DEEP DIVE: CURRENT MODELS OF STATE-LED ASSESSMENT SYSTEMS IN SCIENCE

These resources are part of a series of reports about challenges facing statewide science assessments and innovative solutions states are enacting to meet those challenges.

Transforming Science Assessment: Systems for Innovation *is a series of resources designed to provide state education leaders with 1) information about* ***how states are currently pursuing statewide assessment systems in science****; 2)* ***analyses of what features influence different approaches****, with an eye to supporting state leaders as they make their own decisions regarding science assessment systems; 3)* ***detailed state profiles*** *that highlight how and why some states have made decisions regarding designing and enacting different examples of systems of assessment; and 4)* ***a how-to guide for policymakers*** *looking to enact systems of assessment in science. Some readers may find that it is helpful to review all the resources in this series; others might be particularly interested in a specific component of this report.*

The suite of resources is organized in the following sections:

- *A high-level introduction to science standards and assessment, the need for systems of assessments in science, and two major styles of approaches that are emerging from state efforts to turn the vision for a system of assessments in science into a reality*
- *Deep dive into state-led assessment systems in science* ***(you are here)***
- *Deep dive into distributed assessment systems in science*
- *State Spotlights on systems of assessment in Nebraska, Kentucky, and Michigan*
- *A guide for policymakers to help consider how to develop and implement assessment systems*

Introduction

While there are common features of state-led assessment systems, states enacting these systems have made different decisions about how to design and implement their system based on their priorities, values, and state contexts. Here, we discuss three different models for state-led assessment systems that are currently being developed and implemented: the Centrally-Signaled Assessment System, the Centrally-Mediated Assessment System, and the Centrally-Planned Assessment System. Because many of these decisions are in progress, specific states have not been identified.

Model A: Centrally-Signaled Assessment System

In this model, **the SEA takes a central role in the design and implementation of the assessment system, with a moderate incentive structure** driven by 1) state requirements for every school to participate in the full assessment system, and 2) collection of a small sample of student work from each district in response to the through-course assessments, in addition to results from the statewide summative assessment. Relevant state contextual features and goals for assessment system include:

- Local control over curricular decisions and course maps in grades 6-12
- Legislative requirements for limited testing time, and required testing for federal accountability purposes at specific 3-5 and 6-8 grade levels as well as a high-school biology assessment
- School/district administrator desire for information to support local instructional and curriculum decisions
- Strong state leadership buy-in for science assessment system

Table 1: Centrally-Signaled Assessment System Summary

System component	Who leads development?	Content focus	Goals and intended use	Incentive structure
Instructionally-embedded assessments	Teachers, districts, curriculum designers	Wide range of targets	Provide ongoing feedback to students and teachers to inform instruction and mark progress	No formal incentive, other than 1) good classroom assessment is part of good instruction, and 2) effective classroom instruction will support students in meeting the goals that will be assessed elsewhere in the system
Interim/ through-course assessments: Task bank that educators draw from at a prescribed frequency; educator choice in tasks selected	State-coordinated	SEPs/CCCs in service of phenomena	Provide examples of high-quality assessments, including a wider range of targets (not only the PEs); provide opportunities for task-driven professional learning as educators determine which tasks to use, how to use and interpret the results; emphasize using the crosscutting concepts and science and engineering practices in service of sense-making, knowing that 1) other features might be foregrounded elsewhere in the system, and 2) this reflects the performances that should be targeted in the classroom and will be required for success on the summative	Required by the state at prescribed frequency; each district submits one piece of student work per grade (does not count for a score)
Statewide summative assessments	State-coordinated	Sample of PEs from the tested grade-level	Provide individual student scores; meet federal requirements; provide monitoring/program progress information	Required by the state; information is scored and reported to students, teachers, districts

Model B: Centrally-Mediated Assessment System

In this model, the SEA more directly determines elements of each component of the system by directly supporting formative assessment (connected to widespread use of a common curriculum in the state), developing common unit assessments that can be used across classrooms in the state, and intentionally designing summative assessments to complement the known features of the classroom-based components. In many states, this might be an approach more suited to large districts that have more direct oversight over classroom-level curricular and assessment decisions, and more direct avenues to integrating information across different assessment instruments.

This model differs from Model A in three important ways: 1) the content focus of the individual components, 2) the incentive structure and flow of assessment result information to the state, and 3) the role of the state in classroom-level assessments. Relevant state contextual factors include:

- Common curriculum supports across all districts in the state
- Teacher leaders and professional learning communities in each school
- Widespread buy-in for assessing each year
- Leadership buy-in

Table 2: Centrally-Mediated Assessment System Summary

System component	Who leads development?	Content focus	Goals and intended use	Incentive structure
Instructionally-embedded assessments	Teachers, districts, curriculum designers; state-supported processes	Wide range of targets	Provide ongoing feedback to students and teachers to inform instruction and mark progress	No formal incentive, other than 1) good classroom assessment is part of good instruction, and 2) effective classroom instruction will support students in meeting the goals that will be assessed elsewhere in the system
End of unit assessments	State-coordinated	PEs/learning goals connected to the standards that are targeted by the units of instruction	Provide information to educators and the system regarding student progress toward specific learning goals and performance expectations targeted in the preceding curriculum (near transfer)	In progress; data will be reported for group-level scores to inform programmatic progress. Students are required to take these assessments
Integrative transfer assessments	State-coordinated	Integrated across DCIs, SEPS, CCCs in the tested grades; focus on transfer and application	Provide individual student scores; meet federal requirements; provide monitoring/program progress information; provide information about whether students can use DCIs, SEPs, and CCCs learned across the year in appropriate combinations to make sense of novel phenomena and problems	Required by the state. Information is scored by the state and reported to students, teachers, districts

Model C: Centrally-Planned Assessment System (Hybrid)

In this model, the emphasis is on coherent and intentional assessment system planning and signaling. States using this model push on what can be supported and required by the state, while also including components of the system that are owned by district efforts.

This model differs from models A and B in four important ways: 1) the inclusion of incremental summative assessments in the grades not tested for federal purposes, 2) the breadth of targets for the task library component distinguishes the interim component from model A's through-course task approach, 3) the lack of a direct incentive structure for the interim component, and 4) the involvement of districts in shaping parts of the interim component. Relevant contextual factors that are shaping this assessment system include:

- Local control over curricular decisions
- Grade-leveled standards through grade 8, with recommended but not required course maps for high school
- Leadership buy-in
- Intentional stakeholder engagement to cultivate buy-in
- Small number of very large, powerful districts with specific needs and capacity

Table 3: Centrally-Planned Assessment System Summary

System component	Who leads development?	Content focus	Goals and intended use	Incentive structure
Instructionally-embedded assessments	Teachers, districts, curriculum designers; state supported examples, replacement units, professional learning, and tools/processes to support formative assessment	Wide range of targets	Provide ongoing feedback to students and teachers to inform instruction and mark progress	No formal incentive; providing replacement units and tools that are coherent with other components, and creating difficult-to-develop resources educators need
Interim task library	State-coordinated for some purposes, district-coordinated for others	Wide range of targets; state focus on highest educator needs and building out vertical coherence supports; engaging districts with capacity to focus on developing the portion of the library that focuses on a different set of priorities—enabling districts to use the assessments for local data/accountability purposes	Provide examples of high-quality assessments; provide opportunities for task-driven professional learning as educators determine which tasks to use, how to use and interpret the results; emphasize certain features such as collaboration, student choice, extended and complex performances, and reasoning about different kinds of phenomena; emphasize the areas across dimensions that are taught less frequently in classrooms	No formal incentive; being developed with an eye to meeting key educator needs and being flexible enough that districts can use these to support different uses/common assessments

Table 3: Centrally-Planned Assessment System Summary *(continued)*

System component	Who leads development?	Content focus	Goals and intended use	Incentive structure
Incremental summative assessments	State-coordinated	Small sample of standards in grades 3, 4, 6, 7, 9, 10	Provide some measure of growth; may roll into the 5th and 8th grade assessment scores, or be part of a school cross-section score each year	Required by the state
Statewide summative assessment	State-coordinated	Sample of standards; multiple SEPs, CCCs; domain integration; cross content-area integration; emphasis on application, scientific literacy	Provide individual student scores; meet federal requirements; provide monitoring/program progress information; potentially provide some measure of growth	Required by the state