Reaping the Benefits of Deep Formative Assessment:
Lessons From Around the World

A Summary of the April 27-29, 2016,
FAST SCASS Professional Development Meeting in Portland:
Research and Promising Practices in Assessment for Learning

Prepared by

Marie C. Collins

for

The Formative Assessment for Students and Teachers (FAST)
State Collaborative on Assessment and Student Standards (SCASS) of the
Council of Chief State School Officers (CCSSO)

Reaping the Benefits of Deep Formative Assessment: Lessons From Around the World

As formative assessment practices gain traction in school systems around the world, new insights are emerging about the critical role students play in maximizing its effectiveness; about how to help teachers develop and hone their formative assessment skills; and about how education policy can be used more effectively to deepen and scale up the use of classroom-based assessment practices.

In April, three international formative assessment experts — Bronwen Cowie, Christine Harrison, and Jill Willis — met with members of the Formative Assessment for Students and Teachers (FAST) State Collaborative on Assessment and Student Standards (SCASS)[1] in Portland to share these insights and explain how they emerged in their specific contexts. After the meeting, the presenters graciously consented to the creation of this summary.[2] Their observations have the potential to impact how state and federal government officials, school leaders, and classroom teachers support and practice formative assessment, as well as the potential to ensure that teacher skill with classroom assessment practices benefits all students.

> **Formative assessment** is the term used to describe a type of assessment where the focus is on *informing* learnin*g*, rather than measuring it or summing it up. While some jurisdictions talk of *assessment for learning*, and there are some nuanced differences between the two terms, in this document we treat them as interchangeable. Here, formative assessment is conceptualized as a pedagogic process where teachers and students evaluate their learning while the learning is occurring, rather than a specific type of assessment task or event.

EVOLVING DEFINITIONS

Stories the three presenters shared illustrate how formative assessment practices emerged, changed, and spread in their respective countries. While each route was different, each journey led to similar observations about how and why definitions of formative assessment have evolved.

Christine Harrison, England

In the United Kingdom, the emergence of formative assessment practice was largely driven by university research. Over time, roughly 10 large-scale research projects brought assessment for learning to schools throughout the nation. Teachers in the schools piloted formative assessment practices in their classrooms using a collaborative action-research model, and researchers looked to these teachers, their students, and their school cultures to determine what worked well and what caused efforts to falter.

Dr. Christine Harrison, a senior lecturer in science education at King's College London, pointed to the national conversation about assessment for learning that gradually emerged among all stakeholders as a result of this broad engagement. With it came a realization that early definitions of formative assessment could be revised to more explicitly position it as a classroom practice that is part of daily instruction (rather than an assessment) and to place greater emphasis on student agency. Even when assessment for learning practices are widely recognized and practiced, she noted, the need to empower students as regulators of their own learning and as peer resources for each other frequently takes a back seat to the role of the teacher.

---

[1] The FAST SCASS is a program of the Council of Chief State School Officers (CCSSO). Learn more at: http://www.ccsso.org/resources/programs/formative_assessment_for_students_and_teachers_(fast).html

[2] To view their full presentations, visit: https://plus.google.com/u/0/communities/114390676582269809073

> "Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. .... Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet learning needs.
>
> **—Black et al., 2003, p. 10**

> "This is classroom assessment which focuses on the learning as it is taking place and its function is to bring about improvement. Both teachers and learners need to be involved but ultimately it is the learner who has to take action."
>
> **—Harrison & Howard, 2009**

Jill Willis, Australia

Historically, Australian teachers have been responsible for creating their own classroom assessments, with each state determining how to combine teacher assessments with state-designed assessment tasks. Sharing criteria, using peer and self-assessment, and giving feedback were regarded as expected best practices. Dr. Jill Willis, a senior lecturer in education at Queensland University of Technology, said teachers therefore believed assessment for learning was something they were already doing. The strategies were combined into a policy narrative of "Assessment for Learning" in 2008, when the federal government released some supporting resources and a website to promote it as an approach to curriculum planning.[3]

Despite these quality resources, formative assessment was not prioritized as a policy initiative, as significant attention went to the first national literacy and numeracy tests, which were launched that year. It was also the time when collaborative action on the national curriculum began in earnest.

The national climate quickly shifted from teacher control to a high level of prescription over classroom curriculum and assessment. But increased competition, prompted by the national tests, has led to discussions about "what works" in classrooms and a renewed focus on providing effective feedback and sharing learning intentions with students. School-level professional learning about feedback is offering teachers a way to regain their "optimism and idealism about the professional capacity of teachers," Dr. Willis said.

She pointed to statements about assessment in the new national professional standards for teachers (above-right) as part of the growing discourse that "positions teachers as experts." However, she noted, there is no mention within the statements that acknowledges students as owners of their learning, as there is in the definition at right. "This is an area for future growth and development."

Across the professional standards,[4] teachers are expected to:

- Use assessment to inform curriculum planning (2.3).
- Establish learning goals (3.1).
- Use feedback and student assessment results to inform planning and improve programs (3.6).
- Contribute to collegial discussions (6.3).
- Continue their own professional learning to improve student learning outcomes (6.4).

Standard 5 is devoted to teacher assessment practices and notes that, among other assessment practices, a highly accomplished teacher will:

- Diagnose learning needs.
- Provide targeted feedback.
- Use judgments to progress student learning.
- Develop consistent judgments through moderation.
- Use data to identify interventions.
- Construct accurate reports to students and parents.

> "Assessment for Learning is 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.
>
> **—Klenowski, 2009, p.264**

---

[3] http://www.assessmentforlearning.edu.au/default.asp

[4] Australian professional standards for teachers. http://www.aitsl.edu.au/australian-professional-standards-for-teachers

Bronwen Cowie, New Zealand

New Zealand's story is notable for its long history of deep government support for formative assessment practice. Dr. Bronwen Cowie, professor of education at University of Waikato, said the "seeds of a formative focus" can be seen in the review of classroom assessment by Crooks (1988) and in national policy as early as 1989. She said the country's investment could be seen as linked the *1840 Treaty of Waitangi*, which laid the groundwork for a moral and legal commitment to partnership with Māori (the indigenous people of New Zealand), and to supporting Māori students to succeed as Māori and as citizens of the world (Durie, 2001).

In the mid-1990s, the New Zealand Ministry of Education explicitly included formative assessment in national assessment policy and professional development. Today it calls the practice out in meaningful ways in the national curriculum and in assessment documents (see Dr. Cowie's examples, above-right). Formative assessment skill is a key focus of professional development, she said, and teacher learning is buoyed by in-class support; professional development for school leaders; and high quality, government-developed assessment tools.

> ### New Zealand Curriculum
> "The primary purpose of assessment is to improve students' learning and teachers' teaching as both student and teacher respond to the information that it provides" (NZMOE, 2007, p. 39).
>
> ### Directions for Assessment in New Zealand
> Assessment capable teachers and students are … able and motivated to access, interpret, and use quality information about learning in ways that affirm or further learning (Absolum et al., 2009, p. 6, modified).
>
> ### Position Paper: Assessment (Schooling Sector)
> The student is at the centre — assessment involves a process of ako or reciprocal learning amongst multiple stakeholders (students, peers, teachers, schools, families) (NZMOE, 2011).

Current government policy (2011) places students at the centre of the assessment process, Dr. Cowie said. Formative assessment, as assessment in support of learning, is congruent with the New Zealand understanding of culturally responsive pedagogy, which emphasizes the value of inviting in the knowledge and experience students bring from their homes and communities, and the role of relationships. Both approaches draw on the notion of ako, or mutual learning, in which learning involves students, teachers, peers, *and* whânau (extended family). Both approaches challenge deficit notions of students and aim to move beyond a credit view to position student diversity as a resource for learning and curriculum.

Dr. Cowie said the definition of formative assessment she brings to the table depends on a "dynamic interplay" that includes planned actions as well as actions that are contingent on students and what they do. Teachers focus not only on *whether* students achieve the intended learning (convergent assessment), but also on what they actually learn (divergent assessment). The question, she said, is "how to manage the balance between convergent and divergent assessment within an agenda of learning for *all* students."

> Formative assessment is defined as the process used by teachers and students to notice, recognize, and respond to student learning in order to enhance that learning, during the learning.
>
> **—Cowie & Bell, 1999**

FAST SCASS, United States

After hearing the presenters' observations, participants took time to ponder the definitions of formative assessment in use in their contexts, as well as to confirm that the FAST SCASS definition at right explicitly references both classroom context and student agency.

> Formative assessment is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes.
>
> **—FAST SCASS, 2007**

WHY STUDENT AGENCY MATTERS

Teachers who enlist students as active participants in formative assessment processes harness a multiplier effect that can have a powerful impact on student learning, because their students learn from a variety of teacher-designed peer interactions and experiences, as well as from interaction with their teacher. Students are more engaged in their learning when working with their peers and when peer-generated questions and work samples are used to guide instruction, Dr. Harrison explained. Providing an example from the pan-European Strategies for Assessment of Inquiry Learning in Science (SAILS) project, she compared questions a teacher prepared, which focused on the essential learning of a planned lesson, to questions that the teacher helped student generate, noting that the latter drove exploration of the essential learning to deeper levels during the activity.

Dr. Willis pointed to both formal and informal learning that also occurs in student-centered classroom contexts. Peer conversations and the use of peer exemplars help students understand what is expected of them, she said. Students don't have to wait to get the teacher's attention to ask questions; they can talk with one another to check their understanding. Immersed in this kind of collegial, evaluative classroom environment, "individuals and groups can get a feel for quality," she stated. They begin to internalize discipline-specific values and practices that can help them regulate the quality of their work even after they leave the classroom.
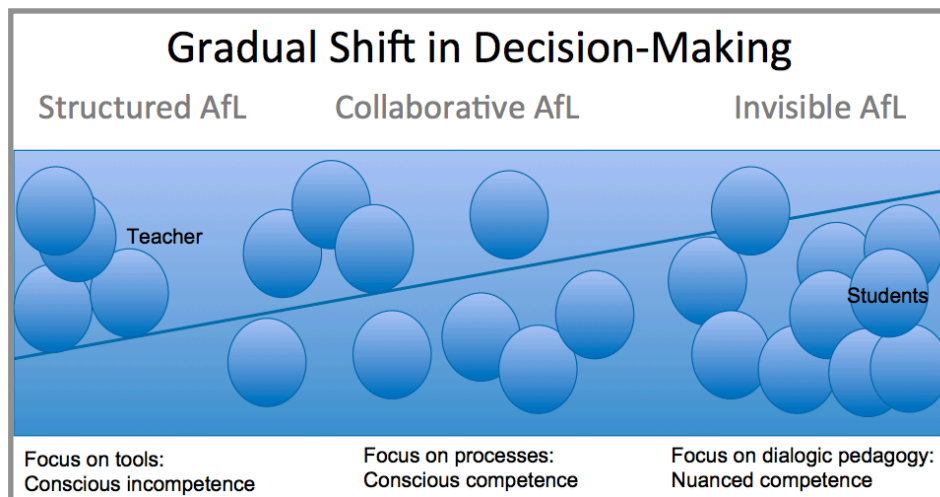
Dr. Cowie provided the quote from Sadler (1989) at right, which summarizes the importance and complexity of this kind of student self-monitoring. She also noted that peer involvement in formative assessment allows for more timely and more targeted personalized feedback.

> The indispensable conditions for improvement are that the student comes to hold a concept of quality roughly similar to that held by the teacher, is able to monitor continuously the quality of what is being produced during the act of production itself, and has a repertoire of alternative moves or strategies from which to draw at any given point.
> **—Sadler, 1989, p. 121**

WHAT DOES IT TAKE TO PROMOTE STUDENT AGENCY?

Successfully engaging students in formative assessment practice is a hallmark of higher levels of expertise. As the graphic below shows, after developing some skill with structured assessment for learning techniques, teachers gradually move toward collaboration with students that grows increasingly nuanced, to the extent that their formative assessment practice becomes essentially invisible, although still central to teaching and learning. In high-functioning formative assessment classrooms, teachers share responsibility for moving learning forward with their students; learning is recognized as a social process and becomes a joint responsibility.

In the diagram, bubbles represent the amount of responsibility teachers and students have and take up, with bubbles above the diagonal line representing the teacher, and those below representing student opportunity and responsibility for self-assessment. "Nuanced teacher competence," or assessment that supports learning, is complex. It requires the

Gradual Shift in Decision-Making

Structured AfL   Collaborative AfL   Invisible AfL

Teacher

Students

Focus on tools: Conscious incompetence   Focus on processes: Conscious competence   Focus on dialogic pedagogy: Nuanced competence

teacher to know where learning is headed during a given lesson, as well as where it currently is for each student, and to guide students' individual journeys toward the new learning using planned activities that support their interests and cultural understandings.

To illustrate this, Dr, Harrison invited participants to think of the straight lines, or "track," in the drawing at right as a planned learning experience designed to lead students from where they are (top) to the learning goals (bottom). Students begin the activity with different levels of knowledge and skill, and as the lesson advances, the meanings they make from their relevancy-enriched explorations can stray a short distance from the rails or the teacher's intended learning at times (the wavy lines). But as they work, the teacher monitors their developing understanding and prompts their thinking in ways that move them closer to
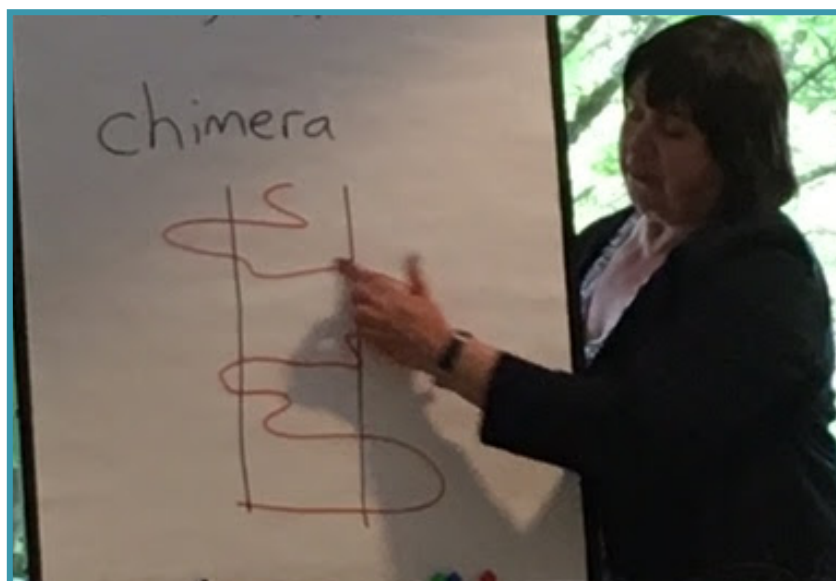
and farther along the track, ensuring a focus on the learning target. The challenge for teachers is twofold: (1) To recognize when productive learning can take place "outside the tracks" and to support that learning, and (2) to recognize when such learning is important to foster, but not at the expense of bringing student learning back inside the track, which ensures they develop the intended curriculum understandings.

Mastery of assessment for learning processes for planning, gathering, interpreting, and responding to evidence of burgeoning, curriculum-specific understanding *while learning is taking place* is central to the teacher's ability to do this. In addition to being complex, the practice requires skillful balance. Allowing student interests to completely drive such a lesson would lead to them to deviate substantially from the intended learning, Dr. Harrison said; on the other hand, staying rigidly within the rails wouldn't necessarily enable *all* students to reach the learning goals.

A Culture of Respect

Dr. Cowie stressed that teachers must cultivate a climate of mutual trust and respect in their classrooms to ensure that students are comfortable sharing their thinking. Time and again, students have pointed to subtle ways — and not so subtle ways — their teachers shut them down, or to signals teachers gave that prevented them from asking questions and voicing opinions in the first place.

Dr. Cowie provided a number of quotes from interviews with students about what they need from teachers to be active participants in formative assessment practices (see the examples to the right).

> "The worst thing is when you ask a question and they [the teacher] belittles you in front of everyone and goes 'Weren't you listening?' or 'Don't you understand that by now?' "

> "I kept on thinking that I would put up my hand [and ask a question] but then someone else would put up their hand and they would understand it [the difference between mass and weight] perfectly and I thought 'Well, everyone else probably understands it and I don't'. ... then I'd look stupid if I put up my hand and asked her to repeat it. She could have already gone over it ten times since I didn't understand it. I'd look like a X … for making her explain it once again because everyone understood it."
>
> —Cowie. 2005

Similarly, a classroom culture that invites students to be agents of their own learning is unattainable without active respect for students' experiential and cultural backgrounds. To achieve the kind of learning environment that formative assessment makes possible, teachers must know and value who their students are at a deep level, Dr. Willis said, and that includes "the beliefs, values, worldviews, languages, and practices of the many and various communities to which their students belong." A deficit view of student differences, such as labeling some students as disabled or using ability grouping, undermines efforts to enlist students as learners.

What Does the Research Say?

Dr. Harrison pointed to a study (Hattie, 2009) that synthesized findings on the effects of many different influences on classroom learning. A number of formative assessment practices related to student agency got high marks: Feedback (effect size 0.73), teacher-student relationships (0.72), not labeling students (0.61), challenging goals (0.56), and peer tutoring (0.55).

High levels of formative assessment practice maximize these influences by creating classrooms that enable and empower students to make their thinking public as they learn. Students in these classrooms get more feedback from their teachers, and they share feedback with their peers. Their engagement with each other provides teachers with feedback about how they are internalizing new concepts, and when and where their views differ or they don't understand something, they seek the feedback of the teacher.

The student interviews Dr. Cowie referenced also provide support for how formative assessment empowers students to engage with learning processes. When they aren't labeled or judged, but have positive relationships with their teachers, students in assessment for learning classrooms can be quite articulate about their needs (see some examples Dr. Cowie gave at right). Students value different ways of interacting for different purposes, she said. When they are pursuing learning goals, they appreciate being challenged to think, and they prefer that the teacher suggest ways to advance their learning, rather than impose one "right" way on them.

By contrast, students in more teacher-centered classrooms may not see the same aspects of formative instruction as "their responsibility." Having acclimated themselves to what it means to be "good students" in a culture that values teacher-directed learning, they need help seeing how taking responsibility for learning is possible and benefits them.

Using case studies of two teachers who used very different approaches to empower such students, Dr. Willis suggested that successfully engaging students as responsible learners and peer resources in formative assessment classrooms may have more to do with teacher-student trust than a particular style or approach. The key, she said, is convincing students they have the power and the permission to take action, rather than always rely on the teacher to direct their learning.

> "You've got to ask the teacher though, because the bits on ions and how you make [compounds], I really didn't understand that. I couldn't understand that. ... I ended up just forgetting about it for a while and when the teacher wasn't busy I asked her to come and I finally got what it was."
>
> "Today I sat by a brainy person so I asked him."
>
> "Other students can help us more cos they use language we understand and they know what we are interested in."
>
> "We ask other students quite often just to see if we did it right. We ask them what their answer was and we compare it ... if it is different we think well one of us must have done it wrong so you do it again ... or ask the teacher."
>
> "She came around and looked at everyone's work and asked if they did understand, and perhaps said, 'Oh well, may be if you tried it this way or that way it may work better' or 'Have you tried this?' "
>
> "You respect teachers who respect you."
>
> —Cowie, 2005

HOW DO WE HELP TEACHERS BECOME DEEP FORMATIVE PRACTITIONERS?

A Process Enacted at Different Degrees of Sophistication

Dr. Harrison spoke of five types of formative assessment practitioners that had been identified in studies in the United Kingdom. While the types provide a way to think about teacher engagement with formative assessment, the way teachers might progress in their use of formative assessment, and the stages at which teachers can get stuck, she stressed that the individual types do not form a learning progression. They are:

• *Conformists* — teachers who enact particular strategies because they are told to.

• *Strategy players* — teachers who focus on a single aspect of practice.

• *Checkers* — teachers who focus mainly on monitoring whether their students learn what was intended.

• *Involvers* — teachers who move, in some way, toward greater student involvement in assessment.

• *Formative practitioners* — teachers who employ a range of rich, robust formative assessment practices.

Drs. Harrison, Cowie, and Willis proposed that connoisseurship, collaboration, and connections are central to teacher practice of formative assessment as a process that is simultaneously responsive to their students' emerging ideas and interests, and guides their students towards curriculum knowledge, dispositions, and competencies/capacities.

Connoisseurship

Citing Sadler (1989), Dr. Cowie called the expertise teachers need to practice high levels of formative assessment *connoisseurship* — a level of mastery that enables them to access information on student learning and make an extraordinary number of complex judgments in the course of a lesson, and implement appropriate and immediate actions based on those assessments — actions that, when combined with students' willingness to engage in learning, move that learning forward.

Undergirding this high level of orchestration, she said, are several competencies:

• Strong, flexible disciplinary knowledge.

• The ability to prioritize content to focus on key learning targets.

• An understanding of which formative assessment strategies are most effective for the subject learning at hand.

• Knowledge of how student learning of that content develops.

• Understanding of what the students in their specific context know and care about, as well as what would be the students' priority, given what students know and care about.

• And more ...

How do teachers with such knowledge and skills become formative assessment connoisseurs?[5] Dr. Harrison described facility with assessment for learning as an intrinsic aspect of teaching skill that must be refined rather than taught. "Our aim is to help them strengthen their formative practice," she said. For the teachers in the study by Dr. Cowie (2005), teachers' recognition that they could and were engaging in formative assessment, including providing feedback, during informal interactions with their students was central to them recognizing the potential of formative assessment. Subsequently, in conjunction with the use of planned strategies, they focused on student learning more deliberately during these interactions.

---

[5] FAST SCASS commissioned the development of rubrics and other reflection and observation tools teachers can use to guide their formative assessment learning (Wylie & Lyon, 2016).

Referring to the findings she presented at right, Dr. Willis elaborated on the conditions under which this skill development comes about. Teachers need to practice their skills in the unique context in which they work, with the support of colleagues who understand the challenges they face. Additional support can include technology — such as devices that facilitate collection of student responses or classroom observations by supportive peers — as well as release time to collaborate with colleagues, particularly within the same subject area or the same or adjacent grades. The importance of fostering collaboration among teachers cannot be overstated: In addition to supporting one another's professional growth, teachers can collaborate on the creation of lesson plans that include formative assessment strategies, ultimately creating a collective, subject-based, and context-specific library of formative assessment instructional strategies — such as discussion prompts, rich tasks, student work exemplars, and more — to improve the processes of gathering evidence of student learning and providing feedback that moves learning forward. Collaboration also critically supports teachers' ability to make sense of where students are in the learning progression, and what strategies might be employed to support their next learning target.

"The literature on teacher development suggests that change is a slow and difficult process, and even more so when involving assessment practices," Dr. Harrison acknowledged. While immersed in this kind of sustained growth, teachers must continually take risks, incrementally moving outside their comfort zones to develop new skills, then rehearsing those skills to develop greater fluency.

> *How teachers develop deep understanding of assessment for learning:*
>
> Grounded in their own classrooms, in their own discipline, and involved [in] their own students. "[G]aining insight into students' conceptions appeared to stimulate teachers' professional curiosity" (Haigh & Dixon, 2007, p. 373).
>
> Teachers need to include students in evaluative activities. "[R]equires fundamental changes to entrenched understandings, attitudes, and behaviours regarding teacher and student roles and relationships" (Hawe & Parr, 2014. p. 230).
>
> Situate collective teaching repertoire development within the subject department (Wong, Leung, Chow, Tang, 2010).
>
> Teacher meetings to have substantive discussions and voice doubts (Haigh & DIxon, 2007, p. 365).
>
> Professional readings, time to discuss, create, and share (Wilson, 2008).
>
> Shared philosophies within supportive school. Support from school leaders. Networks with other schools, professionals, and parents (Sach, 2015).
>
> Not imposed, leaders flexible to enable sustained critical reflection (Hargreaves, 2015).
>
> Dialogue and trust between the municipality level, school leaders, teachers, and students, and where the programme was adapted to the local context (Hopfenbeck, Flórez Petour, & Tolo, 2015).

With time, teachers develop the skill and confidence needed to effect a fundamental shift in teacher and student agency, but such profound shifts in practice usually take more than one year, Dr. Willis noted. "Dialogue and peer work changes the physical layout of the classroom as students need to work together, move around the room, access equipment ... For teachers this can be highly unsettling and additional professional development in new approaches to classroom management may be needed."

HIGHER LEVELS OF SUPPORT

Tight But Loose

There are no shortcuts or quick fixes that can bring about the meaningful changes in teaching and learning that are possible through formative assessment, Dr. Harrison stated. Cherry-picking assessment for learning techniques and treating them as add-ons to other initiatives is not a quicker route to the rewards of the practice. "Implementing new ideas is difficult and requires more than simply adding-on to existing practice," she said; "it requires a *reconsideration, restructuring, and reshaping* of practice."

Similarly, due to the high level of judgment-mediated teacher action involved, reliance on scripts or the imposition of rigid guidelines on how teachers practice formative assessment while their skill is developing does not help teachers develop formative assessment expertise more quickly.

"We advocate: Consistency of principle, *not* uniformity of practice," Dr. Harrison stressed (Harrison & Howard, 2009). The key, she said, is not that teachers practice assessment for learning in a particular way, and not that they learn the practices in a particular order, but rather, that they are "using evidence of achievement to adapt what happens in classrooms to meet learner needs."

She recommends the "tight but loose" formulation, at right, as a rough guide school leaders can use to empower teachers as they learn together. Fidelity to the principles of assessment for learning matters more than which strategy a teacher chooses to achieve that fidelity at a given point in time. To achieve the aims of formative assessment, teachers must understand the theory well enough at the outset to implement it in a way that is consistent with that theory.

> **"The "tight but loose" formulation ...** "combines an obsessive adherence to central design principles (the "tight" part) with accommodations to the needs, resources, constraints, and particularities that occur in any school or district (the "loose" part), *but only where these do not conflict with the theory of action of the intervention*" (Thompson & Wiliam, 2008).

The Role of Policy

Dr. Willis pointed to ways government agencies can help spread and support formative assessment practice at scale. A worthy step is developing a theory of action that outlines the system-wide inputs required to bring about changes at the teacher and learner levels. Referring to the "tight but loose" formulation, "clarity around the theory of action" should be tight, she said; despite intentions, reforms designed to grow formative assessment skill at scale can fail when stakeholders have different ideas about who and what needs to change.

For example, school leaders may have a theory of action that *students will take more responsibility for improving their own learning when teachers change their practice to comply with expected criteria, such as have learning intentions and success criteria on display in the classroom*. Teachers may have a theory of action that *students will take more responsibility for improving their own learning when school leaders allow more flexibility in the curriculum*. This misalignment of expectations means it is not likely the change will succeed. By contrast, alignment with an established theory of action that all stakeholders support can help assure the reform's success.

As an example of a "loose" factor, Dr. Willis cited choices about how to leverage ongoing formative assessment learning once the long-term effort is underway. As new priorities present themselves, assessment for learning practices can be incorporated into new initiatives in ways that align with the established theory of action (Bishop, Darling-Hammond, & Jaquith, 2015). For example, teachers with strong assessment for learning skill could be enlisted to build formative assessment strategies into the development of a new curriculum framework, or to collaboratively develop formative assessment strategies and practices that support the curriculum. Taking such steps challenges teachers to drive their learning to new levels, supports teachers who are new to formative assessment, and embeds assessment for learning increasingly deeper into policy.

WORKS CITED

_____. Strategies for Assessment of Inquiry Learning in Science (SAILS) project. Available: http://www.sails-project.eu/portal

Absolum, M., Flockton, L., Hattie, J., Hipkins, R., & Reid, I. (2009). *Directions for assessment in New Zealand: Developing students' assessment capability*. Wellington: Ministry of Education. Available: http://assessment.tki.org.nz/Assessment-in-the-classroom/Assessment-position-papers

Bishop, J., Darling-Hammond, L., & Jaquith, A. (2015, Nov.). *Maximizing the use of new state professional learning investments to support student, educator, and school system growth: Executive summary.* Stanford, CA: Stanford Center for Opportunity Policy in Education. Available: https://edpolicy.stanford.edu/sites/default/files/publications/execsummarymaximizing-learning-investments.pdf

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2003). *Assessment for learning: Putting it into practice*. UK: Open University Press.

Cowie, B. (2005). Pupil commentary on Assessment for Learning. *The Curriculum Journal, 16*(2), 137-151.

Cowie, B., & Bell, B. (1999). A model of formative assessment in science education. *Assessment in Education, 6*(1), 101–116.

Crooks, T. J. (1988). The impact of classroom evaluation practices on students. *Review of Educational Research, 58*, 438-481.

Durie, M. (2001). *Mauri ora: The dynamics of Māori health.* Australia: Oxford University Press.

Education Scotland. (2015). *Principles of assessment.* Livingston: Education Scotland. Available: http://www.educationscotland.gov.uk/learningandteaching/assessment/about/principles/learnerengagement.asp

Klenowski, V. (2009). Assessment for learning revisited: an Asia-Pacific perspective. *Assessment in Education: Principles, Policy, & Practice, 16*(3), 263-268.

Haigh, M., & Dixon, H. (2007). 'Why am I doing these things?': Engaging in classroom-based inquiry around formative assessment (doi:10.1080/13674580701487000). *Journal of in-Service Education, 33*(3), 359-376.

Hargreaves, E. (2013). Assessment for learning and teacher learning communities: UK teachers' experiences (ISSN 1047-6210). *Teaching Education, 24*(3), 327-344.

Harrison, C., & Howard S. (2009). *Inside the primary black box: Assessment for learning in primary and early years classrooms*. London: GL Assessment.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Oxford: Routledge.

Hawe, E., & Parr, J. (2014). Assessment for learning in the writing classroom: An incomplete realisation. *The Curriculum Journal, 25*(2), 210-237.

Hopfenbeck, T., Flórez Petour, M. T., & Tolo, A. (2015). Balancing tensions in educational policy reforms: Large-scale implementation of assessment for learning in Norway. *Assessment in Education: Principles, Policy, & Practice, 22*(1), 44-60.

Marshall, B., & Drummond, M. J. (2006). How teachers engage with assessment for learning: Lessons from the classroom. *Research Papers in Education 18*(4), 119–32.

New Zealand Ministry of Education. (1994). *Assessment: Policy to practice*. Wellington: Learning Media.

New Zealand Ministry of Education. (2007). *The New Zealand curriculum*. Wellington: Learning Media. Available: http://nzcurriculum.tki.org.nz

New Zealand Ministry of Education. (2011). *Position paper: Assessment (schooling sector)*. Wellington: Learning Media. Available: http://assessment.tki.org.nz/Media/Files/Ministry-of-Education-Position-Paper-Assessment-Schooling-Sector-2011

Sach, E. (2015). An exploration of teachers' narratives: What are the facilitators and constraints which promote or inhibit 'good' formative assessment practices in schools (doi:10.1080/03004279.2013.813956)? *Education 3-13, 43*(3), 322-335.

Sadler, D. (1989). Formative assessment and the design of instructional systems. *Instructional Science, 18*, 119–144.

Stiggins, R. J. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*, *83*(10), 758–765.

Thompson, M., & Wiliam, D. (2008). Tight but loose: A conceptual framework for scaling up school reforms. In E. C. Wylie (Ed.), *Tight but loose: Scaling up teacher professional development in diverse contexts* (RR-08-29, pp. 1-44). Princeton, NJ: Educational Testing Service.

Wilson, N. (2008). Teachers expanding pedagogical content knowledge: Learning about formative assessment together (doi:10.1080/13674580802003540). *Journal of in-Service Education, 34*(3), 283-298.

Wong, P., Leung, P., Chow, A., & Tang, S. (2010). A case study of teacher learning in an assessment for learning project in Hong Kong (doi:10.1080/19415250903554087). *Professional Development in Education, 36*(4), 621-16.

Wylie, C., & Lyon, C. (2016). *Using the formative assessment rubrics, reflection, and observation tools to support professional reflection on practice* (FARROP, rev. ed.). Commissioned by FAST SCASS.

ADDITIONAL REFERENCES AND RESOURCES

Argyris, C. (1991). Teaching smart people how to learn. *Harvard Business Review, May/June.* Available: https://hbr.org/1991/05/teaching-smart-people-how-to-learn

Assembly of Alaska Native Educators. (1998). Alaska standards for culturally responsive schools. Fairbanks: Alaska Native Knowledge Network. Available: http://ankn.uaf.edu/Publications/CulturalStandards.pdf

Australian Institute for Teaching and School Leadership. *Illustrations of practice by career stage* (video resources). AITSL website. Available: http://www.aitsl.edu.au/australian-professional-standards-for-teachers/illustrations-of-practice/find-by-career-stage

Australian Institute for Teaching and School Leadership. *Professional growth: The professional conversations project* (videos and downloadable materials). AITSL website. Available: http://www.aitsl.edu.au/professional-growth/research/professional-conversations

Berliner, D. C. (2001). Learning about and learning from expert teachers (doi:10.1016/S0883-0355(02)00004-6). *International Journal of Educational Research, 35*(5), 463–482.

Black, P., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 139–148.

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation, and Accountability, 21*(1), 5-31.

DeLuca, C. *Approaches to classroom assessment inventory* (online quiz). Queens University Faculty Education website. Available: http://educ.queensu.ca/acai

Earl, L., & Timperley , H. (2015). *Evaluative thinking for successful educational innovation.* (Education Working Paper No.122). Paris Directorate for Education and Skills. Available: http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/WKP(2015)11&docLanguage=En

Harrison, C., & Wiliam, D. (2016). *Assessment for learning in STEM teaching* (free online course starting Oct. 31, 2016). Future Learn website. Available: https://www.futurelearn.com/courses/assessment-for-learning-stem

Harrison, C., & Wiliam, D. (2016). *Assessment for learning in STEM teaching* (video: teachers' reflections on hinge-point questions). Future Learn website. Available: https://www.futurelearn.com/courses/assessment-for-learning-stem/1/steps/58238?utm_campaign=Share+Links&utm_medium=futurelearn-open_step&utm_source=twitter

Le Fevre, D., & Fellus, O. (Eds.) (2016, April). Lead the change series: Q&A with Santiago Rincón-Gallardo. American Education Research Association, 57. Available: http://www.aera.net/Portals/38/docs/SIGs/SIG155/Santiago Rincón-Gallardo .pdf

Munns, G., & Woodward, H. (2006). Student engagement and student self-assessment: The REAL framework (doi:10.1080/09695940600703969). *Assessment in Education: Principles, Policy, & Practice, 13*(2), 193-213.

Robinson, V. M. J. (2009). The knowledge, skills and dispositions involved in effective educational leadership. In Robinson, V. M. J., Hohepa, M., & Loyd, C. (Eds.), *School leadership and student outcomes: Identifying what works and why* (chapter 8). Wellington, New Zealand: Ministry of Education. Available (rev. ed.): https://www.researchgate.net/publication/267411000_Open-to-learning_Conversations_Background_Paper_Introduction_to_Open-to-learning_Conversations

Timperley, H., & Parr, J. (2005). Theory competition and the process of change. *Journal of Educational Change, 6*(3), 227-251.

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration*. Wellington, New Zealand: New Zealand Ministry of Education. Available: http://www.oecd.org/edu/school/48727127.pdf

Torrance, H., & Pryor, J. (2001). Developing formative assessment in the classroom: Using action research to explore and modify theory. *British Educational Research Journal, 27*(5), 615-631.

Wiliam, D. (2007). Content then process: Teacher learning communities in the service of formative assessment. In D. B. Reeves (Ed.), *Ahead of the curve: The power of assessment to transform teaching and learning* (pp. 183–204). Bloomington, IN: Solution Tree.

Wyatt-Smith, C., Klenowski, V., & Colbert, P., Eds. (2014). *Designing assessment for quality learning*. Springer Netherlands.

Wylie, E. C., Ed. (2008). *Tight but loose: Scaling up teacher professional development in diverse contexts* (ETS RR-08-29). Princeton, NJ: Educational Testing Service.