '*only a matter of process or only a matter of instrumentation*' (p. 40) and asserted that good processes would require good instruments which had to be used intelligently to realise their fullest impact. William and Leahy (2015) illustrated this principle in a Language Arts classroom they described.

In the classroom they described, the teacher taught and assessed her students' understanding of the different types of figurative language. To monitor their understanding of the various terms she had taught them, she administered a quiz before proceeding to the next part of her lesson. She gave them a set of six cards marked A, B, C, D, E, and F and wrote the following on the board:

- A. Alliteration
- B. Onomatopoeia
- C. Hyperbole
- D. Personification
- E. Simile
- F. Metaphor

She then read them a series of statements:

1. This backpack weighs a ton.
2. He was as tall as a mouse.
3. The sweetly smiling sunshine melted all the snow.
4. He honked his horn at the cyclist.
5. He was a bull in a china shop.

After reading each statement, she asked the students to show a letter card (or cards) to indicate the type(s) of figurative language features found in each statement. All her students responded correctly to the first statement, but for the second, each student flashed a single card (some flashed E, some flashed C). The teacher then reminded the students that there could be more than one type of figurative language feature in some of the statements. The students then realized that they could adjust some of their responses and they were then able to respond correctly to statements 2, 3 and 4. However, half of the class indicated that statement 5 was a simile. The teacher then led the class into a discussion during which the students justified why they thought statement 5 was a simile or a metaphor and finally, all of them agreed that it was a metaphor because it did not include *like* or *as*.

In the scenario above, the teacher elicited evidence of student achievement, interpreted the evidence, and used it to make a decision about what to do next in her instruction. The decision to adjust her instruction was to meet the learning needs of the students, and the FA she had administered allowed her to make wiser decisions than would have been possible if she had not gathered the evidence. What was noteworthy about the example given was that it had demonstrated that FA could happen in ‘real time, within a single period’ (William & Leahy, 2015, p. 43), and it had helped improve student learning.

Enacting FA in the classroom

How then can teachers effectively enact this interplay of principles, strategies and techniques? Heritage (2010) frames the enactment process as a continuous cycle that is integrated into instruction. The process consists of: (a) eliciting the prior knowledge of students to establish where they are in their learning; (b) identifying the learning goal(s) and determining the criteria for success with the learners at the start of a lesson to show learners where they are going; (c) eliciting and interpreting evidence of learning to surface learning gaps and adjust instruction; and (d) closing the learning gap through feedback to show learners what needs to be done in order to reach the agreed goals.

The sections below will cover how teachers could conduct effective FA before, during and after instruction.

Eliciting student prior knowledge

To help illustrate how teachers can effectively perform various formative assessments even before instruction, Heritage (2010) turned to a group of fourth-grade teachers at Harrison Elementary School who were engaged in a mid-year review to prepare for the upcoming school year. Heritage (2010) highlighted that although the scenario took place in an elementary school, the same principles of FA could be applied in middle and high schools.

The teachers used data from the national reading tests to answer the following questions:

1. What have the fourth grade students already learned in Grade 3?
2. Have they met the standards at Grade 3?

While the test reports indicated that half of the incoming fourth-grade students were advanced and proficient readers at Grade 3, the other half of the cohort were at or below basic levels. The teachers then went further to analyse the student performance by the subscales of the test that led to the discovery that the students who were performing ‘at basic’ or ‘below basic’ levels did well in word analysis but were weaker in vocabulary and reading comprehension.

From the aggregated, summative data, the teachers not only had an idea of the overall achievement levels in reading of their incoming fourth-grade cohort, but they were also able to look at the subscales of the tests, that is, the results of the assessment items that tested specific areas such as vocabulary, word analysis and reading comprehension. This enabled them to have a deeper understanding of the students’ strengths and weaknesses.

What is worth noting is that the teachers could look at these summative data to answer questions limited not just to the students’ overall strengths and weaknesses, but they could also answer questions such as: (i) what the strengths and weaknesses in curriculum and instruction were, and (ii) how they could improve their teaching.

According to Heritage (2010), effective teachers use ‘more than one measure to check for corroborating evidence of achievement’ (p. 31). The process of FA is on-going. What the teachers did at Harrison Elementary School after looking at the subscales of the tests was to go one step further by consistently examining the student scores on the school’s quarterly district reading inventory to monitor the reading progress of the students over the year. This further helped them observe any repeated patterns in the weaknesses the students had in reading, and identify individual students who might have had special needs. Heritage (2010) emphasized how this information gathered is critical in helping teachers understand where the students are currently in reading and deciding on the

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focus and learning goals for the following year.

To obtain even more fine-grained information about their students' knowledge and skills in reading so that they could plan and match their instruction to the learning needs, some of the FA strategies the teachers deployed to elicit the information from the students included (Heritage, 2010, p. 32):

- (i) Drawing pictures and diagrams with explanations to show their understanding of ideas in text;
- (ii) Writing questions to demonstrate their understanding of a passage;
- (iii) Telling the most important ideas in a short paragraph;
- (iv) Writing or telling what they already knew from the passage and writing or posing questions that still needed to be answered in the subsequent text; and
- (v) Inferring two things from the passage that were not obviously stated and justifying their inferences.

What the teachers did was to use the information gathered from these strategies to corroborate the evidence about the students' proficiency levels of reading that they had gathered from their analysis of assessment data. Heritage (2010) stressed the importance of deploying multiple measures to strengthen the validity and reliability of the teachers' interpretations. The teachers also ensured that they not only deployed these strategies to elicit detailed prior knowledge of the students in a particular domain, they also applied these strategies continuously to give them fine-grained data to guide ongoing teaching and learning.

Heritage (2010) pointed out that, for these teachers, data use was not a single event, but was a continuous and systematic approach to using various sources of data to improve learning. She emphasized the importance of using fine-grained formative data to guide ongoing teaching and learning.

The next section examines how teachers can determine and adjust instructional moves based on the formative data they collect in the classroom.

Identifying learning goals and success criteria

In the classroom, the process of FA starts with teachers identifying the learning goal(s) for a les-

son or a series of lessons and determining the criteria for success from the outset of the lesson (Heritage, 2010; Wiliam & Leahy, 2015). Heritage (2010) states that the learning goals and success criteria drive the entire process of FA because it enables the teachers and learners to:

- (i) Establish the goals of the learning;
- (ii) Compare actual levels of performance with the learning goal(s); and
- (iii) Engage in appropriate action that helps to close the learning gaps.

In the area of English Language Arts, Benjamin (2013) refers to learning goals or outcomes as a list of statements that describes the concepts and competencies that students should have attained at the end of their schooling. While learning outcomes represent the destination, Benjamin (2013) emphasizes the importance of not regarding them as a list of discrete skills to be taught, but rather as a whole approach to learning. Thus, Benjamin (2013) claimed that, in the US, realising English Language Arts learning outcomes was more about teaching higher order thinking: evaluating, making judgments, analysing the nuances of language, and understanding purpose and context for effective communication than about the skills of speaking, listening, reading and writing.

Success criteria identify what learners have to do in order to reach the learning outcomes and are used to guide learning progression. They should be integrated into instructional time while learners are engaged in the learning tasks. Before a lesson commences, teachers should communicate clearly to learners the learning goals and success criteria.

Heritage (2010) provided an example of how this was done in an EL classroom in Los Angeles. In the classroom, the middle school teacher identified, communicated, and explained to her students in language appropriate to their level, the reading goal and success criteria for a lesson focussed on reading and responding to literature. The learning goal and success criteria are delineated below:

- i. Learning Goal: Write a critical analysis of *The Old Man and the Sea*.
- ii. Success Criteria:
 - (a) Present a judgment that is interpretative and evaluative; and
 - (b) Support your judgment through references to the text, other works, and other

authors. (Heritage, 2010, p. 47)

The learning goal helped the students to focus on what they should be thinking about while reading. It also gave them an idea of what they were aiming for. The criteria for success were clear signposts to the students regarding what was required of them, and, for the teacher, they guided her on what to look for in the students' performance. This formative process established a shared platform for comparing the actual performance with the goal.

Eliciting evidence of learning

Heritage (2010) explained the importance of teachers implementing appropriate strategies during instruction time, to elicit evidence of learning and determine how far students were away from their learning goal(s). She highlighted that the principle for effective elicitation was that it should allow teachers to access information about how the student learning was progressing. However, the approach to elicit information, for example, through the use of questioning, should be planned in advance even though spontaneous interactions and responses from the students could be different from what the teacher had expected. It would sometimes even require the teacher to adjust her instruction immediately.

Establishing learning goals and success criteria

Building on the example that Heritage (2010) provided earlier, the teacher could plan and align various reading assessment strategies in relation to the learning goal and the success criteria as delineated below:

- i. First draft: Students write to the teacher about what they would like to discuss;
- ii. Second draft: Students surface improvements and go back to peer for a second review and feedback;
- iii. Review: Teacher reviews feedback and provides comments;
- iv. Final draft.

The first section of this issue talked about how FA should ideally enhance student engagement and

empowerment, responsibility and self-assessment. In this example, while empowering the students to peer review, the teacher could ensure that she also reviewed the feedback the partner had given. This would provide insights into how the student partners were thinking about their own judgments and the support they provided for their peers. In addition, the student self-assessment could allow the teacher to assess their learning challenges and provide the specific help needed.

Interpreting evidence of learning

After eliciting evidence on the progression of learning, teachers need to analyse and organise student responses to assessments to identify students who may need additional instructional support to reach their learning goals (Schneider et al., 2013). Teachers *examine* the evidence in relation to

the success criteria to determine the level of understanding and the learning gaps in terms of the knowledge and skills set out in the success criteria. If the learners have met the success criteria, there is no need to make any instructional adjustment. Interpreting the evidence accurately from FA is key to

identifying the gap between students' current learning status and the learning goal.

Closing the learning gap through feedback

Closing the learning gap is attained by responding to the evidence through timely feedback, which often results in modifications to instruction and to learning. Feedback is information that communicates to the learners how they are doing or have done in relation to the success criteria, and it gives these learners directions and suggestions on how to narrow the learning gaps and progress towards their learning goals (Randel et al., 2016). It is not only about telling them what is right or wrong. Some key characteristics of effective feedback that correspond to the success criteria teachers should establish at the start of the lesson are:

- i. *Feedback should provide information to the student pertaining to the task or the learning process that closes the gap between what is understood and what is aimed to be understood;*

- ii. Feedback should be clear and specific and be referenced to the learning goals;
 - iii. Feedback should provide the learner with suggestions and clues for how to improve;
 - iv. Feedback should match the learner's cognitive levels – not too complex and vague;
 - v. Feedback should be given timely, for example, after a learner has learnt a new task, or for low progress learners when they are learning new skills and concepts. In the case of more difficult tasks that require large amounts of processing, delayed feedback might be more appropriate so that students have more time to process.
- (Heritage, 2010, p. 82)

Although research has described the specific FA principles, approaches and strategies teachers can use to make FA happen in the classroom, they may face challenges in enacting FA and need help to develop and deepen FA in the classroom. The last section of this issue talks about the challenges teachers encounter and also addresses the support that the school leadership needs to provide for them to be able to engage in effective FA implementation.

Challenges of implementing FA in the classroom

A meta-analysis conducted by Kingston and Nash (cited in Thum, Tarasawa, Hegedus, Yun, & Bowe, 2015) revealed much more modest mean effect sizes of about .20 than those reported by Black and Wiliam (1998), suggesting that the effect on student achievement reported by Black and Wiliam (1998) was likely inflated. In numerous small-scale intervention studies where teachers were provided with professional development opportunities to enhance the daily implementation in the classrooms, effects were also found 'in the range of 0.2 to 0.3 standard deviations' (Thompson & Wiliam, 2007, p. 5).

Thum et al. (2015) ascribed the lack of strong empirical evidence concerning the efficacy of FA instructional practices to enhance student achievement likely due to the fact that it was difficult to separate the effect of FA from the other factors involved, and that improvement in achievement took time and thus studies needed to be longer term. In fact, they reported few of the published studies being able to eliminate 'competing explanations of intervention effects' (p. 11). This problem was also highlighted in an observational study

conducted by Rodriguez (cited in Bennett, 2011) where it was impossible to establish a clear causal relationship between FA and student achievement.

In a study completed in the early phase of enacting FA in the Singapore classroom, Lee et al. (2014) observed that many teachers were primarily focussed on the design of the assessment tasks. The teachers also executed the FA strategies without understanding the purpose of using them. The teacher interviews also uncovered that these teachers were confused over the array of definitions of assessment terms such as assessment for learning, assessment of learning, summative and formative assessments. There was clearly implementation without understanding.

Heritage (2007) argued that in a milieu where assessment was excessively associated with the 'competitive evaluation of schools, teachers, and students', it was no surprise that teachers perceived assessment of any form as 'something external to their everyday practice' (p. 140). As a result, the 'reciprocal relationship' between teaching and assessment was lost. Heritage (2007) also shared how teachers perceived assessment data as deterministic and irrelevant because it had often arrived too late to be able to help them ascertain student learning progress and plan instruction. In their views, the assessment data merely provided a summary of what the students had learnt, and was used for ranking students and schools. Hence, it was not a useful source of information that could be used during instruction.

Stobart (2008) also contended that the notion of improving school standards, which had been interpreted as 'better results in national tests and examinations, and particularly in international tests' (p. 2) was deeply entrenched in the current education system. Carless (2012) noted how teachers who were persuaded by the principles of FA and were attempting to implement them might be undermined by the demands of the state tests. Stobart aptly encapsulates the dilemmas:

The tangled formative/summative relationship is one of the most difficult practical issues for formative assessment... the real evidence of difficulty comes from the way that formative assessment is so often suspended

when examination pressures set in. The image is still that formative assessment is 'a good thing', but once preparation for examinations starts, we need to 'get on with the real thing'. This means frequent summative assessments and direct teaching-to-the-test. (p. 159)

Carless (2012) highlights that formative and summative assessment might be regarded as mutually exclusive and that establishing a common ground between the two might be a worthwhile undertaking but definitely a challenge. Carless (2012) also points out that, given that summative assessment is a necessary reality and that formative assessment is a powerful way of enhancing student learning, it is important to see them as mutually supportive, that is, if FA is implemented effectively, it has the potential to enhance student performance in summative assessment.

Wylie and Heritage (2010) observe that enacting effective FA requires teachers to be able to 'orchestrate a range of knowledge and skills simultaneously' (p. 118). While the authors concur that the demands on the teachers are phenomenal, they suggest that teachers can consider working on developing one facet of FA at a time. For example, they can work on supporting students to think more deeply about their own learning, and that might impact teachers' content and pedagogical content knowledge. Therefore, teachers can engage in professional development for building all their FA knowledge and skills incrementally. Wylie and Heritage (2010) provided some helpful reflec-

tive questions for teachers and the school leadership to consider:

- (i) What are the learning structures already in place to support teacher engagement in FA implementation?
- (ii) What are the impediments that might need to be addressed for the professional development of FA in the teachers?
- (iii) What are the resources within and outside of the school that the school can use?
- (iv) Do the existing school schedules allow time for the teachers to meet and talk about their FA practices?

Despite the positive impact of the ideas in FA, numerous studies surfaced that FA was scarcely being translated into action in the classroom (Bennett, 2011; Carless, 2012; Gardner, Harlen, Hayward, & Stobart, 2008; Good, 2011; Heritage, 2010; Stobart, 2008). While the journey to effective FA implementation in the classroom may seem daunting, it is surely a journey worth taking and supporting because of the numerous studies that have demonstrated its possible positive impact on student learning and engagement. As reported by Thum et al. (2015), as it was difficult to separate the effect of FA from other factors involved, and improvement in achievement took time and thus studies needed to be longer term, it would be worth investigating the impact of FA classroom practices in the Singapore classroom over a longer period of time so as to ascertain which practices were working well and which classroom practices could be worked on.

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