

Leveraging Student Perspectives

Considerations for Connecting Assessment Systems and Multiple Ways of Knowing



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Leveraging student perspectives:

Considerations for connecting assessment systems and multiple ways of knowing

Submitted to the Smarter Balanced Assessment Consortium, by
Paulina Biernacki, Stanford University

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Executive Summary

Ways of knowing is the term used to refer to the variety of ways in which individuals make sense of the world, and which are shaped by personal background and experience. Research from the learning sciences emphasizes the need to connect educational practices with students' ways of knowing and their full range of academic and linguistic skills, experiences, family histories, and community contexts. By integrating the different ways in which students relate to the world, teachers can promote student engagement and gain insights about identity development.

Ways of knowing is relevant to assessment because, in addition to knowledge on the content assessed, they shape how students understand assessment tasks (items) or activities, and how they respond to them. Properly addressing ways of knowing offers the possibility of ensuring that assessment activities and tasks are meaningful to multiple learners.

While summative assessment takes place at the three levels of an assessment system (classroom assessment, school or district assessment, and state-level accountability assessment) classroom assessment instruments and activities (both formative and summative) are closer to the students' experiences. Therefore, in classroom assessment (and especially formative assessment activities, which are part of instruction), social interaction and communication with students is critical for educators to develop a good understanding of their students' ways of knowing and to help them connect their personal backgrounds and experiences to the content being taught. This form of support is also important for educators to interpret information from large-scale assessment on their students' academic achievement.

In principle, addressing ways of knowing in large-scale assessment (which is intended to provide information on large populations of students), may promote valid and fair assessment practices for diverse student populations by contributing to minimizing measurement error due to factors related to students' personal backgrounds and experiences that are not relevant to the target constructs. In large-scale assessment, addressing ways of knowing needs to be based on proper consideration of the heterogeneity of the populations tested. This effort entails including representative samples of students in all stages in the process of assessment development. Participation of these students should include test try outs and interviews intended to obtain information about the ways in which they interpret the content and contexts of items and how they connect those content and contexts to their views and personal backgrounds and experiences.

There are serious challenges that limit the extent to which ways of knowing can be effectively incorporated into the three levels of assessment system. At the classroom level, teachers may not have sufficient time to interact with their students and, therefore, may have limited opportunities to probe their ways of knowing and properly use the information obtained to support their learning. Educators need to be supported to develop the skills needed to make inferences about their students' ways of knowing based on conversation and social interaction.

At the school-district and state levels, the process of development of large-scale assessments needs to be enriched with larger samples of students with different backgrounds and with the routine use of procedures, such as cognitive interviews, focused on obtaining information about the ways in which students connect the content and contexts of items to their personal backgrounds and experiences. This enrichment may require the modification of current assessment development practices and may have cost and development time implications.

This brief is organized into six sections:

- 1 Introduction
- 2 Relevance of *ways of knowing* in instruction
- 3 Ways of knowing: Examples from educational research and practice
- 4 *Ways of knowing* in assessment: Challenges and possibilities
- 5 Conclusions
- 6 Recommendations for education agencies and educators

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Introduction

Ways of knowing is the term used to refer to the variety of ways in which individuals make sense of the world. Personal background and history, and the lives within their communities shape how students make meaning of their experiences. These experiences may range from everyday life activities to social interactions with different community members.

Because students come from a variety of backgrounds and local contexts that shape their perceptions and understandings of the world, student populations are necessarily onto-epistemologically heterogeneous.¹ By considering this diversity, educators can promote student engagement and bridge connections between students' local contexts and their learning activities.²

Attention to ways of knowing can contribute to improved assessment practices. The challenges and possibilities for this improvement may vary across the three levels of an assessment system—classroom assessment, school or district assessment, and state-level accountability assessment^{3,4}. In this brief, for the sake of simplicity, the discussion of these challenges and possibilities focuses on these three levels and on two forms of assessment—formative and summative. Formative assessment, also called assessment *for* learning, is intended to inform teachers' instructional decisions by producing information about students' progress towards a given set of instructional goals; it allows teachers to glean information about student learning in order to adjust their instruction and/or to provide feedback.⁵ Formative assessment activities range from ongoing informal teacher-student conversations to formal teacher-created activities and instruments used at the classroom level, close to students' individual contexts. Summative assessment, also called assessment *of* learning, is intended to produce information about learning and academic achievement and is used for grading, evaluation, placement, certification, and accountability, among other purposes.⁶ While teachers use summative assessment to grade student learning, it is more clearly associated with large-scale, standardized mandatory tests. Measures produced by summative assessment are typically distal from students' classroom experiences, as they tend to sample broad swaths of standards. Test items tend to be stripped of context or the contextual information they contain is assumed to be meaningful to all students, regardless of their backgrounds.

The goal of this brief is to provide state and district education leaders and educators with some considerations about the possibilities of and challenges in incorporating ways of knowing into assessment design, development, and use. Since educational systems are vast and complex, the recommendations in this brief are not offered as a panacea for eliminating achievement gaps across students. These gaps are regarded as stemming from a complex web of issues that include teacher preparation, school resources, and policy challenges that are beyond what any form of assessment can do.

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Relevance of ways of knowing in instruction

A growing body of literature focuses on embracing students' *ways of knowing*, a concept that reframes student experiences and personal background knowledge as valuable assets that educators should recognize and integrate into teaching and learning cycles.¹ A focus on ways of knowing emphasizes the importance of teachers getting to know their students as individuals (their interests, characters, experiences, personal perspectives) embedded in their local communities. Ideally, educators should harness students' strengths and background characteristics as levers for accessing intended content and for developing a classroom community in which students work together to apply curriculum standards to locally relevant phenomena.

The concept of *ways of knowing* was developed in the context of a turn from deficit-based to asset-based views of students and their skills.¹ Students who are most at risk for poverty and discrimination have historically been viewed as deficient in key skills and in need of intervention and remediation. The shift towards an emphasis on students' assets highlights their rich and varied resources—cultural, linguistic, academic, socio-emotional—that can be leveraged to improve their educational outcomes.

Ways of knowing connects to learning because, according to research in the field, teaching approaches that attend to students' background knowledge, skills, local contexts, and communities are associated with numerous improvements in learning and development.² Specifically, these approaches can increase student motivation, engagement in academic discourse, interest in academic content, and confidence in learning.⁷ Teachers who get to know their students' strengths and interests can then formatively tailor instructional tasks and materials to suit students' needs. Also, they can develop a good understanding of the ways in which their students reason when they engage in solving problems. For example, teachers can present content in ways that align to students' background experiences, offer supplemental texts that appeal to students, or help design projects that align to students' interests.

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Supportive classroom communities are critical to this process, given that learning does not happen in a vacuum. Students need to feel comfortable sharing their background knowledge and skills, while teachers need to get to know their students to adjust instruction and cultivate classroom communities. These processes can expand repertoires of knowing and doing by improving the transfer of knowledge and skills learned in the

classroom to assessment tasks or items that are decontextualized or presented in unfamiliar contexts. Tools for differentiating instruction, and for accessing professional development resources are critical to supporting these processes.⁸

Warren and colleagues¹ highlight three notions that are core to ways of knowing: *multiplicity*, *horizontality* and *dialogicality*. **Multiplicity** calls attention to the diversity of knowledge and perspectives that exist in education. This idea emphasizes the importance of onto-epistemic heterogeneity—the ways in which diverse identities and contexts shape knowledge and learning processes. Multiplicity also entails questioning the power dynamics that shape whose voices are centered or marginalized in the development of scientific knowledge, classroom discourse, and educational materials. Although academic knowledge has been positioned as representing fixed and objective truths, disciplinary knowledge is always evolving and incomplete. Students’ personal perspectives and ideas tend to be dismissed as trivial or inconsequential, especially for students who are at risk of poverty and discrimination. Attention to multiplicity suggests that educational activities should integrate varied perspectives, contexts, and trajectories for learning in ways that align to students’ needs and strengths.

Horizontality refers to the idea that learning spans across multiple contexts and communities of practice, both in and outside of school walls.¹ Some students already apply academic knowledge and skills in informal settings (e.g., they use mathematical concepts in the grocery store) but struggle when this knowledge is decontextualized and is represented differently in the classroom,¹ which speaks to the importance of harnessing the breadth and the depth of knowledge and skills students have acquired outside of school in order to promote engagement and meaningful learning. Learning is shaped by the environment, where individual characteristics, interpersonal relationships, and community factors intertwine. The classroom microculture, including the ways in which students relate to one another, impacts their learning journeys. Students’ identities and feelings of belonging and safety can ignite their motivation, attention, and engagement in learning. Outside of school, students also participate in multiple communities with their own norms and forms of engagement.⁹ These communities shape students’ identities and world views, informing their understanding of educational materials and expectations for how to demonstrate their knowledge on assessments. It is important that teachers consider how to connect the instructional materials to students’ communities and personal backgrounds. When students see the material as connected to their own identity and personal contexts, they may be more engaged in learning. Yet, students often receive messages that they should leave their out-of-school knowledge and identities at the door when entering the classroom. For example, educational materials (e.g., STEM curricula) tend to emphasize the stories of males and individuals from particular backgrounds.¹

Dialogicality calls attention to the social, linguistic, demographic, temporal, and historical forces that shape language use, both in and out of the classroom.¹ Words, discursive forms, and other aspects of language are developed in particular historical contexts that are laden with various connotations and world views. The socially shared meaning of language is distributed over time and evolves uniquely across contexts. Thus, two individuals who were born in the U.S. but grew up in very different communities may interpret the same given set of words in different ways. Dialogicality, therefore, challenges educators to intentionally consider and critique the perspectives, varied meanings, and histories that are infused in instructional language and curricula.¹ It also challenges educators to consider the ways in which they can help students contend with different ways of thinking that empower students to become meaning-making beings in their daily lives.

3

Ways of knowing: Examples from educational research and practice

Research and practice addressing ways of knowing have used a wide variety of methods and resources, including cognitive interviews, verbal protocols, case studies, ethnographic field work, document analysis, surveys, and quantitative longitudinal analyses.⁷ This section discusses four examples that illustrate this variety. They show that ways of knowing are inferred from information obtained from students about their thinking, views, and experiences.

The first example is from a series of case studies reported by Gutierrez⁹ in which students were encouraged to leverage their personal experiences in academic tasks. The study shows how students can be engaged in activities that involve sharing experiences and views that are relevant to understanding their ways of knowing. The case studies were conducted in the context of a leadership institute for migrant high school students, with a curriculum that was designed to align with students' daily realities and to elicit their imagined future possibilities. Students were invited to try to use their full range of skills in the classroom, including languages other than English. As part of their participation in the migrant leadership institute, students wrote autobiographies in the context of supportive scaffolding from instructors.

The second example is from cases studies reported by Penuel and Watkins¹⁰ in which tools were designed to foreground students' perspectives. The authors detail the use of a 'question board' tool for promoting student agency and for tailoring the lessons to students' curiosity in the subject matter. Students' questions were generated individually and co-constructed in small groups. As they progressed in the unit, students actively explored answers to their questions while also generating additional questions in response. This question board tool promoted student connections across classroom, home, and community contexts. Student queries were displayed on the question board, which served as an artifact of student thinking and learning in the classroom.¹⁰ This question board helped teachers connect to students' ways of knowing by eliciting students' personal thinking and reasoning, their curiosities, interests and potential misunderstandings. The questions displayed on this board represent indicators of student progress that informed teachers' formative assessment processes, guiding their instructional decisions in the lead up to summative assessments.

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Penuel and Watkins¹⁰ also describe how digital exit tickets can be used to check in with students about their perceptions regarding the relevance of academic content to their own lives and their perspectives on whether their contributions to the question board were considered by others. A brief survey addressing these topics was administered regularly throughout the lessons in a given unit. The survey data were used to monitor how student agency and engagement might differ based on student background characteristics. Ultimately, data from this type of tool can be used to help teachers scaffold learning and to foster supportive learning environments.¹¹ These exit tickets connected to students' ways of knowing by helping to discern whose voices were centered or sidelined in the classroom, and by inviting students to express whether and how the content connected to their personal backgrounds.

The third example is from a study on the assessment of indigenous populations. Kerr and Averill¹² report on an effort to develop assessments that align to New Zealand Māori students' ways of knowing. The researchers conducted semi-structured interviews with educators. They also examined existing frameworks in order to integrate Indigenous Māori language, perspectives and worldviews into the assessment items.

Ways of knowing are inferred from information obtained from students about their thinking, views, and experiences.

The fourth example is also from a study on the assessment of indigenous populations. Kūkea Shultz and Englert,¹³ gathered validity evidence for a summative mathematics assessment used in a Hawaiian immersion program (Kaiapuni). By leveraging cognitive interviews and verbal protocols to discern how students interpreted and responded to the test items, the authors found that Hawaiian language skills were useful for students to navigate test items. This investigation illustrates how students' ways of knowing can be a guiding notion in the process of assessment design and development.

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Ways of knowing in assessment: **Challenges and possibilities**

In addition to knowledge of the content being assessed, personal skills and contexts impact students' interpretations of test items. Students' personal skills and local contexts are important but often neglected aspects of assessment. Since students interpret test items based on their personal experiences and local contexts, mismatches in language and expressions of knowledge can mask evidence of learning.^{14, 15} When students misinterpret assessment items or demonstrate their knowledge in unexpected ways, inferences about students' knowledge, skills, and abilities may be inaccurate.

Assessment instruments that are aligned to students' needs and community contexts may be more sensitive measures of learning and may therefore be more useful for their intended purposes.¹⁶ Research suggests that when ways of knowing are considered in teaching and learning, students gain confidence in performance on standardized tests and score higher on achievement tests.⁷ Also, when teachers get to know their students' personal backgrounds, thinking processes, and community contexts, they are better equipped to interpret and use assessment results.

Addressing ways of knowing in classroom-based and in large-scale assessment requires very different approaches, as they involve instruments and activities that differ considerably in focus and purposes. At the classroom level, ways of knowing have been addressed mostly by including them in formative assessment activities, including discussions, teacher observations, and exit tickets.¹⁰ In classroom summative assessments, ways of knowing have been addressed through student portfolios and project-based learning activities in which students are empowered to work together on projects that are relevant to their local communities. Such classroom assessment practices can be personalized by connecting to students' individual histories and personal long-term goals. Ideally, these assessment practices carefully incorporate person-level, interpersonal, and curricular factors across multiple points in time.

Connecting assessments to students' individual skills and local contexts requires a level of personalization that is more feasible at the classroom level. However, admittedly, it is quite challenging for teachers to individualize their practices to suit their students' needs. The aforementioned examples from Penuel and Watkins¹⁰ regarding the 'question board' and the digital exit tickets are simple examples of how teachers can elicit students' personal perspectives and experiences in the classroom. Teachers must develop models of their students' current skills in relation to their educational goals in order to personalize learning and scaffold their knowledge, skills, and abilities.¹¹

At the district and state levels, since large-scale assessments are developed for broader, often heterogeneous populations of students, it is especially challenging to personalize assessment tasks to students' individual backgrounds and experiences. The Kaiapuni assessment, mentioned above, was designed using a bottom-up approach to operate in tandem with the Kaiapuni curriculum, which foregrounds Hawaiian history, background knowledge, and worldviews.¹³ Similarly, researchers have leveraged existing frameworks in order to integrate Indigenous Māori language, values, and concepts into the assessment items.¹²

These examples illustrate how some assessment developers can create assessments that are more sensitive to the language, background knowledge, and contexts of various subgroups of students. In large-scale assessment, ways of knowing need to be addressed through the process of assessment design and development, in ways that ensure proper inclusion of students and educators from different backgrounds at all stages of the process of assessment development (e.g., when trying out draft versions of items). *Proper inclusion* entails using diverse and representative samples of students (e.g., from different cultural, racial, and socioeconomic backgrounds) according to a clear population framework.¹⁷ *Proper inclusion* also entails a more extensive use of interviews

to understand how students connect the content and contexts of items to their personal backgrounds and experiences and how they interpret reading passages and other stimulus materials. This information should help assessment developers to anticipate how student factors may impact interpretations and performance on tests.

Some assessment developers can create assessments that are more sensitive to the language, background knowledge, and contexts of various subgroups of students.

5

Conclusions

Scholarship on *ways of knowing* recognizes that identities and contexts shape knowledge, world views, and learning processes. Empirical evidence suggests that, when students' individual skills, background characteristics, and local contexts are leveraged in learning, student motivation, engagement, interest in academic content, confidence in learning, and test scores increase.⁷ However, there are many challenges to considering ways of knowing across the three levels of an assessment system.

In general, it is most straightforward to personalize assessments at the classroom level—though this is no small feat.

Teachers generate their own informal *models of cognition*—insights into student thinking and learning processes, which can provide evidence about how students will be evaluated in large-scale assessments.¹⁸ Within classrooms, educators can use a variety of tools to connect to students' personal background knowledge and skills, including question boards and exit ticket surveys.¹⁰ These types of personal connections to instruction and assessment are critical for students to fully engage with assessment tasks for teachers to better interpret information about their students' performance on tests.

Unfortunately, the education system is structured in a manner that makes it very difficult for teachers to spend time getting to know about their students' lives, backgrounds, and ways of knowing. More state and district resources would need to be devoted to supporting school-home and school-community connections. Teachers need help encouraging students to use their personal background in learning contexts. Teachers also need resources for developing trusting relationships with students and families, as these are critical for discerning the needs of their students and helping them to use their personal background knowledge in the classroom. A culture of belonging and openness in the classroom is needed for students to genuinely feel comfortable making these personal connections. To authentically engage students, student-centered assessment practices must be used in tandem with parallel approaches in instruction and curricula. More systemic supports, spanning across teacher preparation efforts, professional development, program development, professional learning communities, and school district policies should be put in place to facilitate personal connections between teachers and students.

A culture of belonging and openness in the classroom is needed for students to genuinely feel comfortable making these personal connections.

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Recommendations for education agencies and educators

- 1** State and local education agencies should partner with professional development organizations to support teachers in developing skills needed to discern students' ways of knowing and integrate these insights into their teaching and assessment practices. These skills include: promoting assessment system literacy, developing relationships with students, leveraging student knowledge and skills to access content, developing supportive classroom communities, and establishing links to students' home and community environments to better understand students' skills, knowledge, and contexts.
- 2** State and local education agencies should promote efforts to create spaces that help educators make connections across school-home and school-community environments. These connections can help teachers leverage students' local communities and historical familial identities in educational activities.
- 3** State agencies should take action to promote better internal communication in education systems about integrating ways of knowing into assessment. Communication around this topic will need to span across all types of educators, including but not limited to: teachers, school administrators, district administrators, state agency staff, and state leaders.
- 4** State education agencies should work with testing agencies to ensure that the process of development of their assessments is sensitive to the fact that ways of knowing shape students' performance on tests, especially for items that contain contextual information that may be specific to the lives and styles of particular segments of the population. While testing agencies have procedures intended to deal with student diversity in place, the procedures and the student samples used may not be sufficiently documented, may be unavailable, or may not be conducted systematically. Specific actions that should be taken to improve assessment development practices include the routine use of cognitive interviews, focus groups, item draft tryouts, etc., intended to identify how personal backgrounds, experiences, and perspectives influence the ways in which students interpret items and respond to them. State education agencies also should work together with testing agencies to ensure that students from diverse ethnic, geographic, socioeconomic, and linguistic backgrounds are properly represented in the samples of students who participate in the different stages of the assessment development process. This participation should ensure that different students' personal backgrounds and experiences are reflected in assessment items.

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