

## **Building Teachers' Capacity in Classroom-based Formative Assessment**

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### **Abstract**

Building teachers' capacity in formative assessment has become increasingly important for 21st century teaching and learning. Many governments believe that formative assessment offers a powerful means for meeting goals for high-performance, high-equality of student outcomes, and for providing students with knowledge, skills and dispositions for lifelong learning. In order to help teachers to improve their formative assessment practices, it is important to provide them with effective professional development. Research on teacher professional development has pointed out that school-embedded teacher learning communities (TLCs) are the best mechanism for building teacher capacity in formative assessment. The use of TLCs as a professional development model in Singapore schools is relatively new given that professional development for building teachers' capacity in formative assessment is mostly in the format of ad hoc, 1-2 day workshops. This paper seeks to contribute to the knowledge base of teacher professional development and formative assessment practices by presenting two case studies that illustrate the need for schools to employ TLCs as a model of professional development for building teachers' capacity in formative assessment.

**Keywords:** teachers' capacity, formative assessment, teachers learning community, 21st century skills, student learning

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## Introduction

Over the past decade, there have been many policy initiatives launched by the Singapore Ministry of Education to reform the nation's education system so that holistic development of a new generation of students can be made possible through high quality teaching, assessment and learning. The policy initiatives include "Thinking Schools, Learning Nation" (Goh, 1997), "Innovation and Enterprise", "Strategies for Effective and Engaged Development", "Master Plan for IT Education", "Teach Less, Learn More", Curriculum 2015, and the most recent Primary Education Review and Implementation (PERI, MOE 2009). All these initiatives have boiled down to a shift in focus in education, that is, from efficiency-driven system to quality and choice in learning, which leads to changes from learning content to developing a habit of inquiry and nurturing life skills and values as well as from rote memorization to creative and higher-order thinking. This shift in focus is well aligned with the essential skills for success in the 21st century knowledge-based economy.

In the United States, the members of the Partnership for 21st Century Skills have urged policymakers, superintendents and school administrators to promote 21st century education by committing to incorporating 21st century skills in curriculum standards and assessments, investing in teacher professional development and use of technology, and allocating adequate resources to ensure equitable access to 21st century tools (Partnership for 21st Century Skills, 2002). One of the most important strategies is for teachers to use effective classroom assessments that measure what students are learning and how they are learning it. At the same time, teachers are expected to use the assessment information to plan and adapt instruction. In other words, classroom assessments should be integrated with the instructional process for teachers to understand and reinforce student learning. These are the key principles of assessment for learning or formative assessment as advocated by many assessment experts (Black and Wiliam, 1998; Shepard, 2000).

In view of the new vision in education, Singaporean teachers have been constantly given support, training, and resources in developing and implementing new curriculum design, assessment methods, and instructional strategies that are well aligned with the desired outcomes of education for the 21st century learning. For example, MOE has distributed the TLLM Ignite package and the PETALS: The Teacher's Toolbox to schools as guidelines and resources for teachers in school-based curriculum innovations. The Ministry has also provided in-service teachers with professional development workshops in assessment literacy since 2005. The most recent reform in education is evident in the *Primary Education Review and Implementation* (MOE, 2009) in which the semestral exams for Primary 1 and 2 are replaced with bite-sized modes of assessment, such as topical tests, to provide regular feedback on pupils' learning to parents. The PERI Committee has recommended assessment should support the holistic development of pupils and the school-based assessment and feedback system should be adjusted to focus more on developmental objectives. It should also encourage the balanced development of knowledge, skills and values in children.

At this juncture, many felt that it is important to explore formative assessment or assessment for learning practices in schools. There is also a need to build teachers' capacity in formative assessment practices because such innovation is relatively new to many teachers who may not have received any formal assessment training in their pre-service teacher education programs. According to Dede, Korte, Nelson, Valdez, and Ward (2005), no educational improvement effort can succeed without building teachers' capacity to innovate. Likewise, Wiliam and Thompson's (2008) point out, developing the capability of the existing teaching workforce is far more effective than reducing class size or hiring new teachers to replace the old

ones in the effort to improve educational outcomes. In Singapore, a two-year intervention project on improving teachers' assessment literacy at the primary school level had shown positive and promising results in terms of helping teachers to build their capacity in authentic assessment task design and rubric development (Koh & Velayutham, 2009). The findings also indicated that teachers' assessment literacy in designing and implementing authentic assessments had improved as a result of their active participation in ongoing, sustained professional development workshops. In addition, the study also showed that ongoing, sustained professional development was more effective than short-term, one-shot professional development workshops in improving teachers' assessment literacy. A follow-up interview with the participating teachers in the research project revealed that many teachers would like to sustain their assessment innovations and to receive further training in formative assessment, that is, how to use assessment information to support student learning. The interest of the teachers is also sparked by the MOE policy initiative, which urges teachers to integrate formative assessment into day-to-day teaching and learning.

### **Purpose of the Study**

Teacher professional development is deemed to be more effective when it is local, sustained, and involves an active, collective participation of teachers. Research on teacher professional development has consistently pointed out that school-embedded teacher learning communities (TLCs) are powerful mechanisms for building teacher capacity in formative assessment and for teacher change in their classroom practices (Bennett & Gitomer, 2009; McLaughlin & Talbert, 2006; Wiliam & Thompson, 2008; Wylie, Lyon, & Goe, 2009). Improving teachers' capacity is believed to have positive influences on student learning and learning. According to Bennett and Gitomer (2009), there is a need to go beyond traditional approaches to teacher in-service training and build more on teacher learning communities, which let teachers help one another discover how to use formative assessment best in their classrooms. Wyle et al. (2009) have showed that TLCs provide not only an opportunity to support teacher professional growth in formative assessment practices, but also changes the school culture. Their two case studies of teachers from two different TLCs gave invaluable insight into the processes involved in implementing formative assessment through TLCs.

Wiliam and Thompson (2008) have stated five reasons that TLCs are appropriate for the development of teacher expertise in formative assessment. First, formative assessment depends on a high level of professional judgment on the part of teachers. This is especially true for the appropriate use of various formative assessment strategies such as explicit sharing of learning goals and success criteria, questioning, wait time/thinking time, feedback, self assessment, and peer assessment. Hence, it is important to provide teachers with professional development based on a teacher-as-local-expert model. Second, school-embedded TLCs are sustained over time, which allows changes in teachers' practice to occur developmentally. Third, TLCs provide a collegial environment for teachers to discuss their weaknesses in content knowledge with their colleagues. This kind of conservation allows teachers to help each other to develop their expertise in pedagogy and content knowledge. Fourth, TLCs are embedded in the day-to-day realities of teachers' classrooms and schools, allowing for repeated cycles of learning, practice, reflection, and adjustment within their daily context. This may indicates that it will not be an add-on burden to teachers' existing workload. Fifth, TLCs provide a forum for supporting teachers in converting the broad formative assessment strategies into "lived" practices within their classrooms. This provides teachers with a variety of living examples of formative assessment implementation, which they can identify with and learn to improve their own practices

In Singapore, the use of TLCs as an ongoing professional development model for formative assessment is relatively new given that in-service teacher professional development in

assessment literacy has been mostly conducted in the format of ad hoc, 1-2 day workshops. To date, there is also scant empirical evidence documenting teachers' learning trajectories in formative assessment due to a lack of sustainability of teacher professional development programs.

This study seeks to contribute to the knowledge base of teacher professional development and formative assessment practices by presenting two case studies that illustrate the need for Singapore schools to employ TLCs as a model of professional development for building teachers' capacity in formative assessment. At the time of our writing this paper, not all data are available for our detailed analyses. As such, we could only present some of the preliminary findings which showed the learning experiences and constraints by some teachers after participating in ad hoc, 1-2 day workshops. We are hopeful that TLCs can be used in the two schools for teachers' sustained professional development in formative assessment.

### **Method**

Two case studies were conducted in two secondary schools. Both schools were in the east zone of Singapore. Prior to the implementation of TLCs, we conducted two professional development workshops in formative assessment with the participating teachers in their respective schools. In the first school, a focus group interview was conducted with three of the participating teachers to understand their learning experiences and constraints. In the second school, only one teacher was available for the interview.

### **Case Study 1**

#### ***Sample***

The sample involved 30 mathematics and science teachers from Princess Alice Secondary School<sup>1</sup>. The school is an autonomous government-aided secondary school that caters to diverse learners from three main academic streams, namely express, normal academic and normal technical. Currently, the school is classified as a Band 5 school (out of 9 banded schools) for the express stream and a Band 1 school (out of 5 banded schools) for the normal academic stream by the Ministry of Education.

#### ***Context***

One of the strategic thrusts of the school is holistic education, and in recent years, there has been a paradigm shift from conventional classes to differentiated classes to better meet the myriad academic dispositions of pupils that attend the school. Along with these major curricular changes, the school leaders felt that there is a need for changes in assessment, albeit the traditional paper-and-pen assessments are still the dominant assessment mode.

#### ***Professional Development***

Due to the curricular changes, a 2-full day professional development workshop on formative assessment was conducted in November 2009. On the first day of the workshop, the teachers were first tasked to reflect on their current assessment practices, after which, they were introduced to, discussed and shared in groups about the definitions of formative, alternative and authentic assessment. The most part of the workshop focused on the concepts and ideas of formative assessment as well as the five formative assessment strategies. Once the teachers were exposed to the ideas and strategies of formative assessment, they worked in teams to identify whether their current assessment practices were formative in nature. Toward the end of the workshop, the teachers worked in teams again according to their teaching subjects to re-visit their current curriculum and highlight some possible areas of which assessment can be formative. They then discussed in general how they would implement different strategies of formative assessment

in their classes. On the second day of the workshop, the teachers were introduced to crafting rubrics and giving formative feedback. About half of the day 2 workshop was set aside for the teachers, in their teams, to work on the rubrics that would complete their plan of formative assessment for their classes. The different teams of teachers used the remaining time of the workshop to share their ideas of formative assessment with the big group so that the other teachers could critique and learn from each other.

### ***Preliminary Findings***

A focus group interview was conducted with three teachers in a meeting room within the school compound on 31 May 2010. The discussion sought to understand whether they benefited from the 2-day workshop and whether they had implemented what they planned. Any issues and problems they faced in implementing formative assessment in the classroom were also surfaced. The three teachers were invited as follows:

- Teacher C was a biology and principles of accounts teacher
- Teacher D was a mathematics and physics teacher
- Teacher W was a chemistry and mathematics teacher

All three teachers have at least 5 years of teaching experience and have taught across grade levels (Secondary 1 to 5).

From the beginning of the discussion, it was found that all three teachers had not used any formative assessments in class so far. Only Teacher W had used journaling but did not use it as a formal assessment and the journaling assignment was not accompanied by a set of rubrics. When the teachers were asked why they did not use formative assessment in class, several issues emerged.

***Definition.*** While all three teachers found the workshop an eye-opener, and that it was effective in exposing them to other modes of assessment besides the traditional pen-and-paper test, not all teachers were clear about the definitions of formative, alternative and authentic assessment.

Ok actually I still don't really understand what formative assessment is so I don't think I can give much. (Teacher W)

For me, I think, is it like giving class test or common test, that means, not at the end of the year its throughout the year after every chapter just to check their understanding. (Teacher C)

It appears that though the workshop was introductory, it did not fully manage to weed out the underlying misconceptions of formative assessment. Teachers W and C had likened formative assessment to bite-sized tests. This is similar to what has been proposed in PERI!

***Teaching workload.*** The discussion of teacher workload was noteworthy. Two of the three teachers attributed their inability to use formative assessment in class to their overwhelming teaching workload. Teacher W mentioned that "time" was a critical factor in implementing formative assessment in class.

I think it is because when the time pressure is there to complete syllabus, you will always go back to a form of assessment or even teaching that you are most comfortable with.... if I were to do formative assessment, maybe that particular half a year, I should have maybe 1 or 2 classes less. (Teacher D)

Teacher D further suggested that the implementation of formative assessment currently is an add-on, and that nothing has been done to off load the teachers.

***Teacher beliefs.*** All three teachers demonstrated that they believed in the value of formative assessment and how it can assist pupils in learning.

Formative assessment is the assessment of students at different stages of their learning so that it allows them to have intervention at appropriate moments so that their learning is more holistic. (Teacher D)

I think I will definitely implement it because there is definitely some usefulness in doing it but I will do it in a very very scaled down version... (Teacher W)  
These beliefs, however, were apparently weighed down by their workload, time pressure and their lack of confidence in implementing formative assessment in class.

... I also don't have the confidence in implementing it across the classes. (Teacher W)  
Because at the end of the day, let's be very frank, I'm not very confident of implementing formative assessment and I happen to teach 3 classes, and if I do it one shot with 3 classes, it is going to be... all 3 will not get it right. (Teacher D)

**Pupil perceptions.** There was a concern that if the teachers had implemented formative assessment this year, their pupils might not understand the rationale behind it. This might be detrimental to their learning as they might resist that type of assessment and request for paper-and-pen tests instead.

The students are also new to this formative assessment. So if we just bring in something at this level, there will definitely be tension because students focus is just doing well in their N and O level exam at the end of the year and they might be wondering why are we doing like journaling, projects, portfolios and all these and how will this help them. (Teacher W)

The discussion further suggested that it could be more beneficial if formative assessment was introduced to pupils as early as the secondary 1 level.

**Support.** Teacher C highlighted that there could be more professional teacher support if teachers were required to implement formative assessment in class.

For me, it will be Teacher support. Maybe not so much like Teacher Aide but more like real professional teachers doing the same thing so that when we make mistakes we make the same mistakes. (Teacher C).

This suggests that building sustainable school-embedded TLCs is of paramount importance. Besides the professional support that was discussed, Teacher D also linked teacher support to lesser workload.

If I can off load some of my classes to another capable teacher, why not? (Teacher D)

**Stakeholders' expectations.** The issue of the value of marks from traditional high-stakes assessments came out relatively strongly. It was discussed that if marks were still what are expected from the stakeholders and industry, formative assessment may not outweigh paper-and-pen tests.

Whether how you put it across, they (pupils) know that at the end of the day, O levels is just going to be marks. So if we were to implement it now, it will be very tough.... They (pupils) want to see some kind of marks that can be, that is objective. And to them, one thing that gives them the greatest assurance and objectivity is pen and paper. (Teacher D)

I think as much as teachers, we want our students to learn and develop not just in the academic aspect, we want them to also leave the school with good character, being critical thinkers, and have skills that can help them through greater part of their life in future when they work as 21<sup>st</sup> century workers, learners. But at the end of the day, I think marks is still important because that is what everybody is looks at unless this whole thing is taken away and there is a whole new way of grading. (Teacher W)

Teacher D also underscored how schools offering the integrated programme where pupils need not sit for the 'O' level national examination are more able to engage in more formative assessments. Teacher D's responses suggest that he held a misconception of the purpose and function of formative assessment.

**Policy.** Above teacher beliefs and all other resistances, the teachers agreed that if one component of their appraisal and ranking consisted of whether the teacher had conducted formative assessment in class, they would definitely implement formative assessment.

For me, if I am ranked, then I will. If not, then I will maybe still just try. (Teacher C)

Teacher D highlighted that if formative assessment was done because of directives, it would not be done so much for pupil learning, rather, for the ranking of teachers.

## **Case Study 2**

### ***Sample***

The sample involved 17 science teachers from Turning Point Secondary School<sup>ii</sup>. The school has an autonomous status and was awarded the School Distinction Award (SDA) in 2005 by MOE. The school caters to diverse learners from three main academic streams, namely express, normal academic and normal technical.

### ***Context***

The Science department had gone through the experience of ambiguity in the process of curriculum change. It started in 2006 when the curriculum of lower secondary science (LSS) was designed using Understanding by Design (UbD) framework. Till now the curriculum undergoes yearly review with refinement to the content in alignment with the modes of assessment. This year, a concerted effort was put in to build teachers' capacity in their formative assessment literacy. Although the LSS teachers were already engaging in using performance task as a tool of authentic assessment, there were still gaps of understanding especially in the area of assessment for learning. At yearly reviews of the curriculum, gaps were identified and plans were put in place to address those gaps. Among the most critical gap identified was the implementation of performance task as an alternative assessment mode. Teachers mentioned that the product produced by students was unable to provide adequate evidence of their understanding. At times, the product produced seems to be the work of others rather than that of the students. This was due to the manner in which the performance task was carried out. Students will hand in their product after a period of 5 to 6 weeks after the topic has been taught. There was no monitoring and checking process of the progress of students while they were doing the performance task. Another critical point was that students were unable to use the rubrics given to them at the beginning of the assessment as a tool for them to produce a high quality work. These gaps indicate a low level of assessment competency, especially in the area of assessment for learning and students' level of readiness to engage in alternative modes of assessment.

### ***Professional Development***

All science teachers went through a one and a half days of assessment literacy workshop where they were firstly asked to reflect on their current assessment practices. They were then exposed to the concepts, ideas, and strategies on formative assessment or assessment for learning. The contents of the professional development workshop were similar to those delivered at Princess Alice Secondary School.

### ***Preliminary Findings***

Due to time constraint, only one teacher (Teacher A hereafter) was available for the interview. Teacher A mentioned that she did not have time to carry out the feedback sessions with most of her students although she did plan to do so after participating in the assessment workshop. Time constraint was a hindering factor to Teacher A as all the feedback sessions needed to be carried out after curriculum hours. She also added that it was not easy to get the students after curriculum hours as they had other engagements after school. When asked about her understanding and importance of feedback to students, she mentioned that it is an important aspect of assessment for learning but time is a crucial factor for its successful implementation. Again most of the issues and problems raised by Teacher A were similar to those of the three teachers in Princess Alice Secondary School. Due to space limit, we will not repeat the findings here.

## Discussion and Conclusion

Although our findings are preliminary, they concur with the literature that professional development in formative assessment should not be fragmented, one-shot workshops that center on the transmission of either content knowledge or classroom management skills presented from the speaker to the audience. Rather, school-embedded TLCs should be used as a model of professional development. According to National Research Council (NRC, 1996), professional development for teachers needs to shift from technical training for specific skills to opportunities for intellectual professional growth (p. 58). When teachers have the time and opportunities to describe their own views about learning and teaching, and to compare, contrast, and revise their views, they come to understand the nature of exemplary science teaching (NRC 1996, p.67). TLCs are believed to provide a venue for teachers to actively engage in professional learning and growth in formative assessment, which in turn will contribute to improved student learning.

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<sup>i</sup> The school's name is a pseudonym.

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