REPORT

Written by
SCOTT MARION
MARIA WORTHEN
CARLA EVANS

How Systems of Assessments Aligned with Competency-Based Education Can Support Equity

January 2020

How Systems of Assessments Aligned with Competency-Based Education Can Support Equity

Written by

SCOTT MARION

Center for Assessment

MARIA WORTHEN

Aurora Institute

CARLA EVANS

Center for Assessment

ABOUT THE AURORA INSTITUTE

The mission of the Aurora Institute is to drive the transformation of education systems and accelerate the advancement of breakthrough policies and practices to ensure high-quality learning for all.

ABOUT THE CENTER FOR ASSESSMENT

The Center for Assessment strives to increase student learning through more meaningful educational assessment and accountability practices. We engage in deep partnerships with state and district education leaders to design, implement, and evaluate assessment and accountability policies and programs, and to design technically sound policy solutions to support important educational goals.

Suggested Citation

Marion, S., Worthen, M., & Evans, C. (2020). *How systems of assessments aligned with competency-based education can support equity.* Vienna, VA and Dover, NH: Aurora Institute and Center for Assessment.

Table of Contents

Executive Summary

This paper presents a vision and discusses requirements for balanced systems of assessments that can support competency-based education models with the ultimate goal of advancing educational equity for all students. It is written for state leaders interested in creating better systems of assessments that are aligned with competency-based education and that support equity goals. Our equity analysis is rooted in the National Equity Project's definition of educational equity and in the Aurora Institute's *Designing for Equity* framework.

In this paper, we address the following questions:

- **How might a balanced assessment system support competency-based education, and what are the requirements for such an assessment system?**
- **As district and state leaders transform educational models to support competency-based learning, what role could assessment play at each of these levels to advance important equity goals?**
- **What are the barriers and levers in districts and in states to build and sustain systems of assessments that support competency-based education over the short- and long-term?**

Competency-Based Education as an Assessment Context

We adhere to the 2019 field-informed definition of competency-based education, as published by the Aurora Institute *Competency*Works initiative. It includes the following seven components:

1. Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning.
2. Assessment is a meaningful, positive, and empowering learning experience for students that yields timely, relevant, and actionable evidence.
3. Students receive timely, differentiated support based on their individual learning needs.
4. Students progress based on evidence of mastery, not seat time.
5. Students learn actively using different pathways and varied pacing.
6. Strategies to ensure equity for all students are embedded in the culture, structure, and pedagogy of schools and education systems.
7. Rigorous, common expectations for learning (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable.

A competency-based school or district should implement all seven elements of the definition. Strong implementation also requires policies, pedagogy, structures, and culture that support every student in developing essential knowledge, skills, and dispositions.

In the context of this definition, the paper explores the implications for high-quality systems of assessments that advance equity.

Balanced Assessment Systems to Support Competency-Based Education Systems

An assessment system is balanced when the assessments are *coherently* linked through a clear specification of learning targets. Balanced assessment systems *comprehensively* provide multiple sources of evidence to support educational decision-making, and they *continuously* document student progress over time (National Research Council [NRC], 2001). These criteria—coherence, comprehensiveness, and continuity—create a powerful image of a high-quality system of assessments, rooted in a common model of learning. We also find that *utility* and *efficiency* are helpful considerations in thinking about the functioning of such systems (Chattergoon & Marion, 2016). The paper discusses how these ideas can play a role in supporting competency-based education. Specifically:

- A *coherent* assessment system must be compatible with how student learning is expected to progress in a domain.
- Assessment systems are *comprehensive* when they provide a variety of evidentiary sources to inform educational decision-making. In other words, students need multiple opportunities and ways to demonstrate their learning (NRC, 2001).

- *Continuity* is the degree to which the assessments provide information that allows for monitoring and evaluating progress over time.
- *Utility* is the degree to which the assessment system provides the information necessary to support its multiple and often diverse purposes.
- *Efficiency* means getting the most out of assessment resources and eliminating redundant, unused, and untimely assessments.

Balanced assessment systems are quite challenging to develop and implement for many reasons. Competency-based education systems pose additional demands on the design of assessment systems, such as:

- Measuring deeper learning targets including transfer (application) to new contexts,
- Making mastery determinations based on sufficient assessment evidence,
- Providing timely, differentiated support along a pathway to competence, and
- Supporting variable pathways and demonstrations to document learning.

This paper discusses the design requirements for assessment systems to support competency-based education meant to achieve equity.

How Can Assessment, Aligned with Competency-Based Education, Advance Equity?

Competency-based education holds promise as a model for fostering equity, but only if equity is intentionally embedded in the educational culture, structures, curriculum, assessments, and instruction. District and school leaders can use this framing to foster equity goals through the creation of balanced systems of assessments aligned with competency-based learning systems.

The equity framework on equity presented in the report, *Designing for Equity: Leveraging Competency-Based Education to Ensure All Students Succeed* (Sturgis & Casey, 2018), identifies equity principles designed to advance a vision for educational equity as a "fair and just system where every learner—students and educators alike—is thriving." Four of the principles hold particular relevance and valuable insights for aligning systems of assessments.

One equity principle is to "engage the community in shaping new definitions of success and graduation outcomes" and align assessments to those broader valued outcomes. Expanded definitions of student success are vital to equity because they represent the knowledge and skills needed for students to thrive in college and career, as well as the lifelong learning skills to continue learning and adapting as the worlds of work and citizenship change. Such definitions of student success are made meaningful when systems of assessments measure and enable the breadth of knowledge, skills, and dispositions we expect students to master.

Another principle is to "ensure consistency of expectations and understanding of proficiency." When intended learner outcomes are clear, and systems of assessments are in place to measure and support these outcomes, it is critical all educators and learners have the capacity to measure proficiency in those outcomes at every step along a student's path. Additionally, assessment systems should be designed to ensure inferences about students' competency are generalizable in terms of a shared understanding of proficiency.

"Monitor and respond to student progress, proficiency and pace" represents a third equity principle. There are two related concerns for assessment system design: timely, differentiated support along a pathway to competence, along with variable pathways and demonstrations to document learning.

Finally, "respond and adapt to students using continuous improvement processes" is a fourth equity principle. A related consideration for assessment system design is balanced assessment systems to support continuous improvement activities.

Turning Barriers into Levers: Implementing Balanced Systems of Assessments in Support of Competency-Based Education

Barriers to assessment system design and implementation can turn into levers for policymakers and assessment leaders if they attend to the issues and devote the resources to overcome them.

Politics and Policy. The first challenge has to do with the influence of politics, policy, and political boundaries on decisions pertaining to assessments. Policy leaders can play a major role in supporting the design and implementation of balanced assessment systems. They can do this by supporting districts in developing balanced assessment systems, supporting coherence where possible, and attending to the unintended negative effects of assessment and accountability policies.

Furthermore, states can play a role in striking the right balance between state and locally driven assessments. We suggest "loosely coupled systems" (Marion, 2018) may help bring about more coherence than what we see in typical state systems. An example of a loosely coupled system is one in which the state procures and directs the summative assessment, but also purchases interim assessments tied to major aspects of the content standards (e.g., mathematical operations with fractions) that districts can use to supplement the information they get from the statewide summative assessment.

Accountability. State accountability requirements can have perverse effects on the design and implementation of balanced assessment systems (e.g., Elmore, 2004; Hargreaves & Braun, 2013). States can use pilots to develop new approaches to assessment and accountability that better support student success.

The Commercialization and Proliferation of Assessments. Individuals operating at different levels of a system often purchase or develop new assessments to meet real or perceived needs without fully considering how existing assessments might meet the same needs and considering how new assessments can threaten the balance of the system. States can support school and district leaders in evaluating local assessment quality as a key component of assessment literacy.

Curriculum and Balanced Assessment Systems. Systems of assessments cannot support equity-focused competency-based education practices unless each assessment is linked closely to how students are expected to learn the content and skills. A high-quality balanced assessment system focused on improving teaching and learning involves more than just changing the assessments and will demand varying levels of curricular support (Bass & Glaser, 2004; Shepard et al., 2018).

Assessment Literacy for Balanced Assessment Systems. Inadequate assessment literacy among educators, administrators, and policymakers poses a significant barrier to the design and implementation of balanced assessment systems. The implementation of balanced assessment systems requires educators, leaders, and policymakers to possess assessment *system* literacy to create coherent systems aligned to competency education.

Conclusion

District and state leaders can increase the likelihood that competency-based education strategies will enhance the equality of student outcomes by supporting the development of balanced assessment systems, ensuring coherence, and attending to the unintended negative effects of assessment and accountability policies. Some potential levers include conducting accountability or assessment pilots, implementing policy and initiatives that promote educator and leader assessment literacy, and better connecting curriculum, learning, and assessment.

When aligned with a competency-based education approach, systems of assessments can play an important role as part of a coherent system of teaching and learning that advances equity.

Introduction

Teachers, principals, state leaders, and communities who are invested in the equity imperative of our nation's elementary and secondary education policies have long recognized that assessment alone will not drive equity. In fact, a new approach to teaching and learning aligned to more holistic definitions of student success has been taking hold across the nation, with increasing numbers of districts and states embracing new learning models that are personalized and competency-based.[1]

Over the last three decades, standards-based reforms have attempted to address inequities in state education systems and to equalize student outcomes. Large-scale assessment and accountability systems were at the core of this strategy. The policies authorizing these systems generally intended for the accountability indicators—primarily based on large-scale assessments—to inform the identification of schools in need of improvement. These assessment systems were not designed to support teaching and learning at the classroom level, not because there is anything wrong with the tests themselves, but because they are too far removed from curriculum to inform day-to-day instruction, are administered too late in the year to provide timely feedback, and are at the wrong grain size to supply instructionally useful feedback.

The changes to federal requirements for state assessment systems under the Every Student Succeeds Act (ESSA) compared with the No Child Left Behind Act (NCLB) open some possibilities for states to reconsider assessment system designs. Many state and district leaders also have come to realize that large-scale state assessments are limited in how they can support personalized learning systems. There is no question that the quality and utility of large-scale assessments have improved, but such large-scale, end-of-year assessments are limited, by design, in the ways in which they can inform teaching and learning on a day-to-day basis. This has led to renewed calls for balanced systems of assessments designed to meet the needs of multiple stakeholders without compromising any individual assessment in the system.

This paper presents a vision for systems of assessments that can support competency-based education models with the ultimate goal of advancing equity. We address the requirements and considerations to help state leaders develop balanced assessment systems. This paper was written for state leaders who are thinking about how to better align systems of assessments to competency-based education through an equity lens.

An "equity lens" is a framework representing our understanding of educational equity. We use this framework to analyze how systems of assessments can align with competency-based learning models that advance equity. The equity lens is rooted in the National Equity Project's definition of educational equity and in the framework presented in *Designing for Equity: Leveraging Competency-Based Education to Ensure All Students Succeed*, published by the Aurora Institute's *Competency*Works initiative.

We address the following questions in this paper:

- How might a balanced assessment system support competency-based education, and what are the requirements for such an assessment system?
- As district and state leaders transform educational models to support competency-based learning, what role could assessment play at each of these levels to advance important equity goals?
- What are the barriers and levers in districts and in states to build and sustain systems of assessments that support competency-based education over the short- and long-term?

Supporting enhanced opportunities for all students is a key component of competency-based education. Therefore, we focus much of our discussion on how changes to instructional and assessment systems can support more equitable opportunities for all students to learn meaningful content and skills. Specifically, this paper starts with an introduction to competency-based education as a context for balanced assessment systems. We then discuss the characteristics and criteria that define balanced systems of assessments. Next, we use our framing to discuss how equity can be advanced through the implementation of competency-based education and balanced assessment systems. Balanced assessment systems are very challenging to design and implement. We unpack these challenges in our discussion of barriers to balanced assessment systems, but then we take a more optimistic turn in examining how to turn these barriers into levers for improvement. We conclude with suggestions for state and district leaders interested in moving forward with balanced systems of assessments.

Competency-Based Education as an Assessment Context

Competency-based education provides a vision for improving education at scale in ways that provide students with meaningful opportunities to develop the knowledge, skills, and dispositions to be life-long learners and productive citizens. There are multiple definitions and even more versions of competency-based education in practice, but we adhere to the 2019 definition of competency-based education published by the *Competency*Works initiative of the Aurora Institute:[2]

1. Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning.
2. Assessment is a meaningful, positive, and empowering learning experience for students that yields timely, relevant, and actionable evidence.
3. Students receive timely, differentiated support based on their individual learning needs.
4. Students progress based on evidence of mastery, not seat time.
5. Students learn actively using different pathways and varied pacing.
6. Strategies to ensure equity for all students are embedded in the culture, structure, and pedagogy of schools and education systems.
7. Rigorous, common expectations for learning (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable.

Assessment is explicitly stated in the second principle only, but all of the principles have implications for the design and use of assessments and assessment systems. For example, how does one know if a student has demonstrated mastery or enough mastery to be able to progress? The determination of mastery must be based on assessment, broadly speaking. Furthermore, the determination of whether a student should move on or not may be a fairly consequential decision, which has important implications for the quality of the assessment or assessments and for how assessment results are considered among multiple measures of student learning.

Each of the seven principles may serve as a touchstone for the design and implementation of assessments to support competency-based education. However, these principles each call for somewhat different design requirements. There is contrast between the fourth principle requiring summative judgments of "mastery" and the third principle outlining the need for "timely, differentiated support," which strongly implies the need for high-quality formative assessment or other types of instructionally supportive assessments helping students and teachers adjust their learning and teaching while the learning is occurring. The remaining principles imply other assessment design requirements, such as being able to assess "transfer," "application," "creation" of knowledge, and "dispositions." One of the truisms in educational assessment is that each test or assessment can serve a limited set of purposes well, and generally only one. Therefore, schools must integrate balanced systems of assessments into competency-based learning systems in order for the goals of competency-based education to be realized.

Balanced Assessment Systems to Support Competency-Based Educational Systems

Balanced assessment systems have been called the unicorns of educational assessment because they are rarely seen in the wild (Marion, Thompson, Evans, Martineau, & Dadey, 2019).[3] An assessment system is balanced when the assessments are *coherently* linked through a clear specification of learning targets. Balanced assessment systems *comprehensively* provide multiple sources of evidence to support educational decision-making, and they *continuously* document student progress over time (NRC, 2001). These criteria—coherence, continuity, and comprehensiveness—create a powerful image of a high-quality system of assessments, rooted in a common model of learning. We also find that *utility* and *efficiency* are helpful considerations in thinking about the functioning of such systems (Chattergoon & Marion, 2016). We expand on each of these criteria below and examine the extent to which the criteria are in sync with or at odds with competency-based education designs. Further, we provide a brief analysis of the challenges of meeting these criteria in ways that support an equity agenda.

Coherence

A coherent assessment system must be compatible with how student learning is expected to progress in a domain. An assessment system is *vertically coherent* when there is compatibility among the models of student learning underlying the system's various assessments (NRC, 2006). We generally think of vertical coherence among assessments that range from the classroom to the state level, but we should be concerned about vertical coherence even among classroom assessments serving various purposes (e.g., grading, formative feedback) such as the types of assessments that should be present in a competency-based system. *Horizontal coherence* is the alignment among curriculum, instruction, and assessment with the goal of helping students develop proficiency in a content domain (NRC, 2006).

Are competencies capable of serving as a backbone for coherence? On their own, likely not. They must be tied to sequenced opportunities to learn, such as those found in learning progressions and high-quality curricula. Expert educators will know their content and students well enough to facilitate students' progress from one competency target to the next, but this is a heavy lift for most educators, and the challenge is exacerbated with less qualified teachers and fewer resources characteristic of many schools serving poor and minority children.

Comprehensiveness

Knowing What Students Know noted that assessment systems meet the comprehensiveness criterion by providing a variety of evidentiary sources to inform educational decision making. In other words, students need multiple opportunities and ways to demonstrate their learning (NRC, 2001). Competency-based systems typically provide students with multiple opportunities to demonstrate competence. This is a laudable feature of competency-based education, but the practicalities of offering such opportunities can be overwhelming in most schools and even more so in under-resourced schools.

Continuity

Continuity is the degree to which the assessments provide information that allows for monitoring and evaluating progress over time. Closer to the classroom, some researchers are working with educators to create assessments based on learning progressions for documenting content-referenced growth (e.g., Shepard, Penuel, & Pellegrino, 2018; Wilson, 2018). Content-referenced growth is in contrast to the more common reports of student growth as an increase of scale scores, such as a change in scores from 220 to 228, for example. Such numerical changes tell teachers and students little about the skills and knowledge the student has acquired over time. The challenge of producing content-referenced growth information was articulated in *Knowing What Students Know* (NRC, 2001) almost 20 years ago, but we have, unfortunately, made little progress in this area. An advantage of competency-based education is the attention on specific, well-articulated learning targets on which students are instructed and assessed. Well-designed reporting approaches can communicate continuity based on demonstrated acquisition of key concepts and skills in much more content-referenced ways than more traditional compensatory-based (i.e., averaging scores over different content and skills) assessment systems. Again, states will need to lead in this area to ensure that students from under-resourced schools are provided these opportunities.

Utility

Utility is the degree to which the assessment system provides the information necessary to support its multiple and often diverse purposes. Utility is not evaluated in the abstract but follows from a well-articulated theory of action specifying the system's intended outcomes and the processes and mechanisms by which these outcomes are realized. With assessments purportedly designed to improve learning and teaching, for example, these aims often include: providing feedback for identifying and adjusting misunderstandings, promoting deeper learning, fostering student engagement, and/or enhancing self-regulation or/and related skills. Thus, utility should be evaluated by examining the extent to which each assessment experience, and the system as a whole, supports the overarching aims.

Utility requires a thoughtful articulation of the intended goals of the system and a theory of action to articulate how these goals are realized. In other words, it is not enough simply to announce that an assessment will support competency determinations. Rather, stakeholders must understand—and clearly communicate—how the proposed assessment, or set of assessments, will support competency determinations fairly and defensibly. Such considerations have not been addressed sufficiently in the design of many assessment systems, especially competency-based systems, which is why we add utility as a criterion for balanced assessment systems.

Efficiency

We also add the criterion of efficiency. By this we mean getting the most out of assessment resources and eliminating redundant, unused, and untimely assessments. Efficiency determinations identify and reduce assessments that are not serving the stated purposes or are redundant with other, more useful assessments.

Balanced systems of assessments can be powerful drivers for equity in competency-based systems. For this to be true, systems of assessments need to reflect and support the full breadth of outcomes we want for students. Additionally, assessment users (e.g., teachers, leaders, students) must become assessment literate so they understand how to design or select appropriate assessment and know how to interpret and use the results to improve educational outcomes, particularly deeper learning outcomes. Balanced systems of assessments in support of competency-based education systems must transparently provide students, teachers, and families with timely and accurate information about students' progress toward important learning outcomes. Finally, assessment allows teachers - and stakeholders at all levels - to take collective responsibility for ensuring all students master those outcomes through continuous improvement processes that inform classroom-level practice as well as systems of assessments themselves.

Balanced assessment systems are quite challenging to develop and implement for many reasons. Competency-based education systems pose additional demands on the design of assessment systems, specifically:

- Measuring deeper learning targets including transfer to novel contexts,
- Making mastery determinations requires sufficient assessment evidence,
- Providing timely, differentiated support along a pathway to competence, and
- Supporting variable pathways and demonstrations to document learning.

In the next section, we discuss the design requirements for assessment systems for competency-based education meant to enhance equity.

How Can Assessment Aligned with Competency-Based Education Advance Equity?

Competency-based education holds promise as a model for fostering equity, but only if equity is intentionally embedded in educational culture, structures, curriculum, assessments, and instruction. District and school leaders can use this framing to foster equity goals through the creation of balanced systems of assessments aligned with competency-based learning systems.

The National Equity Project defines educational equity in the following way:

Educational equity means that each child receives what he or she needs to develop to his or her full academic and social potential. Working toward equity involves:

- *Ensuring equally high outcomes for all participants in our educational system; removing the predictability of success or failures that currently correlates with any social or cultural factor*
- *Interrupting inequitable practices, examining biases, and creating inclusive multicultural school environments for adults and children*
- *Discovering and cultivating the unique gifts, talents and interests that every human possesses*

The Aurora Institute *Competency*Works initiative presents a framework on equity in *Designing for Equity: Leveraging Competency-Based Education to Ensure All Students Succeed* (Sturgis & Casey, 2018). It includes nine foundational equity principles, grouped into three major categories, designed to advance a "vision for educational equity as a fair and just system where every learner—students and educators alike—is thriving." A summary of the framework follows:

Purpose and Culture

NURTURE STRONG CULTURE OF LEARNING AND INCLUSIVITY

Schools and districts ensure that all students, families, and teachers feel respected and supported. Relationships are vital to learning, which is an inherently social activity. In an equitable system, students are able to learn because they have strong, culturally responsive, and authentic connections with teachers and peers. An equitable system emphasizes growth, learning through failure, and collaboration.

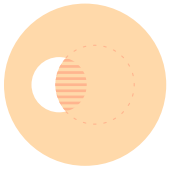
ENGAGE THE COMMUNITY IN SHAPING NEW DEFINITIONS OF SUCCESS AND GRADUATION OUTCOMES

Expanded definitions promote equity by preparing students with meaningful knowledge, skills, and dispositions to be successful beyond their K-12 experience. Although academic proficiency is important, students also need higher order skills, lifelong learning skills, and social emotional competencies to thrive in college, career, and life. Equitable systems also ensure outcomes are relevant, transparent, and accessible to communities by engaging communities as leaders and co-designers when defining new frameworks for student outcomes.

INVEST IN ADULT MINDSETS, KNOWLEDGE AND SKILLS

Equitable systems are designed and enacted by people, so it is only possible to create an equitable education system when teachers and leaders demonstrate the competencies to be equitable practitioners. Developing the knowledge, skills, and mindsets of an equitable practitioner is a process of continual learning and growth. Equitable systems define the competencies that teachers and leaders need to demonstrate, provide opportunities for continual learning, and balance accountability and growth.

Structure



ESTABLISH TRANSPARENCY ABOUT LEARNING, PROGRESS AND PACE

To be equitable, schools and districts need to ensure that students and families can access real-time, accurate data about learning outcomes and targets, where students are relative to those outcomes and targets and where they are on their pathway to graduation.

MONITOR AND RESPOND TO STUDENT PROGRESS, PROFICIENCY AND PACE

An equitable system should emphasize progress and pace: the degree to which a student is advancing, and how quickly. Teachers, students, and families monitor assessment data to ensure all students are making adequate progress toward proficiency and graduation. And, while acceleration may be important for students who are behind, equitable systems ensure that all students have opportunities for deep and meaningful learning.

RESPOND AND ADAPT TO STUDENTS' NEEDS USING CONTINUOUS IMPROVEMENT PROCESSES

In an equitable system that is dedicated to every student succeeding, where data are transparent, teachers provide timely and differentiated supports to ensure each student has the resources—including time, choices, interventions, and people—to succeed. This is true at the classroom, school, and district levels.

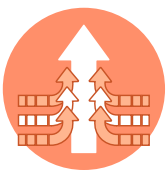
Pedagogy

DEVELOP SHARED PEDAGOGICAL PHILOSOPHY BASED ON LEARNING SCIENCES

Districts and schools are designed around clear articulations of pedagogy that leverage the learning sciences and promote culturally responsive learning. Equitable, research-based pedagogy emphasizes relationships, emotional wellness, learner agency, prior knowledge, and authentic application of learning.

SUPPORT STUDENTS IN BUILDING SKILLS FOR AGENCY

Equitable systems support students to lead their own learning. Learner agency promotes equity because it aligns with the learning sciences, which emphasize the importance of students driving their learning, promotes lifelong learning skills to help students succeed in college and career, and reinforces the idea that power can be shared between students and teachers in a collaborative environment.



ENSURE CONSISTENCY OF EXPECTATIONS AND SHARED UNDERSTANDING OF PROFICIENCY

Key to ensuring all students learn at high levels is ensuring that everyone defines "high levels" the same way. In an equitable system, teachers work together to calibrate common understandings of proficiency, ensuring all students are expected and supported to achieve the same outcomes.

What can these principles tell us about the relationship between balanced systems of assessments and equity? How can assessment play a role in supporting equitable learning and outcomes for all students? What are the assessment design considerations?

The following four principles from *Designing for Equity* hold particularly relevant and valuable insights for aligning systems of assessments:

- Engage the Community in Shaping New Definitions of Success and Graduation Outcomes (and Align Assessments with Those Broader Valued Outcomes)
- Ensure Consistency of Expectations and Understanding of Proficiency
- Monitor and Respond to Student Progress, Proficiency and Pace
- Respond and Adapt to Students Using Continuous Improvement Processes

In the next section, we discuss these four principles and their related assessment system design considerations.

Equity Principle

Engage the Community in Shaping New Definitions of Success and Graduation Outcomes (and Align Assessments with Those Broader Outcomes)

Expanded definitions of student success are vital to equity because they represent the knowledge and skills needed for students to thrive in college and career, as well as the lifelong learning skills to continue learning and adapting as the worlds of work and citizenship change. For expanded definitions of student success to be meaningful, systems of assessments need to measure and enable the breadth of knowledge, skills, and dispositions we expect students to master, including but not limited to rigorous expectations for academic proficiency. At the same time, states must comply with federal requirements to make annual student-level summative determinations of proficiency aligned to a much narrower definition of success (grade-level proficiency in reading/English language arts and mathematics in grades 3 through 8 and once in high school). Using assessment in a way that supports equity starts with defining holistic graduate profiles and aligning systems of assessments to measure the outcomes we want to see for students throughout their learning trajectory. It also requires careful consideration of the role that each assessment in a system of assessment will play and how the data will be used for supporting

teaching, learning, transparency, and/or accountability.

In designing these graduate profiles, states should engage deeply with stakeholders to ensure that these new definitions of success reflect communities' aspirations for their students. The needs of all learners should be considered from the start; the National Center for Learning Disabilities' recommendations on Personalized Learning and Students with Disabilities urges stakeholders to "Establish an inclusive vision for personalized learning efforts from the beginning of design and planning."

Assessment System Design:

A Focus on Deeper Learning Targets and Transfer

Expanded definitions of success and graduation outcomes generally call for students to be able to apply what they've learned in new settings, requiring deeper learning and transfer to novel contexts. Metacognition, the role of prior knowledge in shaping new knowledge, and the influence of social and cultural factors on knowledge are important because they support the development of deep (or expert-like) understanding. Deep understanding, or expert knowledge, is not only characterized by knowledge of a large body of facts and skills but by the transformation of factual information into usable knowledge (NRC, 2000). The literature on transfer is quite clear that when knowledge is organized into conceptual schemas and is efficiently retrievable, people are able to apply (transfer) this knowledge to new situations and to learn additional, related information more quickly (NRC, 2000). This can easily be considered the most important purpose of school learning—to have students develop deep understandings that they can use in contexts beyond the classroom where it was first learned.

The development of advanced knowledge requires that students learn fewer concepts in greater depth. Among other challenges to developing deeper learning at scale, many large-scale summative assessments focus on the recall of superficial content knowledge. Teachers are expected to ensure all of the standards have been covered, and that means they end up prioritizing breadth over depth (NRC, 2000). Furthermore, assessing for deep understanding may not always be possible in large-scale summative assessments where the use of consistent scoring procedures is of paramount importance.

If competencies are designed as described in the principles of the Aurora Institute definition for competency-based education (Levine & Patrick, 2019), particularly principles in elements 1[4] and 7,[5] they should focus on "big ideas" of the respective disciplines as well as critical cross-cutting skills such as metacognition, communication, collaboration, and critical thinking. This means focusing on fewer learning targets than is typical with state content standards. However, we cannot assume that just because a district or state has identified a small set of target competencies they will support deeper learning outcomes. Meeting the deeper learning goals requires a thoughtful and explicit set of design decisions for the competencies to ensure they require deep understanding and the intended key cross-cutting skills. This is not easy and must be couched in the extensive body of research on learning.

Once such competencies are created, assessments must be designed to support the intended inferences regarding these deeper learning goals. For example, one would be hard-pressed to faithfully assess such learning targets without the use of rich, performance-based assessments. The principles of competency-based education (Levine & Patrick, 2019) refer to the importance of application. Application is more properly referred to as *transfer*, for which there is an extensive research basis. Assessing for transfer first requires a clear description of the type(s) of transfer expected. In other words, transfer is not an all-or-nothing phenomenon. Transfer exists on a continuum from near to far (distal) transfer. Near transfer involves doing tasks similar to the tasks on which the student learned the targeted concepts and skills, such as doing a literary analysis of a text very similar in terms of structure, complexity, and other features to the texts on which the student was instructed. More distal transfer would involve doing a critical analysis of a text quite different in terms of structure and other key features. Therefore, transfer means first describing the types of transfer one is targeting and designing tasks to evaluate the expected performances associated with the degree of transfer expected.

Equity Principle

Ensure Consistency of Expectations and Understanding of Proficiency

When intended learner outcomes are clear, and systems of assessments are in place to measure and support these outcomes, it is critical to ensure that all teachers (also students, leaders, and families) have the capacity to measure proficiency in those outcomes at every step along a student's path. Sturgis and Casey write:

> *Shared, valid and reliable definitions of proficiency "come to life" through meaningful systems of assessment... Competency-based systems demand assessment literacy: the ability to use meaningful assessment to design and drive powerful learning that leads toward common outcomes... Systems of assessments are developed, selected and aligned to balance breadth of content with enduring understanding of key concepts and skills. Further, they ensure students develop higher order skills, not simply academic proficiency (p. 35).*

Assessment System Design:

Mastery Determinations

A shared understanding of proficiency supports one of the key tenets of competency-based education, to make decisions about students' mastery (or competency) in a certain domain to determine if the student needs more support or is able to move to the next set of learning goals (i.e., competencies). There are many measurement challenges associated with decisions about students' competence (Domaleski et al., 2015; Evans & Lyons, 2017b; McClarty & Gaertner, 2015), in particular, *generalizability* and *sufficiency*.

Generalizability is the measurement analog to transfer in learning. Generalizability quantifies the degree to which performance on an assessment represents the student's knowledge and skills if we could have administered all possible assessments of the same learning targets under all possible conditions to that student (e.g., Brennan, 1992; Cronbach, Linn, Brennan, & Haertel, 1997; Shavelson, Baxter, & Pine, 1992). In other words, while we care how well students perform on a single assessment, we care much more about whether the assessment provides credible evidence that the student really knows and can do what is being claimed about the full domain. This is a concern for all instruction and assessment programs but is more of a concern for competency-based systems that are designed to certify that students have "mastered the competency" so they can move on without having to demonstrate mastery of the same competency again.

Sufficiency follows from generalizability and is a judgment about having credible evidence to support the claims, uses, and decisions that result from assessments. Sufficiency refers to both the *quantity* of assessment evidence and *quality* of assessment evidence. Sufficiency is a critical consideration regarding the use of assessments to support competency determinations (Marion & Evans, 2018).

State and district assessment leaders must attend to issues of generalizability and sufficiency in designing their competency-based education and assessment systems. Understanding how these concepts affect our interpretations of student competence will be key to designing meaningful assessment systems that provide students with multiple opportunities to show what they know but do not allow students to pretend to know when they don't (Shepard, personal communication, 1996).

Equity Principle

Monitor and Respond to Student Progress, Proficiency and Pace

With transparent data about learning and the knowledge and skills to use them as part of instruction, teachers can meet students where they are in their learning and can monitor students' progress and pace toward proficiency. In an equitable system designed to help every student succeed, both progress and pace are vital. Progress means students advance along personalized pathways: meeting key milestones and achieving proficiency along learning continua designed to achieve learning outcomes and, ultimately, graduate ready for college and career.

> *Pace, a ratio of individual student growth and time, is an important indicator in personalized, competency-based systems as it indicates whether students are adequately progressing along their trajectory and receiving timely, responsive additional supports if not yet proficient. The equity concerns about pace are whether students are on a pace that will ensure success, if they have opportunities for deeper learning, and will they have the supports they need when they need them, and can they move on when ready. (Sturgis & Casey, 2018 p. 25).*

It is particularly important for equity to ensure that the students and subgroups of students who are or who have historically been ill-served by the education system (e.g., racial and ethnic minority students; English learners; students from low-income families, and students with disabilities) are getting supports proportionate to their needs. While attention to individual progress and outcomes is a key function of competency-based education, there is still an important role for data transparency on student subgroup performance.

Assessment System Design:

Timely, Differentiated Support Along a Pathway to Competence

Providing timely, differentiated support to enable students to progress on paths to competence is a call for high-quality formative assessment. We adhere to the Council of Chief State School Officers (CCSSO, 2018) definition of formative assessment as:

> *... a planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of intended disciplinary learning outcomes and support students to become self-directed learners (p. 2).*

This definition makes clear that formative assessment is a process better thought of as part of the classroom instructional system rather than as part of the assessment system (Shepard, 2019). This view follows from the work of Sadler (1989) and Heritage (2010) and makes sense because for formative assessment to be formative, it must be inseparable from instruction.

Most formative assessment researchers argue that formative assessment should be coherent with a well-articulated learning progression and/or high-quality curriculum or a "pathway to competence." In other words, competency-based education systems must go beyond describing endpoint competencies (e.g., end of high school, end of grade span), but must also explicitly and specifically articulate the pathways or progressions to support students' movement from competency to competency. This is a critical equity issue because it requires considerable teacher expertise to understand the content and learning theory well enough to create such progressions on their own, either implicitly or explicitly. Unfortunately, teacher expertise is not evenly distributed, and it has been well-documented that poor and minority students are generally taught by lower quality teachers than more affluent white students (Kraft & Gilmour, 2017; Weisberg, Sexton, Mulhern, & Keeling, 2009). Therefore, if high-quality teachers are required to use formative assessments to support students' movement along the pathways toward competence, clearly specifying these pathways and providing considerable formative assessment and instructional support is critical for helping to address some of the inequity found in most systems.

Assessment System Design:

Variable Pathways and Demonstrations to Document Learning

Allowing students to pursue variable ways to progress toward competence and then permitting flexible approaches for demonstrating learning of competencies raises considerable assessment challenges, particularly around comparability of score inferences. State and district leaders must decide how important it is to support inferences of comparability. For example, do state or district leaders want stakeholders to have similar inferences when it is reported that Juan and Anna Rose both met the competency for *understanding energy flows through natural systems*? In other words, when we declare that two (or more) students met the same competency, we suspect most stakeholders assume some level of comparability.

How do we do this while allowing variable task choice? There must be a process for creating a shared understanding of quality, as demonstrated through student work and related artifacts. Such shared definitions of quality are essential for ensuring credibility in the process and outcomes. Shared understandings of quality can support and be enhanced by calibration processes to evaluate the ways in which such understandings are manifest in evaluations of student work.

Calibration involves comparing two or more things against a known result. In the case of performance assessment scoring, this often means comparing multiple raters against expert scored papers. This is a critical equity issue. It is unfair and inequitable to have different definitions of excellence or competence for different types of students. Yes, students should be allowed and encouraged to provide evidence of hard-pressed in ways they find engaging and meaningful, but it is not acceptable to lower the bar for some students while raising it for others. Common definitions of quality and calibration processes, generally at the performance assessment score level, are ways to avoid this problem.

Equity Principle

Respond and Adapt to Students Using Continuous Improvement Processes

Continuously improving systems of assessments drives equity by helping to ensure that the entire learning system is flexible and committed to the success of each and every student. Continuous improvement operates on both the system and individual levels. At the system level, data are used to evaluate the ways in which the system is serving all students and specific subgroups of students. Such evaluations allow districts and states to gain an understanding of which programs and initiatives are working to further equity aims and which ones are having little influence. Continuous improvement at the individual level is essentially a formative assessment activity in which information is used to identify what the student has learned well and what she still needs to learn.

Assessment System Design:

Balanced Assessment Systems to Support Continuous Improvement Activities

Balanced assessment systems were envisioned to meet both the system and individual aspects of continuous improvement. The comprehensiveness criterion for balanced assessment systems speaks to the need for using multiple approaches for documenting student learning, but it also refers to providing meaningful assessment information to a range of assessment stakeholders to serve multiple purposes. Therefore, meeting the comprehensiveness criterion generally means employing multiple assessments to serve the needs of the various stakeholders. This is where designers need to be particularly careful to avoid producing a chaotic set of assessments that, in the end, resembles a system no more than a pile of bricks resembles a house (Coladarci, 2002).

Further, attending to the utility criterion will help the system's assessments serve the needs of multiple stakeholders, generally by relying on a range of measurement approaches in support of various educational needs.

Turning Barriers into Levers: Implementing Balanced Systems of Assessments in Support of Competency-Based Education

Designing and implementing balanced systems of assessments sounds quite sensible, so one must wonder why we do not see more of these systems in practice. We have recently been examining the barriers constraining the implementation of balanced assessment systems (Marion et al., 2019). We identified the following four interrelated challenges to balanced assessment systems:

- Influence of politics, policy, and political boundaries on decisions pertaining to assessments,
- Influence of commercialization and proliferation of assessments,
- Lack of attention to curriculum and learning in the design of assessment systems, and
- Lack of assessment literacy at multiple levels of the system.

Turning to the "glass half full" perspective, we argue these barriers can turn into levers for policymakers and assessment leaders if they attend to the issues and devote the necessary resources. We acknowledge that many of these barriers will be challenging to overcome because they have multiple causes and contextual factors.

Politics and Policy

Barrier

The challenges of assessment system design across political and ownership boundaries remain largely unaddressed.

Different (and disconnected) political entities control various levels of the educational system and corresponding assessments. This is true in the United States and likely in other decentralized contexts. A major issue with developing a balanced assessment system is determining who is in control. Most states cede considerable control of curriculum and assessment to local school districts. States control the statewide end-of-year assessment, but little else. Similarly, district and school leaders control districtwide assessments and finer-grained schoolwide assessments. Finally, and perhaps most importantly, teachers are responsible for most classroom assessments in service of the instructional needs of their students. Assessment practices at one level of the system can compound quality issues at other levels. Implementing balanced assessment systems cannot be a state-driven enterprise alone, and these political and ownership boundaries cannot be ignored. Unfortunately, differing data needs between policy, district leaders, school leaders, and teachers have led to a poorly articulated mix of legacy assessments and measures cobbled together into an often-incoherent picture of student learning.

Lever

Policy leaders can play a major role in supporting the design and implementation of balanced assessment systems.

They can do this by:

- ✓ Supporting districts in developing balanced assessment systems,
- ✓ Supporting coherence where possible, and
- ✓ Attending to the unintended negative effects of assessment and accountability policies.

Districts are better positioned than states to be the controlling entity for balanced assessment systems. Assessments in a balanced system must be designed to reflect and embody the corresponding learning goals and trajectories. Additionally, districts generally control hiring, professional development, supervision, evaluation, and many other structural components of the learning, instructional, and assessment systems. Districts are positioned to enact coherent and balanced assessment and learning systems in large part because of their primary role in the implementation of curriculum and instructional systems. Unfortunately, we cannot ignore capacity issues at play in many districts that must be addressed to support the design and implementation of high-quality assessment systems.

Lever

Lever: States have a role—tight and loose coupling.

States can play a key role in supporting high-quality district assessment systems. They can support uneven capacity issues in districts by creating high-quality models and tools, support common professional development opportunities, and states can form consortia of districts to increase capacity for assessment system development. States can also help support districts by creating partial assessment systems or what we have termed "loosely coupled systems" with the summative and interim components intentionally connected.

The original criteria for balanced assessment systems outlined in *Knowing What Students Know* (NRC, 2001) suggest a "tightly coupled system," where information flows among the various assessments in the system—from the statehouse to the classroom—to support multiple uses and users as efficiently as possible. This type of information flow is a high bar, likely beyond the capacity of most educational systems. We suggest "loosely coupled systems" (Marion, 2018) may help bring about more coherence than what we see in typical state systems. A loosely coupled assessment system is one in which the state procures and directs the summative assessment and also purchases interim assessments tied to major aspects of the content standards (e.g., mathematical operations with fractions) that districts can use to supplement the information they get from the statewide summative assessment. One example of a loosely coupled system is the Smarter Balanced Assessment Consortium. In addition to its flagship summative assessment, it includes a variety of interim assessment options and an abundance of formative resources. One benefit of loosely coupled systems is they help connect the state and some district assessments to the same learning targets by being designed together and created by the same assessment publisher.

Accountability

Barrier

State accountability requirements can have perverse effects on the design and implementation of balanced assessment systems (e.g., Elmore, 2004; Hargreaves & Braun, 2013).

In the world of assessment system design and implementation, accountability pressures can distract leaders from long-term strategies, such as building teachers' formative assessment skills. These pressures can instead cause educational leaders to grasp at short-term approaches, such as test preparation and products that promise a quick fix. Therefore, state leaders' first responsibility in promoting balanced assessment systems should be to critically examine potential unintended consequences of state accountability policies.

Lever

States can use pilots to develop new approaches to assessment and accountability.

One path for addressing such unintended consequences is through the Innovative Assessment Demonstration Authority (IADA) under the Every Student Succeeds Act. This authority allows states to "rebalance" assessment systems for evaluating schools as well as other approaches for increasing the utility of assessments for improving teaching and learning. State leaders interested in fostering balanced assessment systems should consider some way, either through the IADA or other means of creating space for balanced assessment systems, especially systems with a strong focus on improving learning and instruction.

The Commercialization and Proliferation of Assessments

Barrier

Individuals operating at different levels of a system often purchase or develop new assessments to meet real or perceived needs without fully considering how existing assessments might meet the same needs and considering how new assessments can threaten the balance of the system.

Commercially developed assessments range in quality, and certainly not all interim assessments are low-quality or ineffective. But because they rarely align with the enacted curriculum or other programs of improvement, interim assessments can distract educators from a deeper learning agenda (Konstantopoulos, Miller, van der Ploeg, & Li, 2016; Li, Marion, Perie, & Gong, 2010), especially a learning system focused on attainment of important competencies. As such, these interim assessments also tend to operate in isolation outside of any local assessment system. Therefore, district and state leaders should carefully evaluate the extent to which any assessment will support or detract from the objectives of competency-based education and work to eliminate or at least minimize the use of assessments that do not support the main goals of the education system.

Another recent challenge to balanced assessment systems has been the proliferation of college entrance exams (i.e., ACT or SAT) as part of high school assessment systems, particularly when these assessments are used to measure the achievement of English language arts and mathematics in high school. Such assessments can threaten the balance of district and state assessment systems because they are less aligned to state content standards than custom-designed achievement tests. High school educators must determine whether instruction should align with the content assessed on the college-entrance exams or to the state standards. The limited alignment of the college entrance exams can weaken the coherence of district and state assessment systems because such a visible component of the system is geared toward different learning targets than the curriculum-embedded assessments typically administered in schools and districts.

Lever

Support school and district leaders in evaluating local assessment quality as a key component of assessment literacy.

We offer several suggestions for addressing the challenge of the proliferation of commercial assessments that claim to support competency-based education. First, we suggest that as district leaders engage in developing coherent district assessment systems, they begin with a clear definition of key terms and examples based on use cases (e.g., what formative assessment is and is not). Other approaches involve having those making claims about assessment benefits to provide independent evidence supporting such claims as well as a detailed theory of action for how their product will realize the stated goals. Furthermore, assessment providers should have to describe what additional actions or investments the district must make for the intended outcome to be realized. To pose such questions and evaluate vendors' responses, educators must be assessment literate, knowing how to appraise a theory of action. Of course, having assessment literate school and district leaders is one of the surest ways to combat the incoherent use of commercial assessments.

Finally, a public vetting system of products (e.g., EdReports ratings of curriculum packages) would result in more honest conversations between commercial vendors and users. In fact, the Louisiana Department of Education has done just that at a level that is understood by many of its educational leaders (R. Kockler, personal communication with S. Marion). Further, EdReports is developing a public evaluation system for interim assessments. We are hopeful that such public evaluations will help users make better decisions as well as encourage vendors to improve the quality of their products.

Curriculum and Balanced Assessment Systems

Barrier

Systems of assessments cannot support equity-focused competency-based education practices unless each assessment is linked closely to how students are expected to learn the content and skills.

The role of curriculum in the design and implementation of balanced assessment systems is a related challenge emerging from the issues regarding political control discussed above. The through-line for coherence is a common vision of learning rooted in an enacted curriculum, describing how students are expected to progress from fragile to deeper levels of understanding and domain competence. Unless the course competencies are defined and the progressions articulated at a state level (which does not occur in most states), then the absence of a common vision of learning across districts serves as a significant barrier to state-led, and even district-led, balanced assessment systems. The lack of attention to course competencies enacted through district curriculum (and learning progressions) similarly impedes the design and implementation of balanced assessment systems at both the state and district levels.

Lever

Creating a balanced assessment system that focuses on improving teaching and learning involves more than just changing the assessments and will demand varying levels of curricular support (Bass & Glaser, 2004; Shepard et al., 2018).

We discuss three interrelated strategies for helping to better connect curriculum, learning, and assessment:

- Developing a clear vision of teaching and learning, certainly at the district level and ideally at the state level;
- Engaging in curriculum and assessment mapping at the district level; and
- Designing and implementing curriculum replacement units.

Clear Vision of Teaching and Learning

Districts, and even states, must begin with a clear vision or theory of action of what learning is valued, including the prioritization of content and the degree to which students should be able to demonstrate their cognitive and non-cognitive achievement. This vision must be grounded in an understanding of how students learn, and it must represent important thinking and problem-solving skills situated within the respective content disciplines. This includes understanding that learning is active, requires self-monitoring and self-awareness, and moves beyond a mere accumulation of information (NRC, 2001; Shepard, 2000).

This vision necessitates a developmental approach to assessment: considering how students' understanding of content develops over time with instruction adjusted to meet student needs. By developing this shared vision of teaching and learning, districts can begin to implement more challenging classroom and assessment tasks that address learning processes as well as learning outcomes. Although these assessments may not be part of an external accountability system, they will enhance curriculum, instruction, and improve student learning (Shepard, 2000).

Curriculum and Assessment Mapping

Once a vision has been clarified and shared with the various stakeholders, the district should map their existing curriculum and assessments to these learning priorities. District educators will need to make decisions to embed missing curriculum units and assessments as well as eliminate unnecessary units and assessments. Many districts have legacy assessments tied to outdated purposes. For example, the district may still administer a norm-referenced test that was first adopted for reasons no longer relevant. Additionally, educators must recognize the misalignment of curriculum and assessments. Through this mapping process, educators identify the assessments administered in the course or grade, determining factors such as:

- Content focus of each assessment as a whole, considering the alignment to key standards or competencies;
- Type of assessment items on the various assessments (e.g., selected response, open-ended, performance-based), focusing on the balance of discrete content skills with performance; and
- Cognitive rigor of the assessment items and the assessment as a whole, including opportunities for an integration of knowledge and skills.

An analysis of these assessment maps is required in order to identify the gaps and overlaps in the current assessment system, both within and across grades and content areas.

Development of Curricular Replacement Units

Most school districts are on a curriculum replacement schedule of roughly seven to 10 years, though it may be even less frequent in the neediest districts. Therefore, districts cannot upgrade their existing curriculum at the snap of a finger. Instead of accepting this situation as is, districts should take the opportunity to rethink the role that teachers and other educators can play in the curriculum, instruction, and assessment process.

There are multiple pathways for doing so. The development of curricular replacement units is one such pathway. As Marion and Shepard (2010) described:

> *These units are designed to address the same topics as existing units, but would do so in ways that embody the common core standards and promote deeper learning than typically occurs. Therefore, these units can replace existing units and would not be an add-on to an already overcrowded curriculum. These curricular units, which can also be called assessment supports if it is more politically appealing, would include coherently developed instructional tasks, sample formative questions for teachers to ask or things to look for in student work to get at key conceptual understandings and would serve as the basis for interim performance tasks and as a context for summative assessment (p. 2).*

Well-designed curricular replacement units can eliminate surface-level practices and, further, provide the foundation for structuring instructional activities that are tied to a big idea of the discipline. Such units also inform the development of a unit-based assessment system in which educators design pre-assessments, anticipate potential formative probes and observations, and create rich performance tasks for both instructional purposes and unit summative assessment purposes. As students engage in these unit-based tasks, whether for instructional or assessment purposes, teachers can more clearly differentiate and communicate various qualities of thinking, reasoning, and problem-solving. Teachers' understanding of how students progress in a domain is more fully developed as a consequence, which contributes to better instructional decision-making and analytic task-specific assessment practices (Bass & Glaser, 2004).

Replacement units also provide a foundation for the design of horizontally coherent assessments. In other words, the replacement unit allows for the tight linkage among curriculum, instruction, and assessment, a key feature of a balanced system of assessments. These units support actionable interpretation of both the formative activities and the performance tasks. By analyzing and interpreting student work

through a clear and systematic process, teachers can improve their instructional decisions and support improved student learning.

Developing a replacement unit is a good start, but more meaningful advances in curriculum and assessment are realized when multiple units are developed to occur throughout the school year. And this is particularly true if these units are connected to an underlying learning progression. The research–practice partnerships for developing learning progressions in support of learning and assessment are a compelling testimony regarding what is possible (see Wilson, 2018 and Shepard et al., 2018).

Assessment Literacy for Balanced Assessment Systems

Barrier

Inadequate assessment literacy among educators, administrators, and policymakers poses a significant barrier to the design and implementation of balanced assessment systems.

As the decision-makers regarding assessment choices, state, district, and school leaders have an important role to play in ensuring the coherence of assessment systems (and conversely can contribute to systems' incoherence). The implementation of balanced assessment systems requires that both educators and leaders understand high-quality balanced systems of assessments, as well as the assessment requirements to support competency-based education at all levels of the system: classroom, district, and state. Inadequate assessment literacy among educators, administrators, and policymakers poses a significant barrier to the design and implementation of balanced assessment systems. We must attend to, and support increases in, the assessment literacy of state policy leaders as well as school and district decision-makers.

Lever

The implementation of balanced assessment systems requires educators, leaders, and policymakers to possess assessment literacy so they can create coherent systems aligned to competency-based education.

Assessment literacy is a critical component in creating more equitable education systems. The ability of educators to understand where students are in their learning and provide the supports that students need to deepen their learning and move to the next level in their learning trajectory is a fundamental function of ensuring students are progressing toward success.

As we have noted throughout this paper, maximizing the equality of educational opportunities within a competency-based education system adds another layer of complexity to the typical assessment literacy demands of designing, selecting, and using results from assessments. Designing and implementing a balanced system of assessments requires leaders and educators to know how various assessment components fit together to create a "system." Similarly, competency-based assessment requirements, such as sufficiency, transfer, generalizability, and comparability, add demands to an already over-full set of assessment literacy requirements. We have written about intensive strategies to build assessment expertise rather than simply building assessment literacy (e.g., Marion, 2018). State and local leaders, ideally working in a coordinated fashion, will have to devote significant funding and supports to make more equitable education and assessment systems a reality.

Assessment literacy includes an understanding of how systems of assessments should be coherently linked together through a common learning model. If curriculum and assessment reform initiatives are to be successful, educators and other stakeholders must be given opportunities to develop contemporary understandings of how students learn.

The cry for greater assessment literacy is not new (Stiggins, 1991), but assessment literacy still appears to be an uphill battle. Does this mean educators are incapable of learning in this regard? Of course not. Rather it likely means we have been going about this in unproductive and possibly misguided ways. Improving assessment literacy, at multiple levels of the system, needs to be a comprehensive effort starting with pre-service education and continuing with ongoing, embedded professional learning opportunities for educators and leaders. There are different, though related, demands for the various stakeholders to support the design and implementation of balanced systems of assessments, informed by their degree of assessment literacy.

Conclusion

Competency-based education systems hold promise for maximizing the learning and growth of all students. Such systems, if well designed and implemented, can serve critical equity aims by ensuring that all students are supported in meeting key learning and development targets. Competency-based education systems cannot fulfill these lofty goals unless accompanied by high-quality assessments and assessment systems. School, district, and state leaders must work to develop balanced assessment systems that are *coherent* with the target competencies and learning progressions, that *comprehensively* provide a range of evidence for each student and to serve multiple stakeholders, and *continuously* monitor students' progress over time. Balanced assessment systems are critical for providing information at multiple levels of the system to monitor, evaluate, and enhance equity agendas.

This is a necessary paradigm shift. Under the current federal model of accountability begun under the Improving America's Schools Act of 1994 and the No Child Left Behind Act of 2001, and continued to a significant extent under the Every Student Succeeds Act of 2015,[6] state assessment systems are meant to produce data for school accountability purposes and intervene with school improvement strategies that have yielded limited results. The intent behind this strategy is noble and important—to raise student achievement and reduce the achievement gaps among student subgroups. Unfortunately, we have not seen significant improvements in student outcomes by subgroup except for limited progress for students with disabilities. Students who are from underrepresented racial and ethnic groups, are English learners, or who have a disability, are still far less likely to attain a postsecondary degree or a job with a living wage. Curriculum, instruction, and learning must all be coherently connected and expressly designed with the inputs necessary to advance equity.

District and state leaders can increase the likelihood that competency-based education strategies will enhance the equality of student outcomes by supporting the development of balanced assessment systems, ensuring coherence, and attending to the unintended negative effects of assessment and accountability policies. Some levers include accountability or assessment pilots, policies and initiatives that promote educator and leader assessment literacy, and better connecting curriculum, learning, and assessment.

When aligned to a competency-based education approach, systems of assessments can play an important role as part of a coherent system of teaching and learning that advances equity. In the words of Jason Berg, Executive Director of Educational Services at the Farmington Area Public Schools in Minnesota, competency-based education "allows districts to make equity our pedagogy." (Worthen, 2019)

References

Bass, K. M., & Glaser, R. (2004). *Developing assessments to inform teaching and learning*. Los Angeles: UCLA National Center for Research on Evaluation, Standards, and Student Testing.

Brennan, R. L. (1992). *Elements of generalizability theory*. Iowa City, IA: American College Testing Program.

Coladarci, T. (2002). Is it a house...or a pile of bricks? Important features of a local assessment system. *The Phi Delta Kappan*, *83*(10), 772–774.

Chattergoon, R., & Marion, S. (2016). Not as easy as it sounds: Designing a balanced assessment system. *The State Education Standard*, *16*(1), 6-9.

Council of Chief State School Officers. (2018). *Revising the definition of formative assessment*. Retrieved from https://ccsso.org/resource-library/revising-definition-formative-assessment

Cronbach, L. J., Linn, R. L., Brennan, R. L., & Haertel, E. H. (1997). Generalizability analysis for performance assessments of student achievement or school effectiveness. *Educational and Psychological Measurement, 57*, 373–399.

Domaleski, C., Gong, B., Hess, K., Marion, S., Curl, C., & Pelzman, A. (2015). *Assessment to support competency-based pathways*. Washington, DC: Achieve.

Elmore, R. F. (2004). Moving forward: Refining accountability systems. In S. H. Fuhrman & R. F. Elmore (Eds.), *Redesigning accountability systems for education* (pp. 276–296). New York, NY: Teachers College Press.

Evans, C. M., & Lyons, S. (2017). Comparability in balanced assessment systems for state accountability. *Educational Measurement: Issues and Practice*. https://doi.org/http://dx.doi.org/10.1111/emip.12152

Gross, B., Tuchman, S., & Patrick, S. (2018). *A national landscape scan of personalized learning in K-12 education in the United States*. Vienna, Virginia: Aurora Institute. Retrieved from https://www.inacol.org/resource/a-national-landscape-scan-of-personalized-learning-in-k-12-education-in-the-united-states/

Hargreaves, A., & Braun, H. (2013). *Data-driven improvement and accountability*. Boulder, CO: National Education Policy Center. Retrieved from http://nepc.colorado.edu/publication/data-driven-improvement-accountability/

Heritage, M. (2010). *Formative assessment: Making it happen in the classroom*. Thousand Oaks, CA: SAGE Publishing.

Konstantopoulos, S., Miller, S. R., van der Ploeg, A., & Li, W. (2016) Effects of interim assessments on student achievement: Evidence from a large-scale experiment. *Journal of Research on Educational Effectiveness*, *9*(Suppl 1), 188–208.

Kraft, M. A., & Gilmour, A.F. (2017). Revisiting the Widget Effect: Teacher evaluation reforms and the distribution of teacher effectiveness. *Educational Researcher, 46(5),* 234–249.

Levine, E., & Patrick, S. (2019). *What is competency-based education? An updated definition*. Vienna, VA: Aurora Institute.

Li, Y., Marion, S. F., Perie, M., & Gong, B. (2010). An approach for evaluating the technical quality of interim assessments. *Peabody Journal of Education*, *85*(2), 163–185.

Marion, S. (2018). Stop training the trainers: Moving toward a research-based approach for improving assessment literacy. Retrieved from https://www.nciea.org/blog/assessment/stop-training-trainers

Marion, S., & Evans, C. (2018). How much is enough? Sufficiency considerations for competency-based assessment systems. https://www.nciea.org/blog/assessment/how-much-enough

Marion, S. (2018). The opportunities and challenges of a systems approach to assessment. *Educational Measurement: Issues and Practice, 37*(1), 45-48.

Marion, S., & Shepard, L. (2010). *Let's not forget about opportunity*

to learn: Curricular supports for innovative assessments. Retrieved from https://www.nciea.org/sites/default/files/publications/Marion_Shepard_Curricular_units_042610.pdf

Marion, S., Thompson, J., Evans, C. M., Martineau, J., & Dadey, N. (2019). A tricky balance: The challenges and opportunities of balanced systems of assessment. Coordinated session presented at the National Council on Measurement in Education 2019 annual meeting, Toronto, Canada.

McClarty, K. L., & Gaertner, M. N. (2015). *Measuring mastery: Best practices for assessment in competency-based education*. Washington, DC: American Enterprise Institute.

National Center for Learning Disabilities. (n.d.) Personalized learning and students with disabilities. Retrieved from https://www.ncld.org/research/personalized-learning/

National Equity Project. (n.d.). Why equity? https://nationalequityproject.org/about/equity.

National Research Council. (2006). *Systems for state science assessment*. Washington, DC: National Academies Press.

National Research Council. (2001). *Knowing what students know: The science and design of educational assessment*. Washington, DC: National Academies Press.

Sadler, D. R. (1989). Formative assessment and the design of instructional systems. *Instructional Science, 18*, 119–144.

Shavelson, R. J., Baxter, G. P., & Pine, J. (1992). Performance assessments: Political rhetoric and measurement reality. *Educational Researcher, 21*(4), 22–27.

Shepard, L.A. (2019). Classroom assessment to support teaching and learning. *The Annals of the American Academy of Political and Social Science,* 683(1), 183-200. https://doi.org/10.1177/0002716219843818

Shepard, L. A., Penuel, W. R., & Pellegrino, J. W. (2018). Using learning and motivation theories to coherently link formative assessment, grading practices, and large-scale assessment. *Educational Measurement: Issues and Practice*, *37*(1), 21–34.

Stiggings, R. J. (1991). Facing challenges of a new era of educational assessment. *Applied Measurement in Education*, *4*(4), 263–273.

Sturgis, C., & Casey, K. (2018). *Designing for equity: Leveraging competency-based education to ensure all students succeed*. Vienna, VA: Aurora Institute. Retrieved from https://www.inacol.org/resource/designing-equity-leveraging-competency-based-education-ensure-students-succeed/

Sturgis, C., Patrick, S., & Pittenger, L. (2011). *It's not a matter of time: Highlights from the 2011 Competency-Based Learning Summit*. Vienna, VA: Aurora Institute. Retrieved from http://www.inacol.org/cms/wp-content/uploads/2012/09/iNACOL_Its_Not_A_Matter_of_Time_full_report.pdf

Truong, N. (2019, May 30). iNACOL releases updates to the snapshot of K-12 competency education state policy across the United States [blog post]. Retrieved from https://www.inacol.org/news/inacol-releases-updates-to-the-snapshot-of-k-12-competency-education-state-policy-across-the-united-states/

Weisberg, D., Sexton, S., Mulhern, J., & Keeling, D. (2009). *The Widget Effect: Our national failure to acknowledge and act on differences in teacher effectiveness*. Washington, D.C.: The New Teacher Project

Wilson, M. (2018). Making measurement important for education: The crucial role of classroom assessment. *Educational Measurement: Issues and Practice*, *37*(1), 5–20.

Worthen, M. (2019). iNACOL testifies in Minnesota to support competency-based education [blog post]. Retrieved from https://www.inacol.org/news/inacol-testifies-in-minnesota-to-support-competency-based-education/

Appendix - Definitions

Assessment Types

There are three main assessment types. Assessments are formative, interim, or summative based on use and not based on structure or form, meaning the same assessment can be used for formative, interim, or summative purposes.

Formative assessment is inseparable from instruction and can be thought of as a bridge between instruction and classroom assessment (Heritage, 2010, Shepard, in 2019). It has been defined as:

> ...a planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of intended disciplinary learning outcomes and support students to become self-directed learners (CCSSO, 2018, p. 2).

This definition makes clear that formative assessment is a process better thought of as part of the classroom instructional system rather than as part of the assessment system (Shepard, 2019). This view follows from the work of Sadler (1989) and Heritage (2010) and makes sense because for formative assessment to be formative, it must be inseparable from instruction.

Interim assessments are defined as:

> *Assessments administered during instruction to evaluate students' knowledge and skills relative to a specific set of academic goals in order to inform policymaker or educator decisions at the classroom, school, or district level. The specific interim assessment designs are driven by the purpose and intended uses, but the results of any interim assessment must be reported in a manner allowing aggregation across students, occasions, or concepts.* (**Perie, Marion, & Gong**, 2009, p. 6)

Summative assessments are designed to support various types of determinations (e.g., proficiency, competency) given at the end of a defined instructional period such as a unit of instruction or a school year to evaluate students' performance against a set of learning targets for that period. The state summative assessment—because of its prominent role in accountability and reporting—typically plays a disproportionate role in most assessment systems. To be clear, "summative" does not pertain to state-level tests solely; most district and classroom assessment systems include a summative component (e.g., for awarding grades or making competency determinations).

Assessment Literacy

Assessment literacy is the knowledge and skills associated with designing, selecting, interpreting, and using high-quality assessments to improve student learning. Beyond using assessments in their classrooms, assessment literate educators should be equipped to deal with a range of data from large-scale state assessments, interim assessments, local district- or school-wide assessments, and classroom-based assessments.

Competency-Based Education

1. Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning.
2. Assessment is a meaningful, positive, and empowering learning experience for students that yields timely, relevant, and actionable evidence.
3. Students receive timely, differentiated support based on their individual learning needs.
4. Students progress based on evidence of mastery, not seat time.
5. Students learn actively using different pathways and varied pacing.
6. Strategies to ensure equity for all students are embedded in the culture, structure, and pedagogy of schools and education systems.
7. Rigorous, common expectations for learning (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable.

A competency-based school or district should implement all seven elements of the definition. Strong implementation also requires policies, pedagogy, structures, and culture that support every student in developing essential knowledge, skills, and dispositions.

Personalized Learning

Personalized learning is tailoring learning for each student's strengths, needs, and interests—including enabling student voice and choice in what, how, when and where they learn—to provide flexibility and supports to ensure mastery of the highest standards possible.

Endnotes

1. Truong, N. (2019).; Gross, B., Tuchman, S., & Patrick, S. (2018).
2. Levine & Patrick, 2019; The 2019 definition builds on the original, five-part working definition of competency-based education, which was developed in 2011 at the National Summit for K-12 Competency-Based Education (Sturgis, Patrick, & Pittenger, 2011).
3. Assessment systems are comprised of some combination of assessment types—formative, interim, and summative. Unfortunately, there is considerable confusion about how these terms are defined; we briefly define some key assessment terms in the Appendix.
4. "Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning."
5. "Rigorous, common expectations for learning (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable."
6. All three laws mentioned here were successive reauthorizations of the same underlying legislation, the Elementary and Secondary Education Act of 1965, and widely considered to be instrumental in the standards-based reform era of federal education policy.

About the Authors

Scott Marion is the Executive Director of the Center for Assessment. He is a national leader in designing innovative and comprehensive assessment systems to support instructional and accountability uses and is working to better conceptualize and implement high-quality balanced systems of assessment and accountability. He is also actively engaged with a broad range of Center clients including chief state school officers, legislators, state and district assessment and accountability leaders, and classroom teachers. Scott's projects include designing and supporting states in implementing assessment and accountability initiatives, providing technically-defensible policy guidance, and implementing high-quality, locally designed performance-based assessments.

Scott coordinates and/or serves on five state or district Technical Advisory Committees (TAC) for assessment, accountability and educator evaluation. He has served on multiple National Research Council (NRC) committees including to support designs for next generation science assessments, investigating the issues and challenges associated with incorporating value-added measures in educational accountability systems, and outlining best practices in state assessment systems.

Maria Worthen is Vice President for Federal and State Policy at the Aurora Institute. Prior to joining the Aurora Institute (formerly known as iNACOL), she served as Education Policy Advisor to the Chairman of the Senate Health, Education, Labor, and Pensions Committee, Senator Tom Harkin of Iowa. She also worked at the US Department of Education, serving as Congressional Liaison in the Office of Legislation and Congressional Affairs, Program Officer in the Office of Elementary and Secondary Education, and Presidential Management Fellow in the Office of Safe and Drug-Free Schools.

Earlier in her career, Maria was a pre-school teacher and a social worker, practicing with at-risk children and youth in a variety of settings. An Iowa native, she holds a B.A. in Government and Italian Language and Literature from Smith College and a master's in Social Work from Washington University in St. Louis.

Carla Evans is an Associate at the Center for Assessment. She is actively engaged with projects that support districts and states in designing and implementing innovative assessment and accountability reforms using performance-based assessment. She has been intricately involved in New Hampshire's Performance Assessment of Competency Education (PACE) initiative with a focus on the technical quality and evaluation of that pilot program. Carla is also working with states to set performance standards on their ESSA accountability systems and measure 21st-century learning skills.

Carla's research focuses on evaluating the impacts and implementation of assessment and accountability policies on teaching and learning. Carla is interested in policy research related to innovative assessment and accountability systems, competency-based education, performance-based assessments, and teacher/teacher preparation program effectiveness initiatives. Carla received a Ph.D. from the University of New Hampshire with a concentration in Assessment, Evaluation, and Policy.

AURORA INSTITUTE

A New Dawn for Every Learner

The mission of the AURORA INSTITUTE is to drive the transformation of education systems and accelerate the advancement of breakthrough policies and practices to ensure high-quality learning for all.

1934 Old Gallows Road, Suite 350
Vienna, VA 22182 -4040

ph. 703.752.6216 I fx. 703.752.6201

www.inacol.org

Center for Assessment

The Center for Assessment strives to increase student learning through more meaningful educational assessment and accountability practices. We engage in deep partnerships with state and district education leaders to design, implement, and evaluate assessment and accountability policies and programs, and to design technically sound policy solutions to support important educational goals.

31 Mount Vernon Street
Dover, NH 03820

ph. 603.516.7900 I fx.603.516.7910

www.nciea.org