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USING CULTURE AS A CONCRETE PATH TO RELEVANCE IN SCIENCE ASSESSMENTS

Relevance implies connections to communities students are part of—the cultures they live as part of and in relationship with. *Culture* is “the constellations of practices communities have historically developed and dynamically shaped in order to accomplish the purposes they value, including the tools they use, the social networks with which they are connected, the ways they organize joint activity, and their ways of conceptualizing and engaging with the world” (Nasir et al., 2005, p. 489). Cultures are dynamic and constantly shifting, and any given student may be a part of—or excluded from—many different cultures at once.

Learning—and making learning visible via assessment—is an inherently cultural activity. All people learn by building on the cultural funds of knowledge—the abilities, bodies of knowledge, languages, assets, and cultural ways of knowing, doing, and interacting that communities accumulate over time (González et al., 2005, Hogg, 2011, Rodriguez, 2011). Students’ funds of knowledge that they leverage as part of sensemaking (Chapter 2) include their academic and personal background knowledge, accumulated lived experiences, skills and knowledge used to navigate their everyday worlds, and world views structured by broader historically and politically influenced social forces. Put plainly, students’ science learning happens by activating and building on their funds of knowledge—so relevance in assessment tasks should help students activate their funds of knowledge.

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While we often associate culture with race and ethnicity because those are huge factors that shape shared experiences of groups of people, many other factors shape the specific cultures with which students identify: For example, youth culture is distinct because young people share language, norms, lived experiences, relationships with each other and other generations that are distinct from how adults exist in the world—and this changes with each new generation or major global event! For example, youth experienced the coronavirus-19 (COVID-19)

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pandemic and related shutdowns in a distinct way from their adult counterparts—and that has shaped how they navigate the world. Science has its own set cultural practices—some of these are codified in the science and engineering practices, while others are distinct to particular domains of science. For example, theoretical physicists and molecular biologists have very different relationships to the value of experimental design, shaping the norms and criteria for trustworthy work in each of their areas in fundamentally different ways.

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It should be noted that there is an inherent tension between honoring diverse cultures and attending to the culture of science. Science and engineering are themselves cultural activities, and every community engages in them—yet the behaviors and norms we associate with science have tended to be shaped by Western- and English-dominant perspectives and ways of knowing and doing. Put another way—many of the features and hallmarks of what is commonly thought of as “science” reflect how Western, White, affluent men have conceptualized and valued different modes of observation, standards for evidence, and so on. This does not mean that they are not deeply valuable, but it does mean we need to question (a) whose contributions have been erased, (b) whose perspectives have been left out, and (c) what alternative ways of making sense of the world exist and are valued.

Culture is critical to consider during assessment design because it informs how students will interact with, interpret, and make their thinking visible in response to assessment tasks. For example, students who are raised as part of cultures that deeply value elders and their wisdom may make different judgments about the reliability of certain kinds of evidence than students who are part of cultures that view youth and elders as equal contributors (more on this in Chapter 6). This would be important to account for when making judgments about students’ ability to engage in evaluating data, evidence, and information. Our cultural identities also shape what we care about, find motivating, and how we approach sensemaking—for example, students who have multigenerational ties to a certain community or geography may be invested in its phenomena and problems in different ways than students who have recently moved into the area (Aragaki & Milks, 2025).

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Culture is critical to consider in assessment design for the following three reasons:

1. *It contributes to whether test results are trustworthy.* How we trust and use test results depends on how confident we are that assessments are actually surfacing what our students know and can do. If students are interpreting questions differently than intended, if their thinking isn't well captured by the task, or if they are simply not motivated to spend enough time, attention, and effort on tasks to demonstrate what they know and can do, assessments can't really be trusted to tell us about student thinking. Paying attention to culture, and how that influences motivation, relevance, understanding, and performance, helps make sure assessments are better measures of and for learning, and that they can be used more meaningfully.
2. *It can help us humanize assessments.* Many students feel “left out” of assessments—they see them as demoralizing, dehumanizing experiences that contribute to students feeling like science is not for them. This happens when students (a) do not see themselves or communities they identify with represented as knowers and doers in the discipline; (b) do not see science applied to anything that matters to them on assessment tasks, and (c) when they see themselves and people like them consistently stereotyped, victimized, and essentialized on assessments. By centering culture and language of students and—importantly—diversifying whose experience is centered and celebrated in assessments, we can make sure assessments are positive, humanizing experiences for learners.
3. *Culture and language provide direct paths to motivation, relevance, and engagement.* Students' cultural connections give us insight into the range of ways they might find connection to a phenomenon, problem, or task.

Try This!

Using Cultural Analysis to Identify Funds of Knowledge and Points of Relevance for Learners

Consider your students. For each of the following categories of funds of knowledge (Table 3.2), consider (a) what home and community practices and lived experiences students have that are related to this category, and (b) think about what this means

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for the kinds of scenarios and tasks this student could find connection to. If you have a task you are already considering, you can also ask, “Do these funds of knowledge provide this learner with ways to access and see the relevance of this task?”

Table 3.2 • Funds of Knowledge Inventory

Funds of knowledge	Lived experiences	Possible connections to assessment tasks
Activities (sports, clubs, leisure)		
Place and space		
Politics		
Languages		
Technology		
Religion		
Health/disability		
Family and community		
Art and entertainment		
Worldviews		
Values		