

SUPPORTING FORMATIVE ASSESSMENT FOR DEEPER LEARNING: A PRIMER FOR POLICYMAKERS



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Supporting Formative Assessment for Deeper Learning:

A Primer for Policymakers

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Prepared for the Formative Assessment for Students and Teachers (FAST)
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Executive Summary

Effective formative assessment is essential to successfully implementing new college- and career-ready standards. It is the least recognized dimension of a balanced and comprehensive assessment system, and state and local policymakers have a vital role to play in supporting it.

What is formative assessment?

Formative assessment is a *process* teachers and students use *during* instruction that provides feedback to adjust ongoing teaching moves and learning tactics. It is *not* a specific test, nor an event, nor a bank of test items. Well-supported by research evidence, when effectively implemented formative assessment as a process assists students in achieving intended instructional outcomes. Key practices include

1. *Clear lesson-learning goals and success criteria, so students understand what they're aiming for;*
2. *Evidence of learning gathered during lessons to determine where students are relative to goals;*
3. *A pedagogical response to evidence, including descriptive feedback that supports learning by helping students answer: Where am I going? Where am I now? What are my next steps?;*
4. *Peer- and self-assessment to strengthen students' learning, efficacy, confidence, and autonomy; and*
5. *A collaborative classroom culture where students and teachers are partners in learning.*

What makes formative assessment unique?

The *prospective* nature of evidence gathered, its proximity to learning, and its real-time use by teachers and students to propel learning forward *before* any judgment of learning is made. It is assessment *for* learning. By contrast, classroom-summative, interim/ benchmark, and large-scale summative assessments all provide a *retrospective* assessment of learning.

What steps can state and local policymakers take to support formative assessment?

1. **Ensure teacher professional learning models good formative assessment practices.**
 - Carefully review state teacher and administrator professional learning standards to ensure key practices of the formative assessment process serve as important quality indicators.
 - Provide support and engagement structures that help apprentice teachers in the formative assessment process and facilitate their collaboration on problems of instructional practice.
2. **Align teacher preparation, credentialing, and induction to strengthen the formative assessment capacity of new teachers.**
 - Signal formative assessment's importance by incorporating its practices into requirements for teacher preparation, credentialing, and induction, as well as for administrator credentialing.
 - Recruit from programs that develop teachers' formative assessment capacity; partner with these programs to support clinical experiences and mentorship for preservice teachers.
3. **Build teacher evaluation systems that value and support formative assessment practices for teachers and students.**
 - Ensure key features of formative assessment are incorporated into teacher and administrator performance standards and indicators. Strong examples already exist to examine and adapt.
 - Incorporate into teacher evaluation systems teacher observation protocols and student surveys that value and capture formative assessment practices. *(summary continued on page 2)*

4. Develop educators' assessment literacy to ensure appropriate use of different forms of assessment evidence.

- Ensure policies and messaging clarify and support a balanced assessment system.
- Specify how professional development plans and resources will build teachers' and students' capacity to engage in the formative assessment process.
- Carefully review resources that claim to support the process of formative assessment.

Introduction

The movement to implement new college- and career-ready standards in the United States will succeed or fail based on how well our teachers engage each and every student as a learner. This will depend in large part on the quality of pedagogy – how effectively teachers guide and support students to learn deeply, to understand and act in ways that transfer to novel situations, and to develop autonomy, self-awareness, and persistence as learners.

While new academic assessment systems being developed by multistate consortia help signal this shift to deeper forms of learning,¹ it is unrealistic to believe that large-scale assessments can directly assist teachers in improving their pedagogical practices or assist students in strengthening their learning. Such large-scale assessments are neither sensitive nor frequent enough to serve these purposes.² Although these assessments can indicate whether individual students have met overall learning goals, they are designed primarily to carry out more system-level purposes of aggregate measurement, program evaluation, and accountability.³

Formative assessment is capable of assisting both teaching and learning *while they occur*. This primer argues that formative assessment is essential to successfully implementing new college- and career-ready standards. It explains what formative assessment is, how it works in practice, and why it is critically important in fostering powerful pedagogy and 21st-century competencies. It then contrasts the purposes and uses of formative assessment with those of other forms of assessment in a comprehensive and balanced assessment system. It also offers recommendations for policymakers at state and local levels in how to support formative assessment, and not unintentionally undermine it. Ultimately, this primer argues for formative assessment's central role in fostering a culture of learning for students and teachers.

What is formative assessment?

Formative assessment is *not* a specific test, nor an event, nor a bank of test items. Rather, it is a *process* that teachers *and* students engage in *during* instruction. Consider the following definition from 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):

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.⁴

Figure 1. Key Practices of the Formative Assessment Process

Teachers...

- Establish *clear learning goals and success criteria* for lessons, and ensure students understand and agree with what these mean and entail;
- Plan for and elicit *evidence of learning during lessons* (what students will say, do, make, or write), and interpret that evidence as close to the actual time of the lesson as possible to judge where students are in relation to learning goals and success criteria;
- Take *pedagogical action* based on evidence of learning and provide students *descriptive feedback* linked to intended instructional outcomes and success criteria. Feedback during lessons helps to scaffold students' learning by helping them to answer
 - ❖ *Where am I going?*
 - ❖ *Where am I now?*
 - ❖ *What are my next steps?*
- Support students to engage in *peer- and self-assessment* and -reflection in order to strengthen their awareness, collaboration, confidence, efficacy, and autonomy as learners; and
- Foster a *collaborative classroom culture* where students and teachers are partners in learning.

(Drawn from McManus, 2008; CCSO, 2012; Heritage, 2013; and Jones et al., 2014)

The formative assessment process involves planning student learning, gathering evidence continuously, and providing feedback to adjust ongoing teaching moves and learning tactics. Specifically, teachers use learning progressions⁵ to clearly articulate learning goals and success criteria, and carefully plan learning activities and instructional sequences. They engage students in instructional conversations, probe students' thinking, uncover misconceptions and insights, and observe developing thinking, actions, and language use. Such carefully gathered evidence from what students say, do, make, or write focuses teachers' pedagogical practice, while real-time feedback guides students step-by-step toward achieving intended outcomes.⁶ Formative assessment also fosters students' agency as learners as they continually reflect on their learning, attempt next steps, and serve as resources to one another in a collaborative learning environment. Critically, the formative assessment process is *prospective*. It helps point the way forward for students, and provides the learner with "just right" feedback to support taking steps through the zone of proximal development toward greater levels of autonomy and mastery.⁷ Figure 1 further describes key practices that distinguish the formative assessment process.⁸

Ample research evidence demonstrates that these *assessment for learning* practices lead to improved student learning and achievement.⁹ There is also a growing consensus that formative assessment plays a key role in developing deeper learning of cognitive, interpersonal, and intrapersonal knowledge and skills needed for life and work in the 21st-century, as currently manifested in new college- and career-ready standards.¹⁰ Equally important, this form of assessment is inherently dialogic, requiring purposeful interaction as students make meaning, articulate thinking, and problem-solve with peers and with the

teacher. As such, formative assessment provides linguistic-minority as well as high-poverty students in particular with multiple opportunities to develop academic uses of language while collaboratively grappling with subject-matter content and disciplinary practices.¹¹

What is formative assessment's place in a comprehensive assessment system?

Given a deeply-established tendency in the United States to equate assessment with testing, some may question whether formative assessment is in fact assessment at all. Yet the National Research Council long ago pointed out that assessment is fundamentally a process of reasoning from evidence.¹² Formative assessment as defined here is clearly that. What then distinguishes formative assessment from other forms of assessment? It is the nature of the evidence gathered, its proximity to learning, and the real-time use of that evidence by teachers and students to propel learning forward *before* any final, summative judgment on attainment of learning goals is made. Its purpose is to assist learning *while learning occurs*. As such, formative assessment is intertwined with and inseparable from teaching and learning. In order for it to be properly supported and utilized, formative assessment is best understood as that part of the assessment system that operates within a teaching and learning paradigm, and not, as with other components, within a measurement paradigm.¹³

So what implications follow for evidence-gathering strategies or tasks utilized in the formative assessment process? First, they should yield *specific, actionable information* about students' learning status relative to lesson goals and success criteria. Second, they should be *immediately useful* for teachers to adjust their instruction in response to that status. Accordingly, any strategy or task needs to be tightly aligned to and interwoven with classroom teaching and learning goals and practices. It is not the evidence-gathering tool *per se* that constitutes formative assessment, but rather the process of planning, gathering, interpreting, and using evidence in real-time to pedagogically guide student learning as it is developing.

What are other forms of assessment designed to do?

The goals of formative assessment described above cannot be accomplished using other forms of assessment because these serve different, more system-level purposes. In order to distinguish these different levels and purposes of assessment, a brief review of interim/benchmark and summative assessments is merited.¹⁴ Figure 2 highlights differences in key dimensions among the components that constitute a balanced and comprehensive assessment system.

Figure 2.

| Assessment: A Process of Reasoning from Evidence | | | |
|--|---|--|----------------------------------|
| Dimension | Assessment <i>for</i> learning | Assessment <i>of</i> learning | |
| Method | Formative Assessment process | Classroom Summative/ Interim/Benchmark Assessment | Large-scale Summative Assessment |
| Purpose | Assist immediate learning | Measure student achievement/progress ↔ | Evaluate educational programs |
| Focus | Teaching & learning | Measurement | Accountability |
| Locus | Individual student & Classroom learning | Classroom/Grade level/ Department/School | School/District/State |
| Proximity to learning | Integrated | Middle-distance | Distant |
| Timing | <i>During</i> instruction | <i>After</i> teaching-learning cycle → Between instructional units/calendar periods | End of year/course |
| Participants | Teacher & Student (T-S / S-S / Self) | Student | Student |

As Figure 2 illustrates, interim/benchmark and summative assessments are assessments *of* learning. They measure student achievement and progress *after* a period of learning, and within increasingly broader contexts, within longer timeframes, and at coarser “grain sizes” (i.e., more generalized domain levels). They are also used to make judgments about student learning and to evaluate and hold accountable educational programs. All of these functions are clearly important. Of course, results from these assessments may also serve a formative purpose. For example, they may provide a starting point for educator reflection and discussion of students’ past performance at a grade, school, or district level. They may also signal potential areas for investigating challenges and planning professional learning within or across school years.¹⁵ However, such uses differ from those of formative assessment because they are *retrospective* regarding teacher moves and student learning. They cannot inform instruction or learning as these unfold. The tools themselves are designed to measure performance outcomes at the conclusion of a period of learning.¹⁶

Interim/benchmark assessments are distinct testing events that occur after a teaching/learning cycle, or between instructional units or calendar periods. They are used to measure learning of curricular units, highlight areas of academic attainment and of needed focus, and in some cases to predict – or in the case of *through-course* assessments, even contribute to – final outcomes (hence the latter’s description

as “mini-summative”). Although sometimes confusingly referred to as “formative assessments,” interim/benchmark assessments are neither specific nor timely enough to guide teaching and learning, and so cannot serve the formative assessment process.

Summative assessments render a judgment after the conclusion of instruction, and can occur at the classroom or system level. *Classroom summative assessments* include graded end-of-lesson performances and are used to inform period or course grades. *Large-scale, standardized summative assessments* are designed and intended to broadly measure student achievement. They are also used to

Figure 3. Key actions policymakers can take to support formative assessment

1. Ensure teacher professional learning models good formative assessment practices.
2. Align teacher preparation, credentialing, and induction to strengthen formative assessment capacity of new teachers.
3. Build teacher evaluation systems that value and support formative assessment practices for teachers and students.
4. Develop educators’ assessment literacy to ensure appropriate use of different forms of assessment evidence.

support evaluative judgments on the overall impact and effectiveness of educational programs at the end of the school year or course of study. Used for system accountability purposes, these assessments are most distant from and least able to inform teaching and learning directly because they are wholly retrospective and provide information at very large grain sizes.

How can policymakers support formative assessment?

As formative assessment is often underutilized, what steps can policymakers take to ensure its practices take root in more classrooms and benefit more students? They can begin by building greater coherence and support across policies and systems related to teacher professional learning, recruitment and evaluation, student assessment, and local implementation of college- and career-ready standards. Since formative assessment is so tightly intertwined with instruction, such policies can aim to

strengthen and align systems for training, inducting, supporting, and evaluating teachers. They can also help to train, support, and evaluate school administrators, whose understanding of formative assessment is crucial to its implementation. Some key actions policymakers can take are listed in Figure 3 and are elaborated upon next.

1. Ensure teacher professional learning models good formative assessment practices.

- State education leaders can carefully review state teacher and administrator professional learning standards to ensure key features of the formative assessment process serve as important quality indicators.
- Local education leaders can provide support and engagement structures that can help apprentice teachers in the formative assessment process and facilitate learning communities to support cross-role and job-alike school teams collaborating on problems of instructional

practice.

Strong professional development respects teachers as professionals and builds a professional learning culture focused on key problems of instructional practice.¹⁷ What does it look like? First, it helps teachers to define clear learning trajectories for their own pedagogical development. It also uses coaching and facilitated discussions to help teachers plan, elicit, and use evidence of learning during instruction. This simultaneously strengthens teachers' content knowledge as they develop formative assessment practices. Such content knowledge helps teachers to recognize students' misconceptions and to guide them forward in grasping key disciplinary concepts and principles. Finally, strong professional development encourages teachers to reflect on their practice and develop ways of engaging students in deeper inquiry and metacognition.

Professional learning of this kind is completely consonant with the formative assessment process, as these are the kinds of practices teachers need to employ with their students to empower them as learners. Such practices take time and effort to enact as they challenge the "sit-and-get" transmission models of professional development that many teachers often experience. Professional learning for teachers that embodies the formative assessment process helps to build a learning culture that values and supports it.

2. Align teacher preparation, credentialing, and induction to strengthen formative assessment capacity of new teachers.

- State policymakers can signal the importance of the formative assessment process by incorporating its signature practices into state requirements for teacher preparation, credentialing, induction, and support, as well as administrator credentialing requirements.
- Local policymakers and educational leaders can signal they value teachers committed to engaging in the formative assessment process by recruiting from teacher preparation programs that develop teachers' capacity to engage in formative assessment. They can also partner with such programs to support clinical experiences and mentorship for preservice teachers.

In order to build instructional capacity for formative assessment in school systems over time, preservice teachers need foundational understandings and guided experiences employing formative assessment practices.¹⁸ This is more likely when teacher training programs offer a "clinical curriculum" that directly ties preservice teacher coursework to fieldwork. Such teacher education classes "engage novices in assessing students, designing lessons, trying out strategies, evaluating outcomes, and continuously reflecting with expert guidance on what they are learning" with cooperating teachers and supervisors chosen for their formative assessment expertise.¹⁹ Teacher preparation and credentialing systems also need to support these important shifts in practice. They can incorporate formative assessment practices into learning objectives of all preservice- and induction-level teachers and can foster support, feedback, and cultivation of formative assessment practices via clinical teaching and mentorship. Administrator

credentialing programs can also incorporate training to develop understanding and practice in skillful feedback and mentoring of teachers' formative assessment practices.

3. Build teacher evaluation systems that value and support formative assessment practices for teachers and students.

- State policymakers can ensure that key formative assessment practices are incorporated into teacher and administrator performance standards and indicators. Some states are already doing so, and strong examples exist that can be examined and adapted.²⁰
- Local policymakers can incorporate into teacher evaluation systems teacher observation protocols and student survey instruments that value and capture formative assessment practices and help teachers and students improve in enacting them.

In response to rigorous empirical-research evidence derived from the *Measures of Effective Teaching Project*,²¹ teacher evaluation policy is broadening its initial focus on student test scores to include a broader set of measures in order to strengthen reliability, validity, and relevance of teacher evaluation systems. Such measures include *multiple observations of teacher practice over time* by trained peers with opportunities for *actionable formative feedback* and *self-reflection* – all of which mirror the formative assessment process.²² They also include *student perception surveys* that reflect the theory of instruction defining expectations for teachers in the system and that elicit student experiences of their teachers' expectations, support, and feedback.²³ Carefully incorporating student feedback on these dimensions into teacher evaluation not only supports student-centered formative assessment practices, it also strengthens reciprocal accountability between educational policymakers and teachers for instructional capacity-building and expected performance.²⁴ How so? *Student surveys help to evaluate support systems for teachers as much as they diagnose pedagogical needs.*²⁵ Importantly, implementing and evaluating formative assessment requires more than a simple checklist of evidence-based practices. In fact, a checklist approach may unintentionally undermine authentic formative assessment by emphasizing superficial implementation over a more responsive adaptation of formative assessment practices to local needs and contexts.²⁶

4. Develop educators' assessment literacy to ensure appropriate use of different forms of assessment evidence.

- State and local educational leaders can ensure their policies and messaging clarify and support appropriate uses of each component in a balanced assessment system.
- Local educational leaders can specify how professional development plans and resources will build teachers' and students' capacity to engage in the formative assessment process.
- State and local educational leaders can carefully review multistate consortia resources claimed to support the process of formative assessment.

Strengthening educators' assessment literacy is crucial to their effectively using different forms of assessment evidence. This is particularly important as states transition away from status-bar, test-based accountability systems. The growing rhetorical commitment to balanced and comprehensive assessment systems can support the formative assessment process in classrooms *if* leaders are clear about what formative assessment means and provide sustained leadership to foster it.²⁷ State and local educational leaders strongly influence how educators, students, parents, the press, and other stakeholders understand, engage with, and respond to different forms of assessment evidence. These leaders' clarity on the purposes and uses of each component in the assessment system is therefore critical.²⁸

In designing and implementing professional development plans, local educational leaders can explicitly define their conceptions of student engagement, motivation, and learning and can critically examine proposed assessment practices and uses against these conceptions. State and local educational leaders can also critically examine the quality and relevance of formative assessment “tools” and professional development resources offered by multistate assessment consortia and other providers. In particular, they can carefully evaluate the conceptions of learning underlying these resources to determine how well these resources align with and support curricular/learning goals, key practices of the formative assessment process, and professional learning priorities.

The road ahead

New college- and career-ready standards explicitly challenge us to support students' deeper learning of cognitive, interpersonal, and intrapersonal capacities needed for life and work in the 21st century. New summative and interim assessments can signal this shift toward valuing deeper learning and can play a key role in measuring performance and holding educational systems accountable. Although necessary, these forms of assessment are insufficient because they cannot guide responsive teaching and deeper learning where and when it most matters – in the classroom, among teachers and students, moment-to-moment, day-by-day. Formative assessment within a teaching and learning paradigm can accomplish these purposes. Supporting the formative assessment process can help to foster a shift in U.S. school systems from a culture dominated by testing to a culture focused on learning.²⁹

The role of formative assessment within a balanced and comprehensive assessment system is now being widely recognized and its importance is hard to overstate. It helps to overcome the simple “teach-test-remediate” theory of learning and instruction that prevails in many U.S. school systems, which is inadequate for guiding stronger teaching and deeper learning in a collaborative classroom culture. Policymakers at state and local levels have a major responsibility to understand and support formative assessment. Fulfilling that responsibility is essential to realizing a balanced and comprehensive assessment system, one that places student learning at its center.

Endnotes

¹ See Herman, J. & Linn, R. (2013). *On the road to assessing deeper learning: The status of Smarter Balanced and PARCC assessment consortia*. CRESST Report 823. Los Angeles: UCLA National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

² See Popham, J. & Ryan, J. (2012). *Determining a high-stakes test's instructional sensitivity*. Paper presented at the annual meeting of the National Council on Measurement in Education; and Polikoff, M. (2010). Instructional sensitivity as a psychometric property of assessments. *Educational Measurement: Issues and Practice*, 29 (4), 3–14.

³ See National Research Council (2001). *Knowing What Students Know. The science and design of educational assessment*. Committee on the Foundations of Assessment. Pellegrino, J., Chudowsky, N., & Glaser, R. (Eds.), Board on Testing and Assessment, Center for Education. Division of Behavioral and Social Sciences and Education. Washington, DC: National Academies Press.

⁴ www.ccsso.org

This definition of formative assessment has also been adopted by the Joint Committee on the *Standards for Educational and Psychological Testing* of the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education (AERA/APA/NCME, 2014).

⁵ Learning progressions are descriptions of how students gain more expertise within the discipline over time. For more discussion of how learning progressions relate to formative assessment, see Heritage, M. (2008). *Learning progressions: Supporting instruction and formative assessment*. Washington, DC: CCSSO.

⁶ See Heritage, M. (2013a). Using assessment information in real-time: What teachers need to know and be able to do. In Lissitz (Ed.), *Informing the practice of teaching using formative and interim assessment*. Charlotte: Information Age Publishing. See also Heritage, M. (2013b). Gathering evidence of student understanding. In McMillan, J. (Ed.), *SAGE Handbook of Research on Classroom Assessment*. Thousand Oaks: Sage; and Griffin, P. (2007). The comfort of competence and the uncertainty of assessment. *Studies in Educational Evaluation*, 33, 87–99.

⁷ The zone of proximal development is that area of emerging learning represented by the distance between what students can do independently and what they can do with temporary, scaffolded support from a teacher or more capable peer. As students consolidate these maturing capacities, the scaffolds are removed. In describing the prospective, developmental nature of the formative assessment process, Heritage notes: “Teachers need to lead learning, not retrospectively react to it. Only by keeping a very close eye on emerging learning through formative assessment can teachers be prospective, determining what is within the students’ reach, and providing them experiences to support and extend learning.” See p. 8 of Heritage, M. (2010). *Formative assessment and next-generation assessment systems: Are we losing an opportunity?* Los Angeles: UCLA CRESST.

⁸ Figure 1 draws from McManus, S. (2008). *Attributes of effective formative assessment*. Paper prepared for the Formative Assessment for Student and Teachers (FAST) and State Collaborative on Assessment and Student Standards (SCASS) of the Council of Chief State School Officers (CCSSO). Washington DC: CCSSO; CCSSO FAST SCASS. (2012) *Distinguishing formative assessment from other educational assessment labels*. Washington DC: Author; Heritage, M. (2013). *Formative assessment in practice: A process of inquiry and action*. Cambridge, MA: Harvard Education Press; and Jones, B. et al. (2014). *Supporting students in close reading*. Los Angeles, CA: CRESST-UCLA.

⁹ Black & Wiliam’s landmark qualitative meta-review of studies featuring key components of formative assessment first illuminated the powerful effects of these key features. See Black, P. & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education*, (5) 1, 7–74. Hattie & Timperley’s review of several meta-analyses on feedback (perhaps the signature component of the formative assessment process) illustrated the substantial power of feedback about task, process, and self-regulation on student learning. See Hattie, J. & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, (77) 1, 81–112. A recent meta-analysis by Kingston

& Nash found a modest weighted effect size (.20) of formative assessment, but noted that effects vary based on operationalized definitions of formative assessment and its components (e.g., type of feedback), with higher effect sizes (.30), for example, for professional-development-based formative assessment. Interventions included in their study focused more on formal assessment activity at key points, rather than ongoing formative assessment practice. They concluded (p. 33) formative assessment “can be a significant and readily achievable source of improved student learning.” See Kingston, N. & Nash, B. (2011). Formative assessment: A meta-analysis and a call for research. *Educational Measurement: Issues and Practice*, (30) 4, 28–37.

¹⁰ Both the National Research Council and the Gordon Commission recently concluded that teacher use of formative assessment is conducive to and plays a key role in developing the cognitive, interpersonal, and intrapersonal knowledge and skills needed for the 21st century. See National Research Council (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. Committee on Defining Deeper Learning and 21st Century Skills. Pellegrino, J. W. & Hilton, M. L. (Eds.), Board on Testing and Assessment and Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press. See also the Gordon Commission on the Future of Assessment in Education (2013). *To assess, to teach, to learn: A vision for the future of assessment*. Technical Report. Princeton, NJ: Author.

¹¹ For discussion of these points, see Heritage, M., Walqui, A., & Linqanti, R. (2013). *Formative assessment as contingent teaching and learning: Perspectives on assessment as and for language learning in the content areas*. Palo Alto, CA: Stanford University Understanding Language Initiative. See also Ruiz-Primo, M. A., Solano-Flores, G., & Li, M. (2014). Formative assessment as a process of interaction through language: A framework for the inclusion of English language learners. In Wyatt-Smith, C., Klenowski, V., & Colbert, P. (Eds.), *Designing assessment for quality learning* (pp. 265–282). Heidelberg: Springer-Verlag.

¹² National Research Council (2001). *Knowing what students know*.

¹³ As indicated in the National Research Council (2001) report, the components of a coherent assessment system should be grounded in a coherent theory of student learning. For further discussion of this point, see Herman, J. (2013). *Formative assessment for next generation science standards: A proposed model*. Princeton: Educational Testing Service K-12 Center. See also Brookhart, S. (2013). Comprehensive assessment systems in service of learning: Getting the balance right. In Lissitz (Ed.), *Informing the practice of teaching using formative and interim assessment*, (165–184). Charlotte: Information Age Publishing; and see Heritage, M. (2010).

¹⁴ For a set of succinct definitions of different forms of educational assessment, see CCSSO (2012). *Distinguishing formative assessment from other educational assessment labels*. Washington, DC: Author.

¹⁵ Some systems of instructional-focused assessment tasks that are tightly interwoven with curricular materials and instructional sequences may enable greater teacher learning about student learning. These may strengthen teacher knowledge by highlighting key understandings to be demonstrated by students as, for example, when teachers observe mid-unit checking-for-understanding tasks. However, such formative uses still require a teacher’s pedagogical and subject matter expertise to determine and enact appropriate next steps to engage the learner and to guide learning forward through the zone of proximal development. For elaboration on these points, see Shepard, L. A. (2009). Commentary: Evaluating the validity of formative and interim assessment. *Educational Measurement: Issues and Practice*, (28) 3, 32–37. See also Heritage, M., Kim, J., Vendlinski, T., & Herman, J. (2009). From evidence to action: A seamless process in formative assessment? *Educational Measurement: Issues and Practice*, (28) 3, 24–31; and Herman, J. (2013).

¹⁶ Diagnostic assessments providing information on which targeted subskills or knowledge a student possesses or lacks are often called “formative assessments.” As noted in CCSSO (2012), these time-intensive evidence-gathering procedures provide teachers information about what is not being learned when students are not making progress, and can be a useful resource in the process of formative assessment when they provide immediate, useful information indicating to teachers or students what needs to be done next to progress in learning (p. 7).

¹⁷ See Darling-Hammond, L., Chung Wei, R., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Oxford, OH: National Staff Development Council.

¹⁸ For an example of how formative assessment practices are being incorporated into preservice teachers' clinical curriculum and teaching experiences, see Duckor, B. (2014). Formative assessment in seven good moves. *Educational Leadership*, 71 (6), 28–32.

¹⁹ See p. 6 of Santos, M., Darling-Hammond, L., & Cheuk, T. (2012). *Teacher development to support English language learners in the context of common core state standards*. Palo Alto, CA: Stanford University Understanding Language Initiative.

²⁰ See, for example, the *Nevada educator performance framework: Teacher and administrator standards and indicators*, available at:
[http://www.doe.nv.gov/Educator_Development_and_Support/Nevada_Educator_Performance_Framework\(NEPF\)/](http://www.doe.nv.gov/Educator_Development_and_Support/Nevada_Educator_Performance_Framework(NEPF)/)

²¹ See Measures of Effective Teaching (MET) Project (2013). *Ensuring fair and reliable measures of effective teaching: Culminating findings from the MET project's three-year study*. Policy and Practice Brief. Seattle, WA: Bill & Melinda Gates Foundation; and MET Project (2012). *Asking students about teaching: Student perception surveys and their implementation*. Policy and Practice Brief. Seattle, WA: Bill & Melinda Gates Foundation.

²² As with the use of any observation protocol, observers (whether peers or administrators) of formative assessment practices need sufficient training and certification prior to making consequential observations, along with periodic calibration opportunities to ensure consistency and accuracy over time.

²³ The MET Project (2012) report illustrates a local model that integrates teacher formative evaluation, instructional videotaping, student-survey feedback, and teacher in-class coaching. See the Memphis City schools' *My Teaching Partner-Tripod PD Coaching Cycle*. Also, examples of age-specific student-survey questions that are coherent with and provide feedback to teachers on the formative assessment process can be found in Stiggins, R., & Popham, J. (2007). *Assessing students' affect related to assessment for learning: An introduction for teachers*. Washington, DC: Formative Assessment for Students and Teachers (FAST) State Collaborative on Assessment and Student Standards (SCASS) of the Council of Chief State School Officers (CCSSO).

²⁴ Such reciprocal accountability acknowledges that neither teachers nor students can perform as expected without developing the capacity to do so, and neither can they develop that capacity without appropriate support. Properly designed, funded, and integrated policies and systems of professional learning and formative evaluation are key to this reciprocity. See Elmore, R. (2004). *School reform from the inside out: Policy, practice, and performance*. Cambridge: Harvard Education Press.

²⁵ Met Project (2012), p. 4.

²⁶ See Anderson, G. L., & Herr, K. (2011). Scaling up "evidence-based" practices for teachers is a profitable but discredited paradigm. *Educational Researcher*, 40 (6), 287–289.

²⁷ See Orland, M., & Anderson, J. (2013). *Assessment for learning: What policymakers should know about formative assessment*. San Francisco, CA: WestEd.

²⁸ For example, they can clarify that summative assessment results cannot guide ongoing instructional decisions regarding individual students; and that interim/benchmark assessments evaluating learning after a period of time need to be "instructionally linked" – i.e., the objectives tested should match those taught in the preceding time period. See Shepard, L. A. (2005, October). *Formative assessment: Caveat emptor*. Presentation at the ETS Invitational Conference 2005, The Future of Assessment: Shaping Teaching and Learning. New York, NY.

²⁹ See Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher*, 29 (7), 4–14.