In this final blog, I respond to Meiko Lin's three queries with some closing thoughts and takeaways from "Assessing the Assessments":

- What emerged from this exercise and what gaps were left in the discussion?
- Do you think our nation's teachers are properly prepared to conduct formative assessments? What can be done at the school-level and at the district-level to ensure teachers are successful in this endeavor?
- What best practices with regard to K-12 assessments should be adopted to ensure that all students have the opportunity to learn?

Outside engaging with us on substantive issues, Meiko Lin of Teachers College, Columbia University, was also instrumental in managing day-to-day communications and the blog site on our behalf. She did so competently and with a smile through the entire period of our blog. Thanks, Meiko!

I belong to the growing number of scholars and leaders/practitioners in education who are calling for more widespread use of formative educational assessment in America's schools. See blogs by Jeff Charbonneau, Susan H. Fuhrman, Edmund W. Gordon, Kelley M. Kalinich, Michael V. McGill, Neal Kingston, Steve Ladd, James Pellegrino, Theresa Rouse, and Deanna Iceman Sands.

We need much more work in formative assessment to connect research, theory, practice and policy. As our guest blogs attest, "formativity" in classroom assessment means different things to different people. My kind of formative assessment, appropriately conducted, involves tasks and exercises that are diagnostic in purpose and properties, and helpful in shedding light on specific, fine-grained learning needs.

For example, take long division in math, a focus of our recent research in elementary level classrooms that was supported by the National Science Foundation. We confirmed that long division concepts pose significant cognitive challenges to many young learners, and some blocks eventually lead to persistent learning gaps at higher levels when students need facility with decimals or fractions. We identified several specific needs: Students don't understand the problem; they don't know how to begin the process; they can't recall or do the multiplication required; they misplace partial answers in the wrong column; or fail to see mathematical equivalents. A big issue was applying place value concepts during the computational process or in applying long division to real life problems (PALD paper 1 and PALD paper 2).

Effective formative assessment tasks reveal errors like these in ways that are instructionally useful to teachers while teaching and learning is still going on.

To close detected gaps effectively, diagnostic assessment tasks must be coupled with necessary follow up processes that engage teachers and students together. What kinds of activities would teachers who successfully close learning gaps undertake? Research suggests that teachers should be able to: embed diagnostic assessment tasks into their daily instructional repertoires; interpret student errors meaningfully with respect to the domains of expected learning outcomes; provide timely feedback to students on errors; mediate or re-teach concepts/skills in which learning needs are observed; and provide follow-up practice exercises to help students consolidate new learning (NRC report 1, NRC report 2, PALD paper 1, and PALD paper 2).

But teachers cannot do it alone. Students' awareness of what they are trying to learn, self-reflection on achieving learning goals, and capacity for regulation of their own learning are key factors that influence student development and expertise-building in a domain.

My kind of formative assessment, then, would be defined by both the assessment products (i.e., suitably designed and scored diagnostic items, tasks, tests or assessment systems) as well as contingent assessment processes (practices that teachers would typically facilitate but that would involve students directly). See blogs by Neal Kingston and Deanna Iceman Sands in this series.

I don't think teachers, schools, students or parents have enough education today to be discerning about sound and unsound formative assessment. So, the first commitment has to be towards resources, training and supports for all relevant stakeholders on classroom assessment practices that are:

1. proximal (instead of distal, removed from ongoing teaching-learning environments),
2. **diagnostic** (yielding fine-grained profiles of learner strengths and weaknesses/errors in defined domains, *instead of* only summary scores on student progress)

3. **positive and supportive** (*instead of* punitive to learners, teachers or schools—whereby mistakes are viewed as opportunities to learn and improve, rather than as causes for stigma),

4. **ongoing** (*instead of* done only when a lesson, unit, school term or program ends),

5. **co-owned by teachers and learners, and supported by schools and external agencies** (*instead of* assessment programs/practices that schools or policy-makers adopt and ask teachers to implement)

We coined the label "Proximal Assessment for Learner Diagnosis " (PALD) for a proposed model on diagnostic classroom assessment based on these five defining criteria. PALD draws on talent development theory in medicine, sports and music, and the latest knowledge bases from the pedagogical, cognitive and assessment sciences. For more information, please see Figure 1 of PALD paper 1.

I believe it would be a mistake if the anti-testing rhetoric in public education today pitted assessment for public accountability against formative classroom assessment. I think most of our bloggers would agree that we need both kinds of assessment, as each serves a different but complementary function. Doubtless each needs further development and improvement.

I should be clear, however, that I do not endorse current **high stakes** testing programs that promote teaching to external tests and wipe out a genuine formative assessment culture in schools because of rewards and sanctions tied to student test scores. Nor do I support 'value added' models of teacher/school evaluation as they stand today. Current 'value added' models—a topic that our blog has not addressed in depth—have many technical shortcomings. They rely on standardized metrics that were not designed to measure achievement growth, and frequently ignore a vast number of child, family, school and out-of-school factors that potentially contribute to achievement outcomes.

Quality assurance is necessary in public education. Our search for balance, where well-done formative assessment is coupled with better systems of school evaluation and accountability, must continue. That, in my view, is a prerequisite to schools opening more equitable learning opportunities for all students to succeed.

My thanks to our guest-bloggers and particularly to our partner, James Harvey of the National Superintendents Roundtable, for the thoughtful and informed contributions to this blog.