Barriers to Successful Design, Implementation, and Long-Term Maintenance of Balanced and Comprehensive Assessment Systems

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# Introduction

In 2001, the National Research Council released its influential report *Knowing What Students Know*, in which they set out a vision for assessment systems in which...

"...assessments at all levels—from classroom to state—will work together in a system that is comprehensive, coherent, and continuous. In such a system, assessments would provide a variety of evidence to support educational decision making. Assessment at all levels would be linked back to the same underlying model of student learning and would provide indications of student growth over time."<sup>1</sup>

Drawing on this vision and on the analogy<sup>2</sup> that "a collection of assessments does not entail a system any more than a pile of bricks constitutes a house," my colleagues and I developed the following set of questions for local educators that gets at this same vision<sup>3</sup>:

- Do you have a coherent and effective district and school assessment system to complements and enhances instruction? Does it serve student, teacher, administrator, and policymaker needs, and with good balance?
- Was the system designed so that teachers, principals, and administrators share power in service of providing students the best possible education? Or does the collection of tests feel more like a collection of bricks than a well-designed house?
- Does each test have a clear and appropriate purpose? Are these purposes clearly understood? Agreed to by all parties? Are current uses appropriate to the test purposes? Is it clear what uses are appropriate, and which are not for data from each test? Does it feel like some tests will crumble under the weight of use?
- Are some tests given by tradition without a clear understanding of why? Do you experience "system creep," with new tests added but old ones rarely dropped? Are test data actually used when they become available? Are tests used for new purposes without explicit attention to whether the new uses are appropriate?
- Are the tests (taken as a set) coherent, or do tests prescribed by the state, district, school, or the classroom teacher conflict with each other in timing, content standards, or results?
- Does it feel like, overall, testing disrupts rather than facilitates instruction?

Based on a generally poor response to this line of questioning since 2001, researchers and practitioners have written much about what constitutes an assessment system, primarily describing

<sup>&</sup>lt;sup>1</sup> National Research Council (2001, p. 9, emphasis in original).

<sup>&</sup>lt;sup>2</sup> Coladarci (2002, p. 773).

<sup>&</sup>lt;sup>3</sup> Excerpted from Martineau et al. (2018).

such systems as either *balanced* or *comprehensive* assessment systems<sup>4</sup>. My colleagues at the Center for Assessment and I are not aware of any exemplars that would qualify as high-quality, sustained balanced/comprehensive assessment systems.

## What Is a Comprehensive and Balanced Assessment System?

An early definition comes from an implication that an assessment system achieves the quality of balance by shifting away from an inordinate emphasis on standardized *assessment OF learning* toward a greater emphasis on *formative assessment* FOR *learning*<sup>5</sup>. A more recent definition is that an assessment system achieves the qualities of comprehensiveness and balance when it is grounded in the following three principles<sup>6</sup>:

- **Coherence** exemplified by
  - Sharing a theory of learning (or at least compatible theories of learning)
  - o Grounding curriculum, instruction, and assessment in the common theory of learning
  - Ensuring that curriculum, instruction, and assessment are coherent with each other<sup>7</sup>
  - A theory of action exemplified by clarity regarding the following
    - Overall purpose for the system
    - o Stakeholders in the system
    - Prioritization of stakeholder needs<sup>7</sup>
    - How the various components of the system match prioritized needs because they come from a class of assessment (see Table 3 and Table 4) and have other characteristics that are well-matched to prioritized stakeholder needs
    - How the system is designed to result in fulfilling the overall purpose
    - How the system will be evaluated with regard to appropriately use and achieving intended effects
    - How the system will be modified based on the evaluation while attending to balance and comprehensiveness<sup>7</sup>
- **Efficiency** exemplified by
  - Identifying and eliminating or replacing assessments that are not *coherent* (as described above) or are not consistent with the *theory of action* (as described above) and are not mandated by a higher-level authority
  - Meeting prioritized stakeholder needs using the minimum number of assessments.

#### **Barriers**

The identification of barriers that follows is based on the definition of a balanced and comprehensive assessment system given by Chattergoon and Marion (2016), dissatisfaction with the fractured vocabulary of assessment<sup>8</sup>, and sustained dialogue about assessment systems with a wide

<sup>&</sup>lt;sup>4</sup> These labels have different implications. I assume a sound assessment system must be both balanced *and* comprehensive.

<sup>&</sup>lt;sup>5</sup> Chappuis, Stiggins, Arter, and Chappuis (2004, p. 37).

<sup>&</sup>lt;sup>6</sup> Adapted from Chattergoon and Marion (2016).

<sup>&</sup>lt;sup>7</sup> Added to the Chattergoon and Marion (2016) definition.

<sup>&</sup>lt;sup>8</sup> Discussed in Appendix A and in my paper (for this conference) with Nathan Dadey regarding specificity about intended uses. The genesis of many barriers identified in Table 1 can be readily seen in the issues discussed in Appendix A and the additional paper.

variety of colleagues<sup>9</sup>. I identify the barriers in Table 1. The collection of papers regarding assessment systems address some (but not all) of the barriers identified.

Category	Specific Barriers
Learning Theory	<ul> <li>Poor understanding of learning theory</li> <li>Infrequent consideration of learning theory</li> <li>Conflicting learning theories</li> </ul>
Theory of Action	<ul> <li>No theory of action (TOA)</li> <li>An incomplete or poorly-specified TOA</li> <li>Inattention to a well-specified TOA in activities associated with curriculum, instruction, and assessment</li> <li>Failure to evaluate and/or update a well-specified TOA</li> <li>Failure to consider a well-specified TOA in making modifications to the system</li> </ul>
Fractured Vocabulary of Assessment	<ul> <li>Individuals unknowingly using the same words/phrases to mean different things at different times</li> <li>Individuals unknowingly using different words/phrases to mean the same thing at different times</li> <li>Different people unknowingly using the same words/phrases to mean different things</li> <li>Different people unknowingly using different words/phrases to mean the same thing</li> <li>All of which can lead to miscommunication and frustration with the system</li> </ul>
Assessment Literacy	<ul> <li>Poor <u>basic assessment literacy</u>, including <u>knowledge</u> of:         <ul> <li>Types of assessment</li> <li>Important characteristics of assessment</li> <li>Appropriate purposes and uses for assessment of various types and characteristics</li> </ul> </li> <li>Poor <u>intermediate assessment literacy</u>, including <u>understanding of sound principles</u> for:         <ul> <li>Practicing formative assessment FOR learning</li> <li>Developing, evaluating, selecting, administering, and scoring assessments OF learning</li> </ul> </li> <li>Poor <u>advanced assessment literacy</u>, including <u>demonstrated competency</u> in soundly:         <ul> <li>Practicing formative assessment FOR learning</li> <li>Developing, evaluating, and selecting interim and summative assessments OF learning</li> <li>See also the <i>inappropriate or unsustainable use of assessment data</i> category</li> </ul> </li> </ul>

 Table 1. Compilation of barriers.

<sup>&</sup>lt;sup>9</sup> The sustained dialogue includes long-running conversations with colleagues at the Michigan Department of Education (MDE) and counterparts in other state education agencies, local Michigan educators (during my time at MDE), colleagues at the Center for Assessment, and clients (as an employee of the Center for Assessment). It also includes recent intensive conversations with staff of the Michigan Assessment Consortium; assessment specialists from two Michigan regional education service agencies, and many local administrators and teachers from three Michigan school districts.

Category	Specific Barriers	
Data Literacy Politics and Policy	<ul> <li>Poor basic data literacy, including knowledge of: <ul> <li>Types of data, variables, and values</li> <li>Numeric and graphical summaries of single variables (e.g., distribution shape, typical values, variation)</li> <li>Numeric and graphical summaries of pairs of variables (e.g., strength, direction, and shape of association)</li> <li>Where to go to learn about more numeric and graphical summaries of 3 or more variables</li> </ul> </li> <li>Poor intermediate data literacy, including understanding of sound principles for: <ul> <li>Distilling insights from the practice of formative assessment FOR learning and using those insights for self-evaluation, creating and sustaining a feedback loop between student and teacher, and making in-the-moment or next-lesson instructional course corrections</li> <li>Summarizing results of interim and summative assessments OF learning and using those summaries for self-evaluation, providing feedback to students, grading, longer-term instructional programming, program/policy development, and program/policy evaluation</li> <li>Poor advanced data literacy, including demonstrated competency in soundly:</li> <li>Distilling insights from the practice of formative assessments OR learning and using those insights for self-evaluation, creating and sustaining a feedback loop between student and teacher, and programming, program/policy development, and program/policy evaluation</li> <li>Poor advanced data literacy, including demonstrated competency in soundly:</li> <li>Distilling insights from the practice of formative assessments OF learning and using those insights for self-evaluation, creating and sustaining a feedback loop between student and teacher, and making in-the-moment or next-lesson instructional course corrections</li> <li>Summarizing results of interim and summative assessments OF learning and using those insights for self-evaluation, providing feedback to students, grading, longer-term instructional programming, program/policy development, and program/policy evaluation</li></ul></li></ul>	
,	<ul> <li>Too many needs to fulfill with a reasonable parsimonious system</li> <li>Too many needs to fulfill with a reasonable parsimonious system</li> <li>Power imbalances leading to the needs of more-powerful stakeholders being prioritized at the expense of fulfilling the needs of less-powerful stakeholders</li> <li>Turnover among policymakers leading to a loss of knowledge of why the system was designed as it was and changes to the system that do not take that knowledge into account</li> <li>Changing priorities among policymakers associated with the current political climate and the current position of the educational pendulum leading to one-off modifications to the system that fail to attend to coherence, a theory of action, or efficiency</li> <li>See also the <i>inappropriate or unsustainable use of assessment and associated data</i> category</li> </ul>	
Commercialization, Proliferation, and Incoherence of Assessments	<ul> <li>Misleading but persuasive marketing materials for "silver-bullet" products claiming that an assessment (or the system as a whole) can be simultaneously good, fast, and inexpensive leading to commercialization at the expense of educator expertise and assessment appropriate to intended purpose and use</li> <li>Marketing materials identifying a new need and marketing a new product to meet that need leading to both commercialization and proliferation of assessments</li> <li>Turnover or changing priorities among policymakers leading to proliferation of new assessments through a failure to evaluate existing assessments can serve a perceived need, does serve a perceived need, or can be eliminated in favor of a different assessment that can serve the perceived need (plus any additional needs served by the eliminated assessment</li> </ul>	
Inappropriate or Unsustainable Use of Assessment and Associated Data	<ul> <li>Poor assessment literacy, poor data literacy, political pressure, or policy pressure leading to inappropriate use of assessment and associated data</li> <li>Poor assessment literacy, poor data literacy, political pressure, or policy pressure leading to using the same assessment and associated data for too many purposes (potentially causing a useful assessment to be discontinued under the weight of overuse)</li> </ul>	
Non-Integration of Curriculum, Assessment, and Instruction	<ul> <li>Decisions being made in one area without considering coherence with decisions in another area</li> <li>Lack of professional knowledge about how to integrate products, tools, and knowledge relevant to the three areas</li> <li>Lack of coaching and/or practice leading to poor demonstrated competency in integrating products, tools, and knowledge relevant to the three areas</li> </ul>	

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## **Appendix A**

## **Toward a Coherent and Consistent Typology of Assessment**

In my experience, there is a key barrier to developing a coherent, balanced, comprehensive assessment system: a fragmented vocabulary. The vocabulary of assessment is fragmented at all levels of the assessment community. This includes vocabulary used by classroom teachers, building and district administrators, and state and federal education agency officials. It also includes vocabulary used by those with dedicated expertise in assessment such as university faculty, test vendor staff, theoretical and applied psychometricians and analysts, and content-area assessment specialists<sup>10</sup>.

I do not attempt to address the totality of fractured vocabulary here, just the subset that is necessary to define a typology of assessment. As a first step, I address the scope of assessment by defining a proposed vocabulary describing units of curriculum and instruction on which assessment may be based as shown in Table 2.

Unit	Definition	Examples				
Marking Period	A unit of curriculum and instruction in which a final evaluation is noted in a student's permanent record, such as a grade, awarding or not awarding credit, or skipping a grade or course, or other permanent designation. After the final evaluation is noted in the student's permanent record, it cannot be revised using further evidence of student learning <sup>11</sup> .	<ul> <li>A grade</li> <li>A year</li> <li>A course</li> <li>A trimester</li> <li>A semester</li> </ul>				
Course of Study	Multiple related marking periods.	<ul> <li>Preschool (Pre-K)</li> <li>Early elementary (K-2)</li> <li>Late elementary (3-5)</li> <li>Middle school (6-8)</li> <li>High school (9-12)</li> <li>All grades (K-12)</li> <li>A sequence of courses</li> </ul>				
Lesson	A unit of curriculum and instruction generally consisting of a single class period or part of a school day (but which could continue into a following class period or school day).	<ul> <li>Part of a class period/school day</li> <li>A class period/school day</li> <li>Two class periods/school days</li> </ul>				
Small Unit	A unit of curriculum and instruction consisting of no more than a few lessons.	<ul> <li>Four class periods/school days</li> <li>A calendar week</li> <li>Two calendar weeks</li> <li>Less than three calendar weeks</li> </ul>				
Large Unit	A unit of curriculum and instruction larger than a small unit but smaller than a marking period.	<ul> <li>Three calendar weeks</li> <li>A calendar month</li> <li>Six calendar weeks</li> <li>Two calendar months</li> <li>Half a trimester</li> <li>Half a semester</li> <li>Half a course</li> </ul>				

**Table 2**. Units of curriculum and instruction.

<sup>&</sup>lt;sup>10</sup> This is not a reflection on individuals in the assessment community, but the community/industry as a whole.

<sup>&</sup>lt;sup>11</sup> There are some exceptional circumstances, such as a formal appeal process in which further evidence may be used to alter a grade, score, or other designation on a student's permanent record.

Second, I propose placing all assessment into two established classes<sup>12</sup> that foreground a *mindset* for assessment practice<sup>13</sup>:

- Assessment FOR learning
- Assessment OF learning

There are additional terms in common use that foreground *use* of assessment. In the *assessment for learning* class there is only one such term:

• Formative assessment

In contrast there are three such terms in the assessment of learning class:

- Summative assessment
- Interim assessment
- Benchmark assessment

All three terms have been used variously to describe an assessment that covers anything from a small unit to a course of study. Finally, there are also multiple terms in common use that describe subclasses of interim assessment:

- Minisummative interim assessment *a shortened version of a summative assessment*
- Modular interim assessment
- an assessment covering a small unit or large unit an assessment covering a small unit or large unit
- Unit interim assessment an assessment covering a small

Because these terms are used so variably but are also firmly lodged in the assessment field, I consolidate all of these terms, addressing both mindset and use into four redefined classes of assessment given in Table 3. That vast majority of terms in common use that describe various types of assessment are captured by these four classes of assessment, as shown in Table 4.

<sup>&</sup>lt;sup>12</sup> See Chappuis et al. (2004) and Stiggins (2008) as examples where this dichotomy is established.

<sup>&</sup>lt;sup>13</sup> The application of the term *mindset* to describe these classes of assessment is mine. The term *purpose* could instead by used, but I believe that *mindset* is a more powerful descriptor that better conveys the fundamental, qualitative shift between practices appropriate for assessment FOR learning and those appropriate for assessment OF learning.

#### Table 3. Redefined classes of assessment

			Encompasses at Least Some Common Uses of the Terms									
Redefined Class	Definition <sup>14</sup>	Assessment for Learning	Formative Assessment	Assessment of Learning	Summative Assessment	Interim Assessment	Benchmark Assessment	Minisummative Interim Assessment	Unit-Based Interim Assessment	Modular Interim Assessment	Use	Mindset
	Formative assessment [OF learning] is 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 more self-directed learners.											
Formative	Effective use of the formative assessment process requires students and teachers to integrate and embed the following practices in a collaborative and respectful classroom environment:										ive	ning
Assessment FOR Learning	<ul> <li>Clarifying learning goals within a broader progression of learning;</li> <li>Eliciting and analyzing evidence of student thinking;</li> <li>Engaging in self-assessment and peer feedback;</li> <li>Providing actionable feedback; and</li> <li>Using evidence and feedback to move learning forward by adjusting learning strategies, goals or next instructional steps.</li> </ul>	V	~								Formative	FOR Learning
	Used for in-the-moment and/or next-lesson course correction for teachers and their individual students, instructional groups, and/or classrooms.											
Summative Assessment OF Learning	An assessment covering a <b>marking period</b> or <b>course of study</b> given at the end of the marking period or course of study. Used for final evaluation of student learning.			V	√	V	V	V	V	√	Summative	
Minisummative Assessment OF Learning	A shortened version of a summative assessment OF learning (i.e., covering a complete marking period or course of study, but given before the marking period or course of study covered by the assessment has been completed). Used for monitoring growth over the marking period or course of study covered by the assessment.		√	√	V	V	V	V			Minisummative	OF Learning
Interim Assessment OF Learning	An assessment covering a <b>lesson<sup>15</sup></b> , <b>small unit<sup>16</sup></b> , or <b>large unit</b> of curriculum and instruction. The unit of instruction might be as long as a half a semester or as short as a single less. Used for evaluating the degree to which students have learned the content addressed in the associated unit of curriculum and instruction and assigning interim grades and/or addressing individual or group learning needs after completing the associated unit.		V	V	√	V	V		V	√	Interim	

<sup>&</sup>lt;sup>14</sup> The definition of formative assessment for learning is from FAST SCASS (2017, pp. 2-3) with the exception of the italicized portion. The remaining definitions are mine.

<sup>&</sup>lt;sup>15</sup> It is more appropriate to use formative assessment with lessons, but grades are often assigned on the basis of lesson-based interim assessments of learning (e.g., quizzes, homework).

<sup>&</sup>lt;sup>16</sup> It is generally more appropriate to use formative assessment with small units, but grades are often assigned on the basis of small-unit-based interim assessments of learning (e.g., quizzes, homework).

	commonly used to describe types of assessment organized into the four classes defined in Table 3.
Class	Examples of Commonly Used Terms for Types of Assessment (underlined)
Formative Assessment FOR Learning	<ul> <li><u>Assessment for learning</u>, <u>formative assessment</u>, and some types of <u>classwork</u> and <u>homework</u>:</li> <li><b>Ungraded</b> classwork or homework where students receive rapid feedback to inform their learning before graded classwork, homework, quizzes, or tests are assigned/administered.</li> <li><b>Ungraded</b> rounds of feedback on classwork or homework (only a final product is graded).</li> </ul>
Interim Assessment OF Learning	<ul> <li>Small-unit-based <u>classroom assessment</u> products covering less than 3 weeks developed, selected, procured, or provided by a teacher, department, school, district, or state:</li> <li>Graded daily or single-lesson-based <u>classwork</u>, <u>homework</u>, or <u>quizzes</u> such as a brief writing <u>assignment</u>, a teacher-made <u>quiz</u>, or <u>end-of-chapter questions</u> from a textbook (<i>formative assessment FOR learning</i> is more appropriate, but this example is listed because it is a common use of <i>interim assessment OF learning</i>)</li> <li>Graded weekly <u>classwork</u>, <u>homework</u>, or <u>quizzes</u> such as a weekly writing <u>assignment</u>, or a small <u>project</u>.</li> <li>A spelling <u>unit pretest</u> for a one-week unit.</li> <li>An <u>end-of-unit musical performance</u> for a 5-lesson unit.</li> <li>A <u>unit post-test</u> for a 2-week unit</li> <li>An <u>end-of-unit group project</u> and <u>presentation</u> for a 12-day unit</li> <li>An online, highly-focused <u>micro-test</u>, <u>mini-test</u> or <u>testlet</u></li> </ul>
	<ul> <li>Large-unit-based classroom assessments covering at least three weeks and less than a marking period that are developed, selected, procured, or provided by a teacher, department, school, district, or state:</li> <li>A <u>unit pretest</u> and an <u>end-of-unit performance</u> on basketball skills for a 3-week physical education (PE) unit</li> <li>A Kindergarten <i>unit pretest</i> for an 8-week reading unit to support instructional grouping</li> <li>A districtwide <u>common end-of-unit</u> written <u>exam</u> for a 6-week unit on poetry composition</li> <li>A districtwide <u>end-of-unit</u> online <u>test</u> focused on a 20-lesson Algebra I unit</li> <li>A <u>midterm assessment</u>, test, or <u>exam</u></li> <li>A <u>midterm essay</u>, paper, project, presentation, or performance</li> </ul>
Summative	Marking-period-based assessments developed, selected, procured, or provided by a teacher, department, school,
Assessment OF	district, or state. For example:
Learning	• A teacher-developed end-of-semester final exam, test, or assessment
-	• A districtwide common end-of-course final paper, project, presentation, or performance
	District-developed common end-of-grade and end-of-course tests
	<ul> <li>A state-required <u>end-of-grade assessment</u> covering each of grades 3-8</li> </ul>
	<ul> <li>An optional state-provided or required district-procured <u>end-of-year assessment</u></li> </ul>
	<ul> <li>An Advanced Placement or International Baccalaureate exam</li> </ul>
	<ul> <li>A <u>course-credit assessment</u> for "testing out" of a course</li> </ul>
	<b>Course-of-study-based</b> assessments developed, selected, procured, or provided by a school, district, state, or vendor. For example:
	<ul> <li>A state-required <u>high-school assessment</u> given in grade 11 covering multiple courses</li> </ul>
	<ul> <li>A high-school capstone project, paper, presentation, or performance</li> </ul>
	<ul> <li>A <u>college-admission exam<sup>A</sup></u>, <u>pre-college-admission exam<sup>B</sup></u>, or <u>college-course-placement exam<sup>C</sup></u></li> </ul>
	<ul> <li>A career and technical education work skills, job readiness or certificate exam<sup>D</sup></li> </ul>
	<ul> <li>A district-required graduation exam</li> </ul>
Al	
Minisummative	Shortened versions of summative assessments. For example:
Assessment OF	<ul> <li>A shortened <u>screener</u> English proficiency <u>test</u> used to identify English learners<sup>E</sup></li> <li>A shortened version of a college admission test<sup>E</sup></li> </ul>
Learning	<ul> <li>A shortened version of a <u>college-admission test</u><sup>F</sup></li> <li>An <u>assessment</u> that is computer-adaptive, covers grades K-12, is administered up to four times per year, requires less than an hour to take, and is marketed as aligned to idiosyncratic state standards, aligned to the Common</li> </ul>
	Core, aligned to the NGSS, precisely identifying where on the complete 13-grade scale each student's level of achievement is currently located, and precisely identifying the degree of academic growth she exhibited within and across grades <sup>G</sup>

#### Table 4. Terms commonly used to describe types of assessment organized into the four classes defined in Table 3.

- D See NOCTI (n.d.) for some examples.

- F See ACT (2016) for a description of the *PreACT* as a shortened version of the ACT.
- G See Northwest Evaluation Association (2018) and Scantron (2018a, 2018b), respectively, for marketing materials consistent with this description for the NWEA Common Core MAP Growth and Scantron Ascensus Growth Express assessments.

B PSAT 8/9, PSAT 10, ACT Aspire EHS, and Smarter Balanced. See ACT, Inc. (2017) for the ACT Aspire EHS (early high school) assessment and The Washington State Board of Education (2018) regarding grade 9 and 10 administration of the grade-11 Smarter Balanced summative assessment. C See The College Board (n.d.) and Smarter Balanced (n.d.), respectively, for ACCUPLACER and Smarter Balanced assessments.

E See ELPA21 (n.d.) and WIDA (2017), respectively, for descriptions of English language proficiency screeners.