



STATE SPOTLIGHT: NEBRASKA'S STATE-LED SCIENCE ASSESSMENT SYSTEM

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](#)
- [Deep dive into distributed assessment systems in science](#)
- [State Spotlights on systems of assessment in Nebraska \(you are here\), Kentucky, and Michigan](#)
- [A guide for policymakers](#) to help consider how to develop and implement assessment systems

Introduction

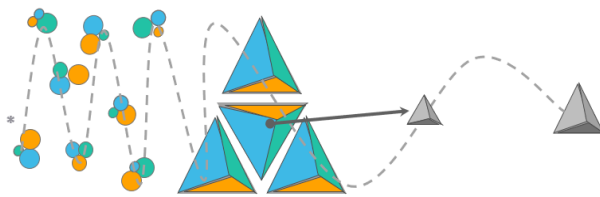
In Nebraska, the State Education Agency (SEA) is in the early stages of developing an assessment system that includes a statewide summative assessment, state-coordinated task library for each grade level and multiple purposes, and formative assessment resources and examples as part of a suite of tools to support classroom implementation. Interestingly, Nebraska is exploring a [hybrid approach](#) to their system of assessment by including distributed ownership of certain components of the system.

Nebraska's System of Assessments At A Glance

- State-coordinated task library, monitoring tasks, and statewide summative assessment components
- Complementary support for district-led task development and implementation to meet specific local needs that might not be prioritized across the state system
- Current plans include:
 - Replacement units with explicit supports for formative assessment, as examples to support educators
 - Development of a state-coordinated task library comprised of teacher-developed, rigorously vetted tasks to be used at each grade level for different purposes
 - Implementation of summative monitoring tasks in grades 3, 4, 6, 7, 9, 10 — those grades not tested for federal accountability purposes
 - State-developed summative science assessments in 5th and 8th grade; ACT in 11th grade
 - Integration of mathematics and English language arts (ELA)/literacy as appropriate
- Central messages associated with the system:
 - Assessments must be designed to build from the kinds of classroom experiences and learning goals we want for students, and used to support Nebraska's instructional shifts
 - Three-dimensional assessment requires multiple sources of evidence of student performance at different times and a range of purposes, especially classroom-based performances that can most easily demonstrate how student thinking is evolving
 - All assessments should be grounded in the core innovations of new science standards, including a focus on making sense of phenomena and problems, and sense-making using the three dimensions

Why the State-Led Hybrid Approach?

When Nebraska approved three-dimensional standards in late 2017, leadership within the SEA—across teaching and learning, and assessment—were committed to better education for all Nebraska students and saw the new science standards as a way to not only improve outcomes for students in the state, but to also connect across content areas like science, ELA, and mathematics to provide students with more meaningful and authentic learning and assessment experiences. The SEA knew that it would be a challenge to help teachers and districts transition without supports in place to support and incentivizing their instructional shifts—like many other states, the SEA has limited influence on local instructional materials decisions, but assessments are a lever the SEA can use to support change, professional learning, and illustrate what student performance should look like in all grade levels. The SEA acknowledged that assessment often drives instructional decisions, and made an intentional decision to leverage this relationship to change science teaching, learning, and assessment in the state by creating an innovative system of assessments in science.



Common Thread: Professional learning for educators

**Curriculum
Embedded
Tasks
(K-12)**

**Task
Library
(K-12)**

**Monitoring
Tasks
(3,4,6,7,9,10)**

**Statewide
Summative
(5,8,11)****

**ACT for 3rd year
cohort

Figure 1: Nebraska's Current Science Assessment System Vision

Nebraska is pursuing an assessment system that includes classroom-embedded assessments, a common task library that teachers and districts can draw from for different purposes, "monitoring tasks" administered in years not tested for federal accountability purposes to provide more regular feedback to teachers and districts, and statewide summative assessments in grades 5, 8, and 11.

Image courtesy of Nebraska Department of Education

As Nebraska's system design continued, it became clear that the SEA would have to focus on certain priorities in the short term, such as supporting effective teaching and learning through the task library development. However, they recognized that some of their larger districts might have other needs that they would want to meet with the task library. Rather than either 1) compromise on state-wide priorities that connect to the overall implementation plan and vision, or 2) ignore or devalue major district needs, the SEA decided to support and empower high-capacity and interested districts to own their own local assessment system processes, developing tasks and implementation plans that are consistent with and complement state plans, but more closely meet their local district needs.

Important State Contextual Factors

- Strong commitment and buy-in from the SEA, including the state science supervisor, the assessment director, and the chief academic officer
- Highly localized control of instructional and professional learning decisions through district- and regional offices
- SEA recognition of assessment as an important lever for instructional shifts
- Legislative requirement for ACT as the grade 11 science assessment
- Some large, high-capacity districts in the state with specific local needs
- Opportunities to network districts through state-led work as well as regional hubs

Hallmarks of Nebraska’s Approach



What is this component in Nebraska’s system?	What is the SEA’s approach in Nebraska?
<ul style="list-style-type: none"> Instructionally-relevant assessments that support daily teaching and learning in the classroom Explicitly connected to instructional materials, plans, and teacher-student interactions in individual classrooms Comprise the largest and most important body of evidence students and teachers have to ensure students are progressing toward science achievement goals Requires careful curricular decisions and educator capacity for science teaching and assessment 	<p>Examples. To support local curricular efforts, the SEA is planning on developing model replacement units with embedded supports for formative assessment processes and end-of-unit tasks that educators can use both directly and as examples to support formative assessment.</p> <p>Professional learning. The SEA plans to co-develop professional learning modules with science leaders across the state that can be delivered through an online platform, accessible to all teachers in Nebraska.</p>
<ul style="list-style-type: none"> Common, vetted library of tasks that can be administered to support a range of uses for each grade K-12 Widest and deepest alignment to standards, across the scope of the library Provide a common set of signals and calibration opportunities that can be used to support both classroom and statewide summative assessment efforts by 1) targeting student performances that are difficult to assess in other contexts (e.g., non-tested grades, practices and concepts that are difficult to elicit in an on-demand setting), and 2) providing common examples and checkpoints that are rigorously vetted and show what it should “look like” for students to meet the goals of the standards 	<p>Task library coordination. The SEA plans to work in collaboration with regional units and districts to coordinate teacher-developed tasks, including task development, vetting, scoring guides, collection of student work samples, and dissemination.</p> <p>Engage districts to take on a complementary leadership role. The SEA plans to prioritize tasks that support teaching and learning needs first and foremost, and engage high-capacity districts or networks of districts in developing consistent and complementary tasks that would support other local needs, like local accountability efforts.</p> <p>Professional learning. The SEA plans to co-develop professional learning modules with science leaders across the state that can be delivered through an online platform, accessible to all teachers in Nebraska.</p>
<ul style="list-style-type: none"> Summative tasks administered in grades 3, 4, 6, 7, 9, 10 — the grades not tested through the current statewide summative assessments Designed to 1) incentivize teaching and learning of science in all grades without increasing the summative testing and accountability requirements across the state, 2) provide more regular feedback and data for students, teachers, districts, and the SEA 	<p>Collaborative task development and implementation. While the SEA is still in early stages of conceptualizing and developing this component of the system, current plans include engaging a wide range of stakeholders in monitoring task design and use, as well as collaborating across states to increase capacity and task pool.</p>
<ul style="list-style-type: none"> Statewide assessment used to meet federal requirement Administered in grades 5 and 8, with ACT used as the grade 11 assessment On-demand assessment comprised of short tasks that can be completed in a single sitting through a combination of selected response and constructed response questions Focus on a sample of standards with an emphasis on supporting program-level (school, district, state) inferences Intentional integration of mathematics and ELA as appropriate 	<p>Assessment development and implementation. The state, working with their assessment vendor and teachers, is coordinating all aspects of the summative assessments.</p> <p>Professional learning. Educators are involved in item development and review. Accordingly, professional learning is embedded in those processes.</p> <p>Consistent signaling of instructional shifts. The SEA is paying very close attention to vision for student performance and rigorous alignment goals to ensure that all of these assessment efforts complement each other and provide consistent information for the range of purposes they are designed to meet.</p>

Keys to Success for Nebraska's System of Assessments in Science

While Nebraska is still in the early stages of defining their system, there are some emerging highlights that set their system up to be successful.

Key to Success #1: Coherence

By taking the lead in developing multiple components of the assessment system, the SEA is able to design the whole system in a way that allows different assessment approaches to connect and complement one another (Figure 2). Some examples of how this approach is influencing their specific decisions about the assessment include:

- Breadth on 5th and 8th grade summative assessments.** Like many other states, Nebraska administers one science assessment per grade band, consistent with federal requirements for science testing—and like many states, Nebraska debated whether the 5th and 8th grade assessments should include only the standards identified for those grade levels or a sample of the standards included in the 3-5 grade band and 6-8 grade band. Because their goal is a system in which students are receiving feedback at multiple points each year, Nebraska felt that narrowing the scope of their summative assessments to just the standards included in 5th grade and 8th grade would allow them to design better summative assessments without compromising feedback loops to influence science in the “non-tested” grades.
- Priorities for each part of the system.** Nebraska has an ambitious goal for their assessment system over time, and recognized that they would need to prioritize their first steps. While these decisions are still in progress, the system focus—along with careful connections with the teaching and learning components of science standards implementation plans—is helping them design intentionally. For example, since part of their focus is on a 5th and 8th grade summative assessment, they are able to think about other grade-levels and some of the newer and more challenging transitions (e.g., high school; inclusion of earth and space science; practices and crosscutting concepts as targets for student performance) as targets for the SEA's support around classroom and interim¹ assessments.

As described in figures 2 and 3, starting with a system design has enabled Nebraska to specify different sets of priorities, targets, and claims for each part of the assessment system with consistent features present in every component to balance consistency with complementary information.

- Inclusion of mathematics and ELA.** One major goal for Nebraska's educational system at large is to break down artificial barriers between content areas and support effective intersections when they are appropriate. By including multiple, varied assessment opportunities throughout the assessment system, Nebraska can intentionally consider when including mathematics and ELA is most appropriate—creating more effective feedback loops for educators, better signals about the goals for students in the state, and proof-points for integration across content areas that can influence other assessments within the science system as well as assessments in other content areas.

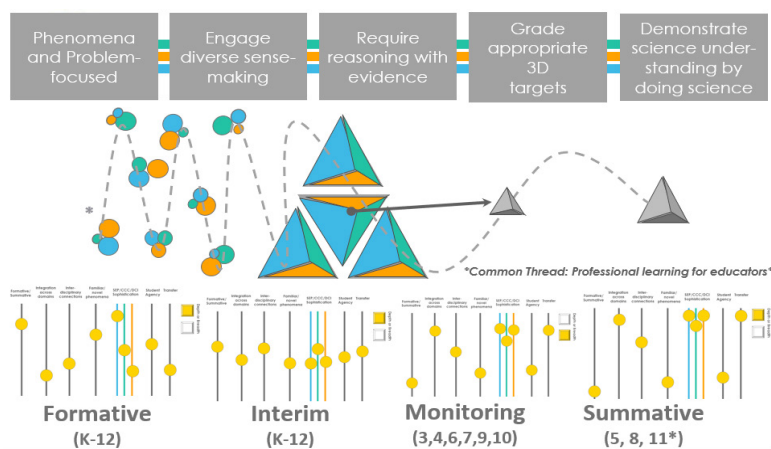


Figure 2: Common and Variable Features to Support Coherent Design Throughout the System

Along with stakeholders, Nebraska's SEA was able to identify five common priorities (top) that would provide consistency throughout the system as well as features that would vary for different purposes and system components (bottom), allowing the different assessments to provide complementary information to targeted stakeholders.

Image courtesy of Nebraska Department of Education

¹ In this suite of resources, the term “interim assessment” is used in the most general sense, to describe assessments that fall between formative and summative assessment. Interim assessments are designed to inform decisions at both the classroom level as well as beyond the classroom (e.g., school, district). They are distinguished from true formative assessments because they can be aggregated across groups of students at the classroom, school, or district level; they are distinct from statewide summative assessments because they happen during the course of instruction rather than at the end, and are intended to provide information that is relevant to individual classrooms, teachers, and students.

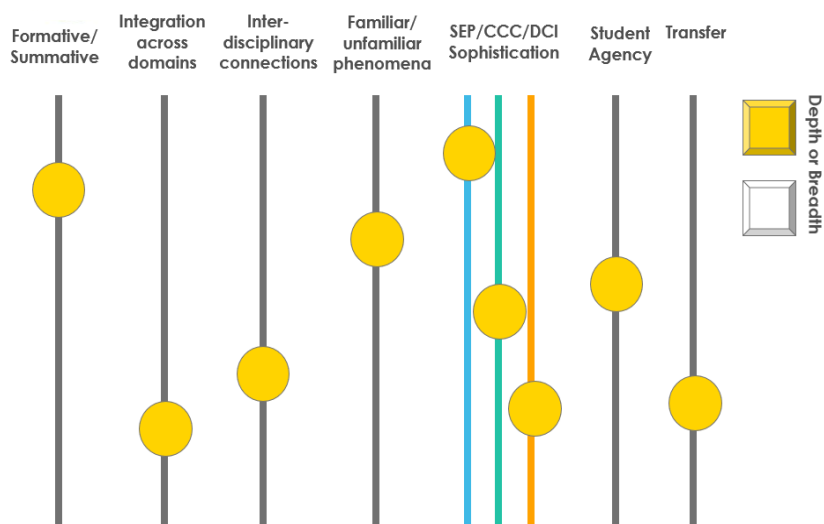


Figure 3: Variable Features to Support Coherence

Each component of the assessment system focuses on a different combination of priorities for student performance to provide information relative to different claims Nebraska wants to be able to make about student performance. These features represent the “knobs” that can be turned—dialed up or down as appropriate—to guide each assessment’s design, implementation, reporting, and interpretation.

Image courtesy of Nebraska Department of Education

Key to Success #2: Collaboration and Stakeholder Engagement

Internal collaboration and stakeholder engagement. Nebraska has made collaboration and engaging stakeholders within the SEA a major focus for their work. Beginning with standards approval, the science leads in the SEA worked together with leadership in teaching and learning more broadly (e.g., the Chief Academic Officer) to build buy-in, support, and ultimately adoption of three-dimensional standards. Soon after the standards were approved, Nebraska recognized that the new assessments being developed would have to be a collaborative effort among several areas and offices within the SEA. For example:

- Without a dedicated science assessment lead, assessment leads and science teaching and learning leads would need to work together to support effective assessment development.
- Supporting all students meant that leadership beyond science needed to be at the table. Accordingly, representatives of other relevant offices, such as special education, English learners, postsecondary approval, etc. were also brought into the process early and often.

By collaboratively developing a vision, regularly engaging other leadership within the SEA, and working together on the design for the assessment system, Nebraska has been able to move forward with an assessment system that reflects a high degree of internal perspective and expertise.

External collaboration and stakeholder engagement. Nebraska used their assessment system design as an opportunity to bring a range of stakeholders that included teachers, developers, district and regional content and professional learning leads, higher education, third party partners, assessment developers, and other staff from other parts of the SEA together to 1) generate a collective vision for science assessment in the state that represents stakeholder perspective and needs, and 2) ensure that stakeholders are informed of and influencing processes at every step of system development. Some ways Nebraska has done this have included:

- Hosting a stakeholder visioning meeting to ground the assessment system work
- Developing a science cadre of leaders in science across districts and schools throughout the state
- Engaging with district leadership regularly about updates to the science assessment system process
- Engaging teachers as the major developers of assessment tasks
- Engaging district leadership in designing system components to ensure needs are met, and empowering high-capacity districts to take a bigger role in the assessment system development
- Engaging less obvious partners—like higher education, mathematics and ELA colleagues, and local and cross-state partners—as part of the network of stakeholders directly engaged in the assessment system vision, design, and implementation

Key to Success #3: Distributed Efforts to Supplement State Goals

Nebraska is planning to go a step further than stakeholder engagement by directly supporting district-level efforts to develop complementary local systems of assessment in science that prioritize district-specific needs. The SEA is working with science leadership in major districts across the state to:

- Identify goals and uses that they need assessments to support, and articulate how this connects to statewide system goals
- Support the inclusion of “constant features” (figure 2) identified by Nebraska in local system designs and task specification
- Support the definition of district-specific variable features (figure 3) that describe the science content and performance priorities for district-developed tasks designed to meet specific purposes
- Support professional learning for task development and vetting processes
- Explore opportunities to connect district-developed tasks, supports, and processes (e.g., how student work is being used in districts) to other districts across the state
- Explore opportunities to include district-developed tasks in the state-wide task library

Central Tenet: Professional Learning

Nebraska was clear from the outset; their emphasis on a high-quality and aligned system of assessments is in service of better teaching, learning, and outcomes for all students. To this end, professional learning for teachers and administrators is both a key lever for success of the system as well as a targeted outcome. While still in the nascent stages of development, Nebraska’s plan to embed professional learning deeply into the assessment system design and development includes:

- Educator-developed tasks on the statewide summative assessment, educator content, and bias review
- Engaging regional service units to provide assessment professional learning to support classroom embedded assessments
- Leveraging the task library development and implementation to support educator professional learning
- Student work analysis with teams of educators