

Assessment Literacy and Professional Learning

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INTRODUCTION

To be consistent with advances in the learning sciences, assessment must be reconceptualized. In Chapter 3 of this volume, “Human Learning and Development: Theoretical Perspectives to Inform Assessment Systems,” Goldman and Lee observe that assessment should “reflect cultural, social, emotional, and cognitive dimensions” of human learning and development, in tandem with the traditionally prioritized cognitive dimension (p. 50). The purpose of this chapter is to consider what assessment literacy entails within this reconceptualization and how it can be promoted among teachers. Throughout this chapter, we position teachers as active agents in their own learning. Beginning in pre-service, candidate teachers should take an active stance and receive guidance from program faculty and cooperating teachers. Across their careers, they should become increasingly self-regulated, taking more control over their learning in collaboration with peers and school and district leaders (Heritage & Wylie, 2020).

In broad terms, we adopt the perspective that assessment literacy is the ability to engage in a chain of reasoning from evidence (Mislevy, 1994, 1996), a process that is always applicable regardless of the differing contexts, purposes, and timescales of assessment (Pellegrino, 2014). A chain of reasoning begins with identifying learning goals—what is to be assessed—followed by a means to elicit evidence of learning in relation to the goal and ends with interpreting evidence to guide asset-based and future-oriented actions to benefit student learning and development. This process characterizes all classroom assessment, from an end-of-unit assessment to an interaction between teacher and a student (Pellegrino et al., 2023).

A primary concern in addressing assessment literacy is how assessment can facilitate equitable and just learning outcomes for all students. We have adopted the definition of equity as “an approach to ensuring equally high outcomes for all by removing the predictability of success or failure that currently correlates with any racial, social, economic, or cultural factor” (Safir & Dugan, 2021, p. 29). Achieving equity requires a culturally sustaining approach to pedagogy and a fair and just approach to assessment, including interrogating the content of what is taught and how it is taught, together with what and how that content is assessed (Paris, 2012; Randall et al., 2022; Stemberge, 2020; Taylor & Nolen, 2022). Fair and just classroom assessment thrives to the extent that teachers and other professionals are also involved in culturally sustaining pedagogy; that they understand how to create assessment tasks that reflect students’ cultures, languages, and ways of knowing; and that they engage in equitable and just interpretations and actions based on information gained from the assessment.

This chapter is organized into three sections. First, we identify the knowledge and skills that teachers need to make effective use of classroom assessment. We then move from examining *what* teachers need to know to examining *how* they can develop competencies in assessment literacy. Next, we present a set of enabling conditions for teacher professional learning on assessment literacy, along with specific professional learning activities. The final section of this chapter addresses the role of school and district leaders and state policy in providing systemic support for assessment literacy.

ASSESSMENT LITERACY

We begin this section by discussing classroom assessments that teachers can use to benefit their students' learning and development in the context of ambitious teaching. Then, we describe the knowledge and skills teachers need to make effective use of classroom assessment within an activity system. These competencies are organized around three components of reasoning from evidence: learning goals, eliciting evidence, and interpretation and action. To illustrate assessment literacy knowledge and skills in practice, we include an example of ambitious teaching and integrated formative assessment in a Grade 8 art lesson (see Tables 5-1, 5-2, and 5-3 later in this chapter).

Classroom Assessment

Following Chapter 4 of this volume, "Classroom Activity Systems to Support Ambitious Teaching and Assessment," we locate classroom assessment within a learner-centered activity system that includes five integrated elements: learner, curriculum, instruction, assessment, and a classroom learning culture. These elements are grounded in ambitious teaching, which adopts a sociocultural approach to learning and centers on each learner's engagement and participation in rigorous learning opportunities. These opportunities connect to who students are and the knowledge and resources they bring to the classroom from their lived experiences in home and community (Shepard, 2021).

Within this activity system, classroom assessment is used for both formative and summative purposes, including grading. Formative assessment is "intimately connected with the process of teaching and learning" (Black, 1993, p. 51). Teachers gain insights into students' current learning status in order to guide ongoing teaching and learning decisions so that they can teach within the students' zone of proximal development (Torrance & Pryor, 1998). Students are prompted to develop metacognitive strategies so that they can purposefully direct their own learning.

Whereas formative assessment provides a steady stream of evidence to inform ongoing learning, classroom summative assessment gives a point-in-time view of achievement at the end of a period of learning—for example, the end of a unit or a course. Summative assessment results can be used to assign grades or otherwise certify achievement (Shepard, 2019), to inform future work, or to prompt further probing to understand weaker-than-expected performance among students.

To augment classroom-based assessment evidence, Safir and Dugan (2021) advocate for the use of "street data," information that comes from a variety of sources that include student interviews, identity maps, student ethnographies, home visits, and staff or student comment cards. Unlike test scores or other forms of summary data that provide a "satellite view" of achievement, street data provide an on-the-ground perspective "revealing students' assets, cultural wealth, and learning needs" (Safir & Dugan, 2021, p. 57) that can be used in conjunction with assessment evidence to provide real-time insights into the context surrounding student learning.

Assessment Literacy Knowledge and Skills: Learning Goals

Learning goals—the foundation for both instruction and assessment—are rigorous, high-quality, meaningful, and challenging for students (Shepard, 2021). Clearly defined

success criteria help students understand what meeting a goal looks and sounds like. Learning goals and success criteria are developed from a combination of academic resources, teachers' disciplinary knowledge, and teachers' knowledge of their students. Academic resources can include learning standards, learning progressions that show a typical trajectory of learning, and learning sequences laid out in the curriculum. Teachers' disciplinary knowledge consists of the distinctive nature of the thinking processes and beliefs specific to a discipline; an understanding of how learning typically progresses in that discipline; and pedagogical content knowledge, "that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (Shulman, 1987, p. 8). Using their knowledge of students, teachers need to tailor disciplinary learning goals to connect to their students' prior knowledge—from school, their cultural backgrounds, and their lived experiences (Moll et al., 1992; Sireci, 2020). Reflecting who students are in the classroom is important for engendering feelings of legitimacy, so that all students can feel safe and valued (Gutiérrez & Rogoff, 2003; Moll et al., 1992; National Academies of Sciences, Engineering, and Medicine, 2018). The specific knowledge and skills needed to develop learning goals and associated success criteria are presented in Box 5-1.

Table 5-1 focuses on setting up the Grade 8 art lesson, as well as communicating learning goals and success criteria. This lesson draws from an English language arts unit developed by Walqui et al. (2023) and observed by Heritage. The lesson was not recorded so student quotes reflect what was heard but are not taken from a transcript.

BOX 5-1
Specific Knowledge and Skills Needed to Develop
Learning Goals and Associated Success Criteria

- Knowledge of the distinct ways of knowing and reasoning that are specific to a discipline and how students come to learn in these distinct ways.
- Skills in creating goals that apprentice students to a discipline (e.g., behaving as a mathematician or a writer) while honoring and supporting their individual identities as learners.
- Knowledge of standards, curriculum sequences, and learning progressions within a discipline and/or skills to create learning progressions from the standards.
- Skills in creating worthwhile and rigorous learning goals that are aligned to standards, progressions, or curriculum materials that challenge each student based on their current learning status.
- Skills in describing success criteria to help students understand what success looks and sounds like.
- Knowledge of students' family and community beliefs, values, and culture, as well as the interests and gifts that students bring to the classroom.
- Skills in leveraging this knowledge to create learning goals that connect to students' lived experience and help students to gain insight into experiences different from their own.
- Knowledge of self-regulation, metacognition, motivation, and self-efficacy and their impacts on development.
- Skills in leveraging these constructs when making decisions about learning goals and success criteria (e.g., will student be motivated by this goal, or will all students be able to access this goal?).

The lefthand column describes how the lesson unfolded, while the righthand column draws attention to the specific aspects of assessment literacy that the teacher employed at that stage of the lesson.

Contrast the example in Table 5-1, showing a teacher modifying curriculum to better reflect her students’ culture and attend to their identity, with that of students who experience a curriculum that is agnostic to who they are and the resources they bring to the classroom. Assessment of student learning in this teacher-modified curriculum has the potential to “sustain, not eradicate, students’ cultures, languages, and ways of knowing/being” (Randall et al., 2022, p. 172), a hallmark of fair and justice-oriented assessment.

TABLE 5-1 A Vignette Linked to Assessment Literacy Skills for Learning Goals

Classroom Practice	Teacher’s Assessment Literacy Knowledge and Skills
<p>This lesson comes from a Grade 8 class focusing on art as a form of storytelling—part of the visual literacy strand of the district’s art curriculum. The teacher planned a series of lessons based on these standards:</p> <p>Art: Develop Visual Literacy</p> <ul style="list-style-type: none"> • Describe, analyze, and interpret created art • Speak and write effectively and clearly about works of art <p>Many of the students’ families had roots in Mexico and the teacher knew that quite a few of them had also visited family there. To connect to some students’ Mexican heritage, and to broaden the cultural understanding of those students who did not share that heritage, the teacher began the lesson series with the Mexican artist Diego Rivera’s mural <i>Dream of a Sunday Afternoon in Alameda Park</i>. The mural depicts hundreds of characters from 400 years of Mexican history gathering for a walk in Mexico City’s largest park. The teacher wanted her students to see a powerful artist who shared their heritage and images of people who looked like them. The teacher would later help students apply what they had learned from analyzing this mural to other works of narrative art.</p>	<p>The teacher was able to set a goal, aligned to existing curriculum standards, that was challenging and meaningful to the students. She connected the goal to students’ cultural backgrounds because she knew they would be motivated by making connections to their families’ Mexican roots and would value learning about an artist that shared their heritage (based on the teacher’s knowledge of family background, student interest, and the neighborhood surrounding the school).</p>
<p>After introducing the focus of the lesson series, the teacher started the first lesson by asking students what they knew about murals and if they had seen murals anywhere in their community. Some of the students said they lived near a wall that had a lot of graffiti on it and thought that was a kind of mural. Some students said they had seen a wall painted with an image of Kobe Bryant. Other students said that on their way to school they passed Farmer John’s, a meat supplier, which had a mural of pigs in a field on the wall. The teacher asked the students what they thought the purpose of the various murals were, and their answers ranged from celebrating someone’s life to advertising what you were selling to showing that you were in a gang. From the discussion, students came to agree that the people who created a mural had a purpose and a message to communicate. After establishing this foundational knowledge, the teacher would now be able to draw on and make connections to the students’ prior knowledge about murals throughout the lesson.</p>	<p>The teacher capitalized on her knowledge of the students’ likely experiences with murals within their community.</p>

continued

TABLE 5-1 Continued

Classroom Practice	Teacher’s Assessment Literacy Knowledge and Skills
<p>Then the teacher introduced the students to Diego Rivera, projecting his image on the whiteboard and giving some background about him. This background provided context for analyzing his mural—for example, how he favored mural painting because it could present subjects on a large scale to a wide public audience, consistent with his communist politics. The teacher then briefly introduced the class to key ideas of communism. She also noted that in 1922, after the Mexican Revolution, Rivera and others signed the <i>Manifiesto of the Syndicate of Technical Workers, Painters, and Sculptors</i>, arguing that artists must invest their greatest efforts to make art that was valuable to the people.</p>	<p>The teacher augmented the students’ background knowledge about Rivera so they could draw from it, as well as their local knowledge of murals, when they were analyzing <i>Dream of a Sunday Afternoon in Alameda Park</i>.</p>
<p>Next, the teacher asked the students to write individually in their journals about how they thought murals were different from other art forms they had studied. The teacher then led a class discussion in which students raised questions about art, including that they saw some forms of art being for rich people and only seen in museums, whereas ordinary people could view murals on the street. One student speculated that “maybe there is more of a story and a message in a mural like the ones we just talked about.” This prompted the teacher to ask, given the student’s background, what kinds of messages or stories the class thought Diego Rivera might have. Students offered ideas such as “stories about communism and poor people, messages from workers, stories from history.”</p>	<p>The teacher provided students with clear success criteria to help them understand what was expected of them, and the teacher made sure they understood both the goal and criteria before they began their task.</p>
<p>At this point, the teacher decided that the students had sufficient background knowledge to begin their analysis and projected a large image of Diego Rivera’s mural onto the whiteboard. The teacher explained that the goal of the lesson was to learn how to analyze an image—in this case, the Rivera mural. To reach that goal, the students would examine the details of the mural in sections and then discuss how they came together to tell a story. Their success criteria would be to describe what they saw in the mural, identify key information, and make inferences to explain what story the mural was telling. The teacher then asked the students to tell a partner in their own words what the goal and success criteria in the lesson entailed.</p>	

Assessment Literacy Knowledge and Skills: Assessment Evidence

Assessment evidence of learning for either formative or summative purposes comes from planned tasks or situations, aligned with learning goals that embody the cognitive and cultural dimensions of learning, and that prompt students to say, do, or create something that shows the status of their learning (National Research Council, 2001). The social and emotional dimensions of assessment are addressed by taking account of students’ motivations and interests, ensuring that students understand the purpose of the assessment, and confirming that students perceive the task as worthwhile and relevant (Shepard, 2000).

Assessment tasks or situations should offer multiple entry points and modalities in which knowledge and reasoning can be displayed—for example, tasks with differing levels of difficulty, oral and written language options, and both graphic and pictorial

representations (Nasir et al., 2021; Randall, 2021) so that all students can accurately show what they know. Assessment opportunities should also connect to and build on students' funds of knowledge, those knowledge assets that students have as a result of personal experiences in their homes, families, and communities (Esteban-Guitart & Moll, 2014; Moll et al., 1992; Subero et al., 2015). Students can also generate evidence of learning through their own internal feedback, or self-assessment—a process of comparing one's own performance to internally or externally provided criteria. In self-assessment, students form judgments about the level to which they have satisfied the criteria (Boud & Molloy, 2013) and make decisions about the actions they need to take next (Ames, 1992; Paris & Paris, 2001), including adapting learning strategies, revising work, or setting new goals. Of course, teachers need to support students in developing self-assessment skills through models and structures in the classroom. Helping students develop self-assessment skills does have “pay off” by increasing academic performance (Brown & Harris, 2013) and fostering metacognition, self-regulated learning, and self-efficacy (Panadero et al., 2016). The specific knowledge and skills teachers need for generating assessment evidence of learning are presented in Box 5-2.

BOX 5-2
Specific Knowledge and Skills Needed for Generating
Assessment Evidence of Learning

- Knowledge of the importance of coherence among learning opportunities, classroom formative and summative assessment (including grading), and how assessment purpose will inform how evidence of student understanding is produced.
- Skills in creating an optimal climate for learning and assessment, generating an atmosphere of trust and purpose, and ensuring collective orientation to learning and development.
- Knowledge and skills in planning situations, activities, tasks, or questions to elicit prior knowledge and evidence of progress toward the current learning goal(s) with shared indicators of successful performance that will be actionable in the here and now of learning, and, in the case of summative assessment, at the end of a period of learning.
- Knowledge of how to create assessment opportunities that sustain the specific local cultural and linguistic diversity present in each classroom and support students' ways of knowing and being.
- Skills in planning authentic and worthwhile tasks with multiple modes (e.g., written, oral, performance) that require students to engage with powerful disciplinary ideas and practices that incorporate their funds of knowledge they bring to school from their homes and communities; that have sufficiently broad entry points to provide all students with the opportunity to show where they are in their learning in ways that situate them as competent; and that are accessible to students with disabilities and who are English learners.
- Skills in ensuring metacognitive skill development (including goal setting and self-monitoring) and promoting the ongoing use of these skills in the classroom to help students understand their own learning status and performance.
- Skills in identifying and collecting other sources of information (i.e., street data) to support deeper insights into student learning compared to solely considering assessment data.

Table 5-2 continues the example of the Grade 8 art class with a focus on how the teacher elicits evidence of student learning throughout the lesson.

TABLE 5-2 A Vignette Linked to Assessment Literacy Skills for Eliciting Assessment Evidence

Classroom Practice	Teacher’s Assessment Literacy Knowledge and Skills
<p>When the teacher thought that the students understood the learning goal and success criteria, she gave images of four sections of the mural to each group of four students to analyze. First they were to work individually on one section each and then share their thinking with each other in order to decide together what story Rivera was telling with the complete mural. To scaffold this analysis, the teacher provided questions for individual students to write responses to before they came together for a group discussion—for example, “What do you see in the image? What stands out to you? How are people in the mural interacting? What did Diego Rivera want to convey to people and why do you think that?” The students could respond in English or a combination of English and Spanish.</p>	<p>The open-ended questions that the teacher asked to capture students’ preliminary ideas about the mural in their notes, along with their more refined understandings as a result of the group discussions, provided the teacher with evidence of student understanding.</p>
<p>As the students were completing their individual writing tasks, the teacher observed the students’ work and, in instances where a student’s writing was limited, prompted them with questions like, “What are the details you notice in this section? Why do you think Rivera introduced these images? What do you think he was trying to say? What title would you give this section? What do you see that makes you say that?” As students responded to these prompts, the teacher obtained more evidence about their analytic thinking and the students had a chance to deepen their analysis.</p>	<p>The use of multiple modalities and translanguaging helped the teacher access the emerging thinking of her bilingual students while sustaining linguistic diversity in the classroom.</p>
<p>After their individual writing tasks were complete, the students placed each section of the mural side by side so the small groups were able to see the full image. Before they began their small group discussions, the teacher reminded them that they are learning to describe, analyze, and interpret art and encouraged them to be explicit about whether they were offering a description, analysis, or interpretation. The students shared their ideas about their respective sections in their groups using discussion prompts to help start the discussion, including, “Which objects stand out to you? What do you think they represent? What is a question you have about the mural or about Diego Rivera?” Some students added to their responses or revised their ideas based on what their peers said. While the students were engaged in their small group conversations, the teacher listened and asked probing questions to gain insights about their thinking, including, “What did your classmate say that made you change your idea? Why did that particular object stand out to you? What do you think Rivera intended by including it?”</p>	<p>The assessment evidence of student understanding was aligned with the learning goal and was proximal to the learning itself. The teacher used the learning goal throughout the discussion to help students connect the specific case of the Rivera mural to broader art appreciation skills.</p> <p>Because the teacher had cultivated a classroom climate in which students felt safe to express their ideas in English or Spanish, regardless of language proficiency, and where students recognized the value in listening to their peers’ ideas, the classroom was an optimal environment for the teacher to elicit evidence of current understanding from her students.</p>

Assessment Literacy Knowledge and Skills: Interpretation of Student Responses and Action

The interpretation of student responses to tasks and situations in order to guide future action requires evidentiary reasoning based on disciplinary content knowledge (Bennett, 2019) and the teacher's knowledge of their students. Analysis of the evidence obtained from assessments should be used to develop an asset-based explanation or interpretation of the qualitative and quantitative assessment information and guide decisions on how best to advance every student's learning and development. Asset-based interpretations necessitate a shift from a reductive binary categorization of students—"got it" or "didn't get it"—to a more fine-grained view that identifies the specifics of what students understand and do not yet understand.

Interpreting student responses in a manner that integrates the cultural dimension of learning requires a focus on equitable and just interpretation of evidence stemming from teachers' sociocultural consciousness—for instance, teachers need to be careful to not privilege any students' linguistic and cultural patterns and practices that are more aligned with their own (Randall et al., 2022). Interpretation that considers the social and emotional dimension of learning is also informed by the teacher's knowledge of students' cultures, lived experiences, and current learning needs (Safir & Dugan, 2021); their knowledge of students' attitudes to and interest in the instructional and assessment task content (Ames, 1992); and their knowledge of the students' sense of self-efficacy with regard to the discipline (Bandura, 1977, 1993). An augmented picture of student learning performance based on a teacher's deep knowledge of their students and epistemological resources optimizes the potential for sensitive action that builds on students' current strengths and sustains their learning within the context of their language, literacies, and cultural ways of being (Paris & Alim, 2017).

Interpretation of assessment evidence must be followed by action by the teacher or student. Several carefully designed studies have demonstrated a positive impact on student learning when teachers use assessment evidence to make instructional adjustments (Bergan et al., 1991; Fuchs et al., 1991). Action based on interpretation from a cognitive perspective should be tailored to students' academic knowledge, skills, and analytic practices; and can take varied forms, including offering additional scaffolding to support deeper learning, sharing ideas and approaches from other students, introducing a new learning activity, using metaphor or representations, or providing feedback to guide revision and reflection with sufficient time to process and respond to that feedback. Longer-term adjustments, likely based on analysis of summative assessment evidence or data across multiple sources, may include modifying an upcoming unit to provide opportunities for some students to revisit a concept they have not yet fully grasped or examining trends across students or classrooms to inform grade- or department-level pedagogical, curricular, or assessment modifications.

It is critical that teachers use diverse student ideas and experiences, sourced from assessment evidence, as starting points for navigating between everyday forms of knowing and those forms of knowing that are accepted and used within specific content areas (Au & Kawakami, 1994; Bang & Medin, 2010; Cowie et al., 2018). This approach is especially important in formative assessment.

Action based on interpretation that addresses the cultural aspect of learning may include determining that students would benefit from a stronger integration of funds

of knowledge into future learning activities. For example, in a social studies unit, Ms. Cárdenas was teaching a Grade 2 class of English learners who were exploring their interest in civil rights, which had been piqued by a workers' strike occurring in their neighborhood. After the class's initial discussions and reading about rights—including *The Youngest Marcher* (Levinson & Brantley-Newton, 2017), about the youngest known child to be arrested at a civil rights protest in Birmingham, Alabama in 1963—the teacher wanted to strengthen the students' understanding by connecting rights to their own lives. She invited them to make clay models related to what they perceived as their personal rights and explain them. The students' explanations included: *I want to always have the right to live with my brother because in some places today families are separated. I have the right to be bilingual because if I'm not bilingual I cannot do things like talk to my grandma and read in more than one language* (personal communication, April 2017).

Action based on interpretation that addresses the social and emotional dimension of learning helps students regard assessment as a means for learning (Pryor, 2010) as they receive ongoing improvement-oriented feedback (Duijnhouwer et al., 2010). Such feedback offers students specific and actionable suggestions they can use—or not use, since feedback is not always a mandate. It focuses on the learning—the task—and not on the learner, which may lead students to set or revise their own goals, promoting feelings of competence (Andrade & Heritage, 2017). The specific knowledge and skills needed for the interpretation of student responses and action are presented in Box 5-3.

We conclude the example of practice from the Grade 8 art class in Table 5-3 by examining how the teacher interpreted evidence from students and acted on the insights she gained. While the separate tables help to explicate the different aspects of assessment literacy, the divisions are artificial. In other words, the teacher was collecting evidence of student understanding even during the initial stage of introducing the learning goal, which informed her decision to begin the main part of the lesson (see Table 5-1). Eliciting evidence, interpreting it, and taking subsequent action also all happened in close temporal proximity—for instance, when the teacher observed what students were writing and then asked them additional questions to help them deepen their observations of the mural (see Table 5-2). Interpretation and action based on assessment evidence most effectively supports learning when it occurs in the ongoing flow of a lesson—one or more class periods—and not as a distant event after learning has been completed (Black & Wiliam, 1998; Shepard, 2021).

The art teacher used ambitious teaching practices in this lesson, incorporating students' interests, backgrounds, and experience in an authentic inquiry. She built on students' prior knowledge and engaged them in learning as a social process, using appropriate scaffolds to support the entire class's participation so that they could develop visual literacy knowledge and skills, analytic abilities, and language skills by working collectively in a learning community.

The teacher's formative assessment practices were undergirded by her assessment literacy knowledge and skills. She designed multiple assessment opportunities into her teaching so that she could gauge how learning was developing across the class period and take contingent action. Representing understanding was not restricted to one mode—she supported her students' communicating their understanding in a variety of ways, including encouraging emergent bilingual students to use both Spanish and

BOX 5-3
Specific Knowledge and Skills Needed for
Interpretation of Student Responses and Action

- Skills in asset-focused evidentiary reasoning based in disciplinary content knowledge, recognizing strengths in student performance in order to determine next steps based on interpretation of formative assessment evidence, and evaluating student achievement based on interpretation of summative data.
- Knowledge of sources of corroborating, complementary, or other collections of data (e.g., street data) to provide a broader and deeper interpretation and understanding of learning and development, including knowledge of students' backgrounds, cultural frames of reference, interest and motivation in learning, and personal circumstances.
- Conscious knowledge of possible assumptions or biases and skills in minimizing them when making interpretations about student learning, recognition of whose voices are frequently marginalized, and skills to be more inclusive when collecting other sources of information to contribute to a well-rounded picture of students and their strengths and areas in which they need support.
- Skills in planning contingent responses based on student needs inferred from evidence, including leveraging student ideas as bridges to content area concepts; using improvement-oriented feedback generated by the teacher, peers, or the individual student's self assessment; and giving students time to use it by structuring additional activities for student discourse to advance learning.
- Knowledge of fair and effective grading practices and when they should be appropriately applied (i.e., not in the context of formative assessment).
- Skills in using interpretations from summative assessments to inform evaluation of curricular units, teaching practices, performance of subgroups of students, and trends across and among classrooms.
- Knowledge of the cultural components needed to advance learning, skills in weaving specific cultural aspects of students' backgrounds into teaching and learning, and skills in prompting students to draw on their funds of knowledge during sense-making.
- Skills in collaborating with students to understand learning status and performance in ways that enhance feelings of self-efficacy; and showing students how their responses shaped next steps.
- Knowledge of self-regulation and its impact on learning and motivation, and skills in teaching self-regulated learning processes.

English. All students were positioned as competent, with personal experiences that they could share, and each student's contribution was recognized in the paired work and the class discussion. The teacher used the evidence obtained from students' writing, discussions, and responses to take asset-based and future-oriented actions intended to move each student's learning forward.

In the example communicated through Tables 5-1, 5-2, and 5-3, the teacher's assessment was solely formative and, as a result, two key assessment literacy skills were not illustrated: grading and the relationship between classroom summative and formative assessment. Noting the problems with many grading practices, Chapter 4 of this volume, "Classroom Activity Systems to Support Ambitious Teaching and Assessment," emphasizes that grades should be based solely on what students know and can do,

TABLE 5-3 A Vignette Linked to Assessment Literacy Skills for Interpreting and Taking Action on Evidence

Classroom Practice	Teacher’s Assessment Literacy Knowledge and Skills
<p>Based on her observations, the teacher concluded that while students could describe what they were seeing in the mural and what stood out for them, most groups could not yet explain what story they thought Rivera was telling.</p>	<p>The teacher focused on what students could do and continuously progressed their learning by taking action that matched their current learning status.</p>
<p>In response to where she thought the students’ thinking was, the teacher helped their analysis by prompting them to consider an emotion or feeling they had about the mural and the reason why. To scaffold their thinking, the teacher asked the students who initially mentioned the mural of Kobe Bryant to describe how they felt when they saw it. One student shared that he felt proud because he was a Lakers fan. Another student said it made her feel motivated to keep practicing with her basketball team. Another student said it made him feel sad about how Kobe had died. The teacher then invited the students to think about an emotion they had about the Rivera mural and share with a peer. After their paired conversation, the teacher led a class discussion where students volunteered their ideas and identified any details in the mural that contributed to their emotional reaction. For instance, some thought a smiling skeleton in the middle of the mural was scary and didn’t understand why it was there. Others talked about the violent incidents they observed in the mural involving Indigenous people and why those made them feel angry.</p>	<p>The teacher drew on earlier discussions about local murals to help students connect the emotions created by the Rivera mural to the story it was telling.</p>
<p>She then invited the students to share their ideas about the mural’s story. She guided the discussion so that students could build on each other’s ideas. As the discussion progressed, students added to each other’s perspectives and sometimes made alternate suggestions. For each idea presented, the teacher asked the student to refer to the mural for its source. The main ideas that surfaced were that Rivera wanted to show different people throughout Mexican history, both rich and poor, and that some poor people were not treated well. Some students inferred that Rivera thought that people would do better under communism, an idea that was picked up by other students in the classroom after they had heard their peers express it.</p>	<p>The teacher gave the students an opportunity for reflection on their learning and used evidence she obtained from both that reflection and the lesson itself to plan next instructional steps intended to deepen and expand their understanding of the Rivera mural, and then learn about other Mexican muralists.</p>
<p>At the conclusion of the lesson, the teacher returned to the learning goals and let students know that they would continue to develop their descriptive, analytical, and interpretative skills on other works of art in future lessons. She then asked each student to complete an exit ticket and respond to the questions, “What was your key takeaway from today’s lesson? What do you think you need help with? What would you like to learn more about?”</p>	
<p>Based on the final class discussion and review of the individual exit tickets, the teacher decided that as a next step she would invite the small groups to reconvene and come up with three questions that would help them better understand the message and story of the mural. Their questions eventually led the students to learn more about the Mexican Revolution, communism, and other Mexican muralists with similar views to Rivera.</p>	

and not on any other extraneous criteria. This point is underscored by Feldman (2019), when he stresses that equitable grading that is “accurate and bias-resistant includes *nothing other than a student’s summative assessment results*” (p. 143, italic in original). If the teacher in Tables 5-1, 5-2, and 5-3 was planning to assign grades, she would have done so at a later point based on summative assessment—for example, an end-of-unit assessment. Ideally, the summative assessment would be created from the macro goals of the unit, from which micro lesson goals for formative purposes were derived, so as to ensure synergy between the two forms of assessment. In addition to using the summative results to assign grades, the teacher would be able to use that information to make decisions about future unit content and any necessary pedagogical changes.

ENABLING CONDITIONS FOR PROFESSIONAL LEARNING

In this section, we discuss three enabling conditions for professional learning—sociocultural consciousness and agency, learning supports, and deliberate practice—that ground teachers’ professional learning to develop assessment literacy competencies, regardless of the stage of their career (see Figure 5-1). In Figure 5-1, assessment competencies—the focus of professional learning across each of the three identified enabling conditions—are subsumed under the broad headings of learning goals, assessment evidence, and interpretation and action. Ambitious teaching is at the center of the figure since it is foundational for equity-focused assessment (Shepard, 2021) and is the context in which teachers make use of their assessment literacy knowledge and skills to benefit learning and development.

We expect that, for the most part, these enabling conditions will be operationalized in teachers’ local settings so that they can collaborate with their peers on continuous improvement of their assessment literacy knowledge and skills. In addition, each enabling condition should be supported by the direct involvement of school and district leaders, who play a pivotal role in helping teachers develop assessment literacy competencies (Stiggins & Duke, 2008).

Sociocultural Consciousness and Agency

In this section, we describe how developing sociocultural consciousness and supporting teacher agency are critical for professional learning.

Sociocultural Consciousness

To engage meaningfully in equitable assessment, teachers must understand that their worldview is not universal, but has been profoundly shaped by their life experiences and mediated by a variety of factors—chief among them race, ethnicity, social class, and gender (Villegas & Lucas, 2001). Part of this process of understanding involves teachers recognizing the ways in which privilege and power operate in society in general, and within school systems in particular. Developing this understanding is the basis of sociocultural consciousness and requires teachers to critically reflect on their individual attitudes, beliefs, and values related to students and their backgrounds, schooling, and assessment (Heritage & Wylie, 2020). Such reflection sensitizes individuals to their

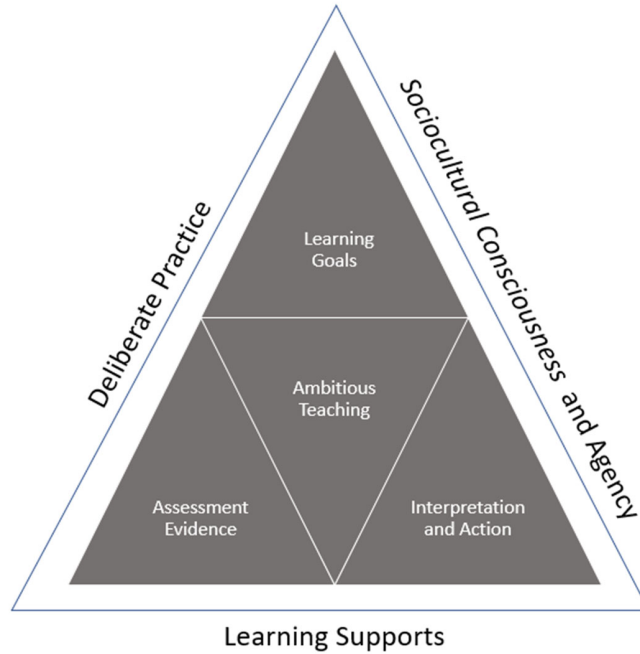


FIGURE 5-1 Content and enabling conditions for developing assessment literacy.

own social identities and relationships to power, which bear on their work in schools and their local communities (Randall et al., 2022) and help to counter artificially low expectations of traditionally minoritized students, increase educators’ understanding of students’ lived experiences, and inform asset-based interpretations of assessment evidence of student learning.

Teachers may also work with colleagues to develop sociocultural consciousness—for instance, by discussing the cultural facets they have in common and how these may differ from those of their students. Such conversations can lead to considerations of how these differences might impact their attitudes and behaviors toward their students and how to ameliorate these attitudes and behaviors. Teachers may also want to read and discuss resources written by traditionally marginalized individuals and groups that provide perspectives on race, culture, and language that differ from their own.

It is equally important for school and district leaders to engage in comparable reflections so that they can lead explorations of assessment practices from an equitable and just perspective (Villegas & Lucas, 2001) and ensure that assessment practices are undergirded by equity-focused curricula, standards, and pedagogy across the school and district. In this vein, Marvin Pryor (personal communication, November 2022), former principal of The New Schools at Carver in Atlanta, Georgia, remarked that he led his school with the belief that “all students will learn under our care, not *can* learn, but *will* learn.”

Teacher Agency

Teacher agency is enhanced when professional learning is treated as an inquiry process, in which teachers bring their problems of practice to a community of peers for exploration, reflection, and feedback. Such problems of practice could encompass the full range of assessment literacy competencies outlined earlier in this chapter. Although school and district leadership might identify areas of professional learning for which they have evidence of a system-wide need, the inquiry process encourages teachers to be active problem-solvers rather than only recipients of expert knowledge (Calvert, 2016). Furthermore, to preserve teachers' role as active agents, school and district leadership should ensure that professional learning activities help teachers achieve their personal goals and provide access to opportunities that are genuinely differentiated according to teachers' needs or expertise (Goe et al., 2017).

Learning Supports

In this section, we describe two specific learning supports that can be used to develop each of the assessment competencies: access to a learning community and to expertise.

Learning Community

By providing a forum for participants to come together and deepen their knowledge and expertise by interacting on an ongoing basis (Wenger et al., 2002), learning communities are fundamental to nurturing teacher agency. In a learning community, participants take intentional and responsible management of their learning, utilize others as a resource for their own learning in the context of their own curricula, contribute to the growth of their peers, and act in new and creative ways (Calvert, 2016; Toom et al., 2015). Learning communities should exist for a sufficient enough duration that teachers have time to learn, practice, incorporate new ideas into their regular teaching practice, and reflect with colleagues on their implementation (Darling-Hammond et al., 2017).

Many schools have dedicated blocks of time for department- or grade-level teams to learn together—either short blocks of time on a regular basis or less frequent but longer blocks of time, such as a monthly early closure for students so that teachers can meet for the afternoon. Teachers should determine the assessment literacy focus for these blocks of time and combine learning and practical application into their conversation. School leaders play a role in ensuring that these blocks of time are preserved for this purpose.

An example of the value of a learning community comes from a case study of high school teachers focused on formative assessment. The participating teachers used no-carbon-required (NCR) paper, so that researchers would have a copy of their plans, to record how they were planning to try new strategies or continue with others they are familiar with after receiving feedback from their group, or address other aspects of formative assessment practice (Wylie et al., 2009). In an interview, one teacher described how the expectation of committing to try out something new in his classroom and then reporting on it created an informal, but powerful, sense of accountability:

BUT I'm sitting with my friends and on the NCR form I write down what I am going to do next month. Well, it turns out to be a sort of "I'm telling my friends I'm going to do this" and I really actually did it and it was because of that...by the next month you better take out that piece of paper and say "did I do that" and even if you didn't do it, you KNEW that you made a commitment to do [it] ... the idea of sitting in a group, working out something, and making a commitment, even something as informal [as writing on the NCR paper] I was impressed about how that actually made me do stuff. (Wylie et al., 2009, pp. 24–25)

Access to Expertise

While school-based learning communities provide a valuable forum for learning, when a group is at a novice stage in their collective assessment literacy, members may struggle to accurately attend to the most important aspects of their own practice and peers may not yet know how best to press their colleagues to reflect critically (Sherin et al., 2011). In this situation, injecting sustained expertise into the learning community can be useful. For instance, coaches or teacher leaders can serve critical, expert roles such as instructional specialist, curriculum specialist, classroom supporter (teaching demonstration lessons, co-teaching, or observing to provide feedback), learning facilitator, or mentor to support teachers' assessment literacy in a range of contexts (Heritage & Wylie, 2020).

In addition to in-person expertise, other external supports that can assist learning communities include video or written examples of classroom practice, which are most instructive when accompanied by analysis that draws attention to critical features of the example. Disciplinary content expertise can be developed through the use of resources like research-based learning progressions and practical applications like deconstructing standards to examine the sub-goals while simultaneously considering how standards combine into major disciplinary ideas (Heritage & Wylie, 2020).

Deliberate Practice

Deliberate practice, the third enabling condition for professional learning, entails specific and sustained efforts to do something that a person cannot do well (Ericsson et al., 1993). In summary, the characteristics of deliberate practice—in any area, not only teaching—are (1) a motivated individual who is attending to a task at hand and willing to exert effort to improve; (2) a scaffolded task that takes into account the prior learning of the subject; (3) the opportunity for brief instruction to support performance of the task; (4) the provision of informative feedback to the subject about their performance; and (5) repeatedly undertaking similar tasks over time (Ericsson et al., 1993). Classroom observation is a way to support deliberate practice, applicable to developing the range of assessment literacy knowledge and skills outlined previously.

Classroom Observation of Assessment Practices

Classroom observation—either in-person or from a video recording—of assessment practices with feedback from a peer or a coach can complement work done in a learning community and permit teachers to exercise agency by directing the focus of the

observation (Wylie & Lyon, 2020). For instance, a teacher might ask a peer to attend to the quality of classroom questioning, noting to whom the teacher directs questions, the nature of each question, how students respond, and the pedagogical action the teacher takes. Discussion after the lesson can address how questioning informed teacher insights into student understanding as the lesson unfolded and ways in which future questioning can be improved (Wylie & Lyon, 2020). The observed teacher could practice implementing improvements and then request a subsequent observation to discuss the impact of their efforts, and so on. Tools can also support this form of deliberate practice—for example, an observation protocol with rubrics for various dimensions of formative assessment, including a template for improvement planning based on feedback discussions between peers (Wylie & Lyon, 2016).

Principals or other administrators can also promote deliberate practice by observing assessment practice in classrooms and having conversations with teachers to support reflection (Stronge & Xu, 2021). These observations and conversations could also serve as the basis for constructive feedback at a department or school level, if applicable to all teachers. Such cross-school or grade-level observations might focus on how students' epistemologies are used in instruction and assessment, the degree to which multiple modes of assessment are employed in a lesson or unit, and the use of evidence to advance learning. If a specific area of improvement emerges from these observations, teachers could engage in cycles of deliberate practice, implementing new approaches, reviewing them together, and making refinements.

PROFESSIONAL LEARNING ACTIVITIES FOR DEVELOPING ASSESSMENT LITERACY

In this section, we describe specific professional learning activities for applying sociocultural consciousness and agency, learning supports, and deliberate practice to developing assessment literacy skills. These activities are not intended as a list or to be worked through exhaustively and in order. Rather, when teachers and those who support them decide on a particular assessment literacy focus area, they can draw from the suggestions below to match their identified needs.

Learning Goals

Developing and Refining Learning Goals

Developing expertise in effectively creating, modifying, or utilizing learning goals for the purpose of assessment and instruction is a continuous process of review and refinement. A case in point is two experienced and skilled formative assessment practitioners who report that they still “share them [learning goals] with one another and get feedback because they're not always one hundred percent” (Heritage & Wylie, 2020, p. 209).

Collaboratively analyzing curriculum materials to identify the progression of concepts and analytic practices therein can support the development of learning goals and help deepen teachers' disciplinary knowledge. Similarly, learning goals can be improved by examining existing progressions—for example, the progression of science practices

in the Next Generation Science Standards Appendix E¹—and creating local progressions derived from existing standards, tracing intermediate learning steps between standards in adjacent grade levels. For an example of how to create teacher-developed progressions, see Heritage (2021). Collaboratively developing or modifying lesson or unit goals with certain questions in mind, such as those in Box 5-4, can strengthen the skills of individual teachers in developing and refining learning goals.

BOX 5-4
Questions to Guide the Development of Learning Goals

- Are the goals aligned to the standards, progression, or curricular materials?
- Are the goals rigorous for all students?
- Do the goals apprentice students to the discipline?
- Do the goals build on, and are they coherent with, students' prior academic learning?
- Do the goals combine cognitive, social and emotional, and cultural dimensions—for example, by reflecting students' family- and community-based funds of knowledge and nurturing students' identities?

Teachers can also examine whether the learning goals address cognitive, social and emotional, and cultural dimensions. Identifying some exemplar goals that address the social and emotional and cultural dimensions can then inform expansions and revisions to current curriculum learning goals. For example, a curricular goal for students was to “understand the way of life” depicted in Ernest Hemingway’s novella *The Old Man and the Sea*. Teachers modified this goal so that it read: “To understand the way of life depicted in the novella, compare what is important in your life to what is important in the life of Santiago [character in the novella].”⁴In addition to the cognitive dimension (understanding the way of life), the revised goal incorporated the emotional dimension (thinking about one’s own life in relation to someone else’s), and the cultural dimension (what is important in their own lives) (Heritage, 2021). Enabling students to work with a partner to share ideas about what is important in their lives compared to Santiago’s life adds the social dimension to the activity. A useful approach to ensuring these dimensions are embedded in learning goals might be to work on an upcoming unit, review how students responded to the goals, and then identify potential revisions for the following year, before moving on to another unit.

It is also useful for teachers to review and reflect on learning goals at the end of a lesson or unit to evaluate how well they worked, using questions such as those in Box 5-5. A personal reflection can sometimes be sufficient for such an analysis, but if multiple teachers have taught a lesson or unit with the same learning goals, they would likely benefit from a collaborative review.

¹ See <https://www.nextgenscience.org/sites/default/files/resource/files/AppendixE-ProgressionswithinNGSS-061617.pdf>.

BOX 5-5
Questions to Guide the Analysis of Learning Goals

- Did the learning goals embody effective disciplinary representations (concepts and analytic practices)?
- Did the learning goals lead to rich, productive learning experiences?
- Were the learning goals accessible and meaningful for all students?
- Did the learning goals effectively build on students' prior learning, including their lived experiences?
- Were the learning goals the appropriate grain-size for a unit or a lesson?

Establishing Shared Assessment Criteria

Clarity of criteria is foundational for good assessment no matter whether it is summative, including grading, or formative. Teachers' skills in this area can be enhanced through deliberate practice for developing, trying out, and revising success criteria for learning goals—what the students will say or do to show they have reached the goal—following an inquiry process such as “Plan-Do-Study-Act” cycle (Russell et al., 2020). Teachers will need to draw on their disciplinary knowledge for this purpose and ongoing deliberate practice is necessary to develop expertise in establishing success criteria. Resources such as the Next Generation Science Standards Evidence Statements² can be a useful starting point to create lesson-level success criteria. Outside or within a learning community, teachers can reflect on success criteria after teaching a lesson or unit to determine how well the criteria worked for formative or summative assessment purposes and make further refinements if necessary.

Incorporating Funds of Knowledge

Before teachers can incorporate students' funds of knowledge into lesson or unit goals, they must have some familiarity with the beliefs, values, and practices of the communities to which their students belong. To acquire this knowledge, teachers can work together to create an ethnography of their school community, drawing on interviews with families and community leaders about the demographics of the area, the heritage of local families, common languages, religious observances, food, and local industries and businesses. Teachers can also understand students' interests and preferred activities at home and in the local community by asking them to produce identity artifacts—texts or drawings—which can help teachers access their funds of knowledge (Esteban-Guitart & Moll, 2014; Subero et al., 2015). Similarly, providing an exit ticket to students at the end of a lesson can probe the degree to which students found the lesson meaningful and relevant to local concerns, as well as their affective response to the lesson (Raza et al., under review).

² See <https://www.nextgenscience.org/evidence-statements>.

Reading about other teachers' methods to understand their students' funds of knowledge can be a valuable activity in a learning community. For example, the Michigan Assessment Consortium's³ work on model assessment systems provides rich portraits of early literacy development and assessment that illustrates what it means to understand students' funds of knowledge (Michigan Department of Education, 2020). Such resources can act as a source of ideas for teachers. As they try out some of the suggested approaches, teachers can collectively share what they are learning about their students' funds of knowledge, develop local strategies to continue to deepen their knowledge of their students, and explore how they can make connections between students' home knowledge and experiences and the ideas they are learning about in school.

With information about students' funds of knowledge in hand, teachers can craft new learning goals or modify existing ones, as the teacher in Tables 5-1, 5-2, and 5-3 did by using Diego Rivera's work to reflect students' family backgrounds. Sharing learning goals with peers and discussing ways to incorporate students' funds of knowledge can strengthen teachers' skills in connecting learning goals to students' lived experiences, enhancing their motivation and their identity as capable learners. Reviewing students' responses after the lesson with colleagues can also provide insights into the motivational and identity aspects of the learning goals.

Leaders can also assist teachers in developing a deep understanding of the local community and students they are teaching. By spearheading discussions with their teacher colleagues, leaders can help them develop deeper community knowledge and think about how this knowledge can be used to positively impact learning goals, curriculum, teaching, and assessment.

Elicitation of Assessment Evidence

Creating Formative Assessment Opportunities

Ambitious teaching provides the means for designing formative assessment into teaching, particularly when teachers can draw on strong disciplinary knowledge. Teachers can review exemplar lesson plans and discuss with their learning community peers the ways in which multiple opportunities to elicit evidence are intentionally embedded throughout the lesson, how these elicitations align to the learning goals and success criteria, and what student responses are anticipated. Administrators or coaches could assist in locating these exemplar plans. Alternatively, a video recording of a lesson could be reviewed in a learning community to consider how evidence was elicited and acted on.

Teachers can collaboratively examine the ways that assessment evidence is generated and consider the extent to which important disciplinary ideas and practices are represented in assessment tasks or classroom discussions. For example, if a science assessment task for summative purposes provides lockstep directions for students to set up equipment and collect data, it will provide very few insights into students' understanding of science concepts or practices.

³ See <https://www.michiganassessmentconsortium.org/elas>.

Teachers can also use and expand their disciplinary knowledge by collectively evaluating the degree to which the assessment task, whether for formative or summative purposes, enables students to show their thinking in multiple discipline-based modes. For instance, assessing a student's understanding of the main argument of a text might include matching different elements of the argument to specific paragraph numbers, a short answer response, and a graphic organizer to note the key points about two authors' views of the same topic.

Working on a peer's lesson plan can also be fruitful. This exercise may enhance formative assessment opportunities by considering how the lesson plan builds on students' prior knowledge and whether there are multiple entry points to allow all students to demonstrate what they know. A group of teachers could also review a lesson plan after the lesson has been taught in order to discuss if the evidence elicited was as they anticipated and provided sufficient and actionable insights into student learning. After this review, teachers might modify how they elicited evidence for this learning goal and related success criteria for future use.

Scaffolding Student Self-Assessment

In a learning community or grade-level meeting, teachers can collaborate on strategies to support students' use of self-assessment. These strategies could include co-developing opportunities for self-assessment tied to particular lessons or generating questions for students to think about while they are involved in learning activities to support their metacognitive thinking. For example, in mathematics, students could be asked: "What is the problem about? What are the similarities and differences between the problem at hand and the problems you have solved in the past and why? What are the appropriate strategies, tactics, or principles for solving the problem and why? Does my solution make sense?" (Mevarech & Kramarski, 1997).

Teachers can also share protocols they use to support self-assessment or co-develop them for specific lessons. For instance, a middle school mathematics teacher uses the success criteria for the lesson with a Likert scale for them to rate their level of understanding and space for them to write something about what they learned or what they need to learn more about. A group of teachers developed a learning log for students to complete at the end of a class period that included questions such as: "What was successful about your learning today? What difficulties or problems did you encounter in your learning? How did you manage those difficulties?" In addition to supporting students' self-assessment and self-regulatory processes, student responses become important sources of evidence for teachers to use in planning next steps (Heritage, 2021).

The deliberate practice of trying out strategies, discussing how the strategies worked in a lesson with peers, making revisions, and trying them out again can help increase teacher expertise in scaffolding student self-assessment over time.

Reviewing Summative Assessments

Teacher inquiry cycles, as a form of deliberate practice, provide a structure for repeated rounds of examination of teacher-created summative assessments. For example, a group, possibly in a learning community, could focus on a single assessment to follow the process from task design and selection to use, interpretation, and action. Collectively, the group could review the purpose of the assessment and how it will be communicated to students, whether students are adequately prepared for the assessment, and whether the assessment's design sufficiently matches the learning goals. After any needed revisions have been made, the assessment can be used. Afterwards, the group can reconvene to discuss how students responded to the assessment task, what insights into student learning were gained, and what future revisions might be needed. An inquiry cycle related to teacher-created summative assessment as well as required external summative assessments can be guided by questions such as those in Box 5-6.

The deliberate practice of repeating teacher inquiry cycles once a month or once per quarter will allow for the in-depth examination of an assessment task that will help teachers learn how to individually review other assessments they are using against the same criteria. For teachers who do not have colleagues using the same assessment tasks, peers can still serve as a sounding board, even if they do not have student data to compare across classes. Such a review can increase teachers' knowledge about the assessment and potentially lead to discarding or modifying the assessment to better serve summative needs.

Reviewing the Set of Assessments Within a Unit

Examining the full set of formative and summative assessment tasks and prompts used within a unit is a worthwhile activity for individual teachers and teacher meetings to determine whether there is coherence between what is assessed for formative and summative purposes. Depending on the length of the unit and the number of tasks, this

BOX 5-6 **Questions to Guide the Analysis of Summative Assessments**

- How well are students' funds of knowledge and interests represented across assessment items?
- Do the items have sufficient entry points to provide all students with opportunities to show where they are in their learning in ways that situate them as competent (e.g., open-ended problem solving tasks that are accessible to all students)?
- Are the items meaningful to students and will they perceive them as worthwhile?
- Do the items align with curricular and instructional goals (i.e., have the students had opportunities to learn what is represented on the items)?
- Do the items integrate cognitive, social and emotional, and cultural dimensions of learning?
- Will the assessment provide information that can be used to advance student learning?

process might need to be applied to a sample rather than all assessments. The opening review could analyze alignment with learning goals, whether there are opportunities for students to respond in multiple ways, if the assessments promote the major disciplinary ideas of the unit, and the extent to which the tasks draw on students' funds of knowledge and linguistic diversity. The review could also include student input, including their perceptions of the various assessment approaches and what they think their purposes are. Documenting what is being learned during the review can then inform future modifications to the tasks. After using the revised tasks, questions, and prompts, teachers can reflect on how the changes impacted student responses and the quality of the evidence generated.

Interpretation of Evidence and Action

Engaging in Evidentiary Reasoning and Interpretation

As noted in this chapter's introduction, assessment is a process of reasoning from evidence. Building evidentiary reasoning skills is an essential component of becoming assessment literate and is dependent on disciplinary knowledge and interpretive skills. For instance, Jim Minstrell and colleagues' research shows how science teachers are able to make more nuanced interpretations of evidence when they possess strong disciplinary knowledge combined with high levels of interpretive skills (Minstrell et al., 2009). These teachers reasoned, for example, that their students expressed speed as proportional to the net force acting on the object, whereas less skilled teachers only noted that students were wrong about the net force needed (Minstrell et al., 2009). Learning progressions, whether research-based or locally developed, can help teachers learn what to notice in student responses, particularly when the progressions highlight common student misconceptions and less sophisticated ways of thinking.

Evidentiary reasoning and interpretation skills can also be developed by analyzing student work with associated rubrics, guided by questions like: "What and how are my students thinking in relation to the learning goal? What are the strengths of their thinking? What are the next steps for students to deepen their learning?" During a lesson, teachers who are skilled in formative assessment will have these questions in mind when they are observing students, asking questions, and listening to student talk so that they can interpret what the evidence they are obtaining reveals about learning. Discussions with colleagues after a lesson might consist of sharing the evidence observed in the student work and describing inferences the teacher made in real time. To evaluate student achievement beyond "got it" or "didn't get it," the same questions posed at the start of this paragraph can be answered when teachers review summative data, particularly if the data are accompanied by clear learning goals and success criteria.

Knowing a student well is also part of evidentiary reasoning and interpretation. For example, a teacher might infer that a student was drawing on their funds of knowledge as a basis for understanding a disciplinary concept, and subsequently leverage this knowledge in an asset-based way in determining next steps for the student. Similarly, when teachers have access to street data, their interpretations of a student's academic performance may be augmented by considering these data. For instance, teachers may be cognizant of economic challenges in the local community that can cause stress for

families or be knowledgeable about the traumas experienced by recent immigrants and how these traumas might impact learning and assessment performance. However, teachers will also need to be conscious of their own web of privileges and inequities, since they may shape their perceptions and influence their work with students. This consciousness is essential if teachers are to ensure fair and justice-oriented interpretations of street data. Accumulating this street data is not a one-time activity but is rather knowledge that teachers assemble over the course of a school year or longer (González, 2005), often with the assistance of school administrators.

Making Contingent Responses

Often one of the most challenging skills for teachers to develop is taking contingent action based on interpreted evidence (Heritage et al., 2009). There are various ways, however, to support the development of this skill. For instance, in a learning community, one teacher might share lesson plans that integrate formative assessment, describe the evidence elicited to her peers, discuss the pedagogical action taken in response—for example, modeling, explaining, or prompting—and then evaluate how effective these responses were for advancing learning. Lesson revision suggestions to support improved formative assessment can also be discussed. Such exchanges can lead to shared lesson structures and routines, which can benefit students as they move between teachers within a grade, or from grade to grade.

Teachers could share lesson plans and explain how they leveraged student ideas or their funds of knowledge as bridges to disciplinary concepts. Teachers could also solicit ideas from colleagues about how to more effectively bridge to disciplinary concepts, with respect to specific interpretations of evidence. Discussions about students' funds of knowledge or ways in which students present ideas may conflict with some teachers' assumptions about students' families, backgrounds, or abilities. Again, developing one's sociocultural consciousness can help mitigate such assumptions. Mutual trust in professional learning situations, like teacher learning communities, will be paramount for surfacing and working through any conflicts in a supportive manner.

Asset-based interpretations of student learning and contingent responses can be augmented by teachers' knowledge and the application of an underlying learning progression (Wylie et al., 2018, p. 147). For example, recognizing that since a student cannot represent a proportional reasoning problem numerically but can describe the situation using "more than" and "less than" phrases, there is an opportunity to build on the student's initial understanding of the problem. Similarly, noticing that a student was able to laboriously solve a proportional reasoning problem using a build-up strategy but not able to use a more efficient scalar approach provides a starting point for a discussion of multiple solution strategies—rather than allowing a deficit mindset to simply see this student as having failed to use cross-multiplication (Wylie et al., 2018, p. 147).

Collaborative lesson or unit planning can help teachers build their repertoire of contingent actions by thinking together about possible student responses to specific activities and subsequent potential strategies to advance learning. In-the-moment formative assessment is especially supported through this planning process. A group video analysis of a lesson or a written vignette that integrates formative assessment

could be scaffolded by a peer or coach and focus on the contingent actions a teacher took, why they thought the teacher took the specific action, and how and why they thought it was or was not effective. If the video is of a teacher from the learning community, having a discussion with the teacher about the actions taken after the viewing and analysis presents an even further benefit.

Planning Feedback

Skills in providing feedback to students as a type of contingent response, particularly in formative assessment, can be developed by sharing and critiquing examples of feedback from other teachers or from external sources like practitioner books. Deliberate practice in giving individual feedback on the same pieces of work and then sharing, discussing, and revising the feedback if needed can be an ongoing focus of a teacher learning community. Collaborative consideration of how students' funds of knowledge can be included in feedback can also be beneficial in strengthening the utility of that feedback, as can sharing examples of how teachers have provided feedback that draws from knowledge of their students. Examining how students have used feedback as a form of reverse engineering can also be a means of reviewing the quality and effectiveness of the provided feedback. Secondary school teachers who are teaching large numbers of students across several classes, in particular, can share strategies for how they manage to efficiently provide some form of feedback to all their students—for instance, comment markers linked to specific criteria on a specific piece of work.

Students also need to have feedback about their performance on summative assessments, which help them understand how well they met the goals of the unit or course and then assist them in setting goals for future learning. Teachers could discuss how they approach this within their learning community: Do they have one-on-one conferences with all students or just those they believe need extra support? Do they provide written comments to students about their performance, and then have students respond with their own perspective, or do they make a plan with students for how they will accomplish the goals they set during the next unit? If teachers are using data from summative assessments to assign grades, they might consider the learning benefits of providing feedback on summative assessments and then giving students the chance to revise their work or retake the assessment based on the feedback. When students have feedback about summative assessments and act on that feedback, the summative nature is temporary because teachers are using the data formatively and learning is still in progress (Brookhart, 2017).

Supporting Peer Feedback

In addition to teacher feedback, peers can also assess each other's work and provide feedback to support revision, which is beneficial to both the giver and receiver (Rollinson, 2005; Spiller, 2012). Teachers can collaborate on strategies to teach students how to give feedback—for instance, sharing common ways of introducing students to peer assessment and feedback, discussing strong and weak examples of feedback with students, or conducting teacher think-alouds to demonstrate to students how they think

about feedback in relation to specific pieces of work. Teachers could share protocols they use for scaffolding peer feedback—for instance, an elementary teacher developed a feedback structure for her students to use when commenting on peers’ work: P (put up: what the student is doing well), Q (a clarifying question about the work), and S (a suggestion for improvement). When other teachers in her school heard her share how it was helping her students improve the quality of their peer feedback, they also started to use it (Heritage & Wylie, 2020). Teachers can also review ways that they invite students to respond to peer feedback and how students responded. Teachers can try out these strategies with their students and later debrief with their peers to learn from each other’s experiences, making revisions if needed. Beyond teaching strategies and support protocols, the success of peer feedback will very much depend on the classroom culture—another factor teachers need to keep in mind as they are collaborating on strengthening students’ peer feedback skills.

Using Classroom Assessment Data Evaluatively

Teachers can collaboratively develop clear grading criteria for summative assessments that describe the quality of the desired student performance while avoiding compliance factors for work completion or following classroom procedures (Guskey & Brookhart, 2019). Examining student work with teacher colleagues against shared grading criteria can increase teachers’ interpretive skills and lead to more consistent grading. In the same vein, asking a colleague to review one’s grades can help inter-rater reliability and increase consistency among teacher grading practices.

Individually and collectively, teachers should critically examine their grading practices to identify bias, particularly related to students’ behavior and participation in the classroom (Taylor & Nolen, 2022). For instance, research on teacher judgments about student behavior suggests that teachers reprimand students of color more often than White students for subjective infractions in the classroom (Taylor & Nolen, 2022). Most instances of bias are unintentional, but taking a hard look at one’s own grading practices can help ensure more equitable grading.

Results from required external summative assessments can be used evaluatively to examine the effectiveness of curriculum materials and pedagogical approaches to inform future revision and use. Teachers can review the data using questions such as those suggested in Box 5-7. Districts often have specific protocols for examining summative data, including large-scale assessment results. These protocols can be useful resources for administrators or coaches to lead a review with teachers of summative data and collaboratively make improvement plans.

Conversations about summative data among teachers require making individual teaching approaches more transparent and a school- or department-wide culture of curiosity, grounded in the belief that any unit can be revised and taught better in the future. It is important for teachers to remember, and for administrators to reinforce, that they have control over what and how they teach, and that anything teachers can learn together about how to modify their practices will ultimately benefit their students.

BOX 5-7

Questions to Guide the Analysis of External Summative Assessment Data

- Are there patterns in data that suggest one or more concepts were difficult for many students? If so, might adjustments to curriculum materials or pedagogical approaches for future use be warranted, in order to better support student understanding?
- What problems of practice do the data suggest? How can they be ameliorated?
- For students just assessed, are there opportunities in future units to revisit concepts that some were struggling with?
- Did students perform differently across classes on one or more concepts? If so, did teachers use different pedagogical strategies when teaching those concepts which might be useful for all students?
- Do subgroups of students perform differently on one or more concepts? If so, are there implications for how to engage all students in the learning?
- Are the same patterns of difference in performance visible in the unit level assessments? If so, what are areas to pinpoint for intervention?

SYSTEM SUPPORT FOR ASSESSMENT LITERACY

In this section, we address how school and district leaders as well as state departments of education can provide systemwide support to promote assessment literacy.

School and District Leaders

We have already noted specific ways that school and district leaders can establish a climate and community to strengthen assessment literacy among their teacher colleagues, as well as ways that they can contribute to specific assessment literacy learning opportunities. In this section of the chapter, we describe more general attitudes and skills that leaders should embody to effect change with respect to assessment literacy within their schools and districts. It bears emphasizing that school and district leaders should model and cultivate a culture of curiosity that supports productive failure and in which constructive assistance is offered to teachers whose first attempts to change practice may not be successful (Wylie et al., 2009; Youngs & King, 2002).

School and district leaders need to be familiar with the assessment literacy knowledge and skills described earlier in this chapter so that they can recognize the need for sustained professional learning for teachers and can participate in productive discussions about assessment literacy topics with their colleagues (Heritage et al., 2017). This knowledge base is essential for promoting high-quality assessment practices and bringing coherence among local priorities or mandates. For example, a leader needs to recognize and challenge when there are philosophical differences across policies—like a district-level mandate requiring a grade to be provided for every piece of student work—that are antithetical to school-based efforts to emphasize feedback rather than grading. Sometimes efforts to improve classroom assessment practices are directly undermined by other policies or implicit expectations regarding assessment. Pressures, real or perceived, to improve school or district performance on state assessments can

result in classroom practices that are more focused on test preparation than learning, exacerbating the dangers of narrowing curriculum to only focus on content that will be assessed on state-required assessments (Wylie & Gholson, 2023).

School and district leaders also need to ensure the coherence of, and then make evident relationships among, local initiatives like instructional reforms and standards implementation; formative assessment practices; and Diversity, Equity and Inclusion programs, and how assessment literacy pertains to each one. In doing so, leaders can promote more integrated approaches to teacher learning and help reduce teachers' feelings of being overwhelmed and frustrated by the perception of these initiatives being the "the flavor of the week" (cf. Fullan, 2010). In this regard, leaders could utilize a disciplined approach to inquiry, such as a Plan-Do-Study-Act cycle (Russell et al., 2020), which stimulates a common way of thinking about assessment that can align with other priorities, like those at the school, district, or state level. In the Plan-Do-Study-Act cycle, participants can collectively raise and explore questions about student learning with respect to local initiatives.

Leaders can establish clear policies for assessment use. Such policies may emphasize formative assessment practices and help teachers "right-size" the role of required external assessment data, including using them in ways that do not unduly and inappropriately dominate classroom pedagogical decisions. In instances where there are significantly different outcomes from classroom and external assessments, leaders should consider explanations for those differences with their teacher colleagues. For example, it may be that there is different content coverage or different parts of the standards emphasized on an external assessment than on classroom assessments, such as no or limited representation of mathematics practices or primarily selected-response items on external assessments. There may be different expectations of proficiency, different approaches for how students can display what they know and can do, or students may perceive the content as not worthwhile or regard the assessment as having no bearing on their experiences—particularly if there is an absence of cultural context in the assessment. Pursuing these explanations together can also serve a moderating function, supporting the development of consistent expectations across teachers within a school (Heritage & Wylie, 2020).

School and district leaders need to be creative problem solvers to identify time in already packed schedules for when teachers can collaborate. What works in one context may not be directly transferable to another, and leaders cannot assume that teachers will "make time" because this work is important.

Finally, leaders must be comfortable with ambiguity. There is no single correct place to start with assessment literacy. There is a logic and order to assessment literacy knowledge and skills, but local needs, teacher interests, and experience will suggest different starting points. Teacher agency and engagement in learning is often more important than having the "right" starting point.

State Leaders

While state educational leaders have less direct contact with school leaders, teachers, and classrooms, they play an important role from a policy perspective and can set the context for how schools and districts perceive and use state accountability assessment and other data.

First, state leaders can provide explicit policy support for the reconceptualization of assessment to reflect cultural, social and emotional, and cognitive dimensions, and the value of classroom assessment in the service of ambitious teaching and learning. In this regard, it is essential that state policy use consistent language around components of an assessment system and language that aligns with research-based guidance for formative assessment (Wylie, 2022). While outside their jurisdiction, when state leaders treat formative assessment as more than just frequent summative assessment, which our own experience suggests they often do, they neglect its potential value to student learning and equity. State leaders need to be sensitive to the tension between using assessments for accountability and using assessments for teaching, learning, and development—and emphasize the value of latter purpose (Gordon et al., 2012).

Second, to lead the creation of a statewide culture for equitable and just assessment, state leaders will need to examine individual and systemic privileges to develop a socio-cultural consciousness that can both inform and permeate policy. State leaders must ensure that their policies are sensitive to the communities they serve and, in particular, those who have been historically marginalized or disenfranchised. For example, the Oregon Department of Education published a guidance document in 2021 that aligned six federal and state programs into a single planning document, and encouraged districts to apply an equity lens to their funding applications.⁴ An equity lens is “an active tool that supports core values, commitments, orientations, and questions to become standard practice” (Oregon Department of Education, 2022, p. 37) and “applying an equity lens helps create a systematic structure and process to ensure that no focal group or community is ignored in the process of community engagement and plan development” (Oregon Department of Education, 2022, p. 97). Another example of modeling a focus on equity comes from the Wisconsin Department of Public Instruction, which published the Model to Inform Culturally Responsive Practices to support educators in developing the beliefs, knowledge, and practices needed to meet the needs of all Wisconsin students (Wisconsin Department of Public Instruction, 2017).

Third, state adoptions of curriculum materials need to be equity-focused, and, in the case of local-control states, clear guidance about relative strengths and weaknesses of curricula should be made available to support district or school decisions (Polikoff, 2021). An equity-focused curriculum that integrates cognitive, social and emotional, and cultural dimensions of learning and that promotes a culturally sustaining pedagogy will provide the bedrock for assessment use and for the development of assessment literacy among educators at all levels.

Fourth, state leaders can provide high-quality professional learning materials and supports for assessment literacy—for example, learning progressions, exemplars of learning goals, videos of practice, coaches, or other kinds of expert support that are sustained over time. The Michigan Department of Education is a case in point: in

⁴ See https://www.oregon.gov/ode/StudentSuccess/Documents/ODE_Integrated%20Guidance.

collaboration with the Michigan Assessment Consortium, the state board of education endorsed Assessment Literacy Standards (Michigan Assessment Consortium, 2015, 2017, 2020), which are supported by a broad array of programs and services, including the Assessment Learning Network.⁵ The Formative Assessment for Michigan Educators, now in its 15th year, is a statewide program offering sustained professional learning in formative assessment, which has been implemented widely across the state.⁶

Finally, state leaders can also serve as conveners to support work being done at the district level (P. Leonard, personal communication, February 2023). State leaders serving as conveners can take the form of bringing in external national or local experts, facilitating district-to-district sharing on an issue that is relevant to all, or creating university partnerships. States and school districts often have access to data that needs analyzing, and universities have graduate students looking for opportunities to apply what they are learning in measurement or evaluation programs. One example of this work has been led by the Connecticut State Department of Education, resulting in the creation of the Centre for Connecticut Education Research Collaboration.⁷ The Center for Connecticut Education Research Collaboration currently has relationships with 11 public and private universities across the state, and are engaged in a wide variety of studies aimed at supporting Connecticut educators and students (A. Gopalakrishnan, personal communication, May 2023).

KEY TAKEAWAYS

Assessment literacy is critical so that teachers can equitably use assessment in the service of student learning and development. The body of knowledge and skills required to be assessment literate is extensive but should not be thought of as work for individual teachers to tackle in isolation. Rather, with collaboration among teachers and the appropriate local- and state-level support for teacher learning, it is eminently achievable (see Box 5-8 for key ideas for assessment literacy and professional learning).

⁵ See <https://www.michiganassessmentconsortium.org/aln>.

⁶ See <https://famemichigan.org>.

⁷ See <https://portal.ct.gov/ccerc>.

BOX 5-8
Key Ideas for Assessment Literacy and Professional Learning to Support Just and Equitable Teaching

- Classroom assessment should draw on a combination of formative and summative practices, and ambitious teaching provides a rich and reciprocal context for formative assessment in particular.
- Whether the assessment purpose is formative or summative, integration of learning goals that address cognitive, social and emotional, and cultural components of learning; assessment evidence; and asset-based and future-oriented interpretations and actions are necessary, and all aspects should take place within a safe and trusting classroom climate.
- Teachers need access to a strong, coherent, and standards-aligned core curriculum that provides the necessary backbone for both teaching and assessment.
- Each aspect of assessment—learning goals, assessment evidence, and asset-based and future-oriented interpretations and actions—must be considered through a lens of equity and justice.
- There is a professional body of knowledge and skills that is required for assessment literacy, and it should include the examination of individual and systemic privileges to develop schoolwide sociocultural consciousness.
- School and district leaders play a critical role in establishing a climate that supports teacher learning, inquiry, and practice, while state leaders can create a policy environment that supports classroom assessment.

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