



New Mexico

Building Science Leaders

Network

Building Science Leaders Network: Fostering Systems That Support Science HQIM Implementation



The urgency of this moment is hard to ignore. For the first time since 2011 the Nation's Report Card (2024) has identified more 8th graders at “below basic” (38%) in science than at or above proficient (31%).

An Evolving Landscape for Science Learning

Science education has reached an exciting, pivotal moment. In 2012, a committee of scientists, engineers, researchers, and educators drew on decades of research to draft *A Framework for K-12 Science Education*,¹ an ambitious new vision of science learning that engages students in the process of meaning-making about the world around them. That set in motion efforts across the United States to implement this vision. The shift from students passively learning about science to actively engaging in the intellectual work of answering meaningful questions and solving real problems has such a profound effect on how science is taught that materials designed for previous standards cannot simply be retrofitted to meet the new standards.

Nearly all states have adopted standards based on the Framework (e.g., Next Generation Science Standards [NGSS]) and have released guidelines for selecting standards-aligned instructional materials. Yet, in the absence of a system of supports that helps deliver on the promise of these standards, both low- and high-performing students have shown declining achievement on state science tests.

Now, more than a decade later, many of the essential pieces needed to reverse this trend are coming into place. Comprehensive high-quality instructional materials (HQIM) for science are now available for grades K–12. And science assessments in which students use evidence to reason about authentic, complex scenarios are replacing rote measures of disconnected facts and concepts.

Leaders across the country are recognizing that meeting state and local initiatives by providing teachers with access to HQIM and assessments is necessary for mobilizing a transformation in science teaching. But simply providing access to these materials is not sufficient. All parts of the instructional system **need to work in concert** to improve science teaching and learning.

New Mexico's Building Science Leaders Network (BSLN)

State leaders in New Mexico responded to this challenge by partnering with WestEd's K-12 Alliance and SCALE Science to create a network that brings together school and district science leadership teams from across the state that are committed to taking a systemic view of instructional improvements in science.

Teams composed of various combinations of district leaders, school leaders, instructional coaches, and teachers began meeting during the 2023–24 school year to analyze, plan, and implement initiatives in their own districts and share insights and resources across the state. Over the 2025–26 school year, district teams used resources and practices they developed in the network to support **more than 4,000 teachers and leaders** across the state in strengthening their science instruction and assessment practices.

Improving science teaching and learning includes dismantling structural hurdles like having access to the right materials, prep time to set up the materials, and collaboration time with other teachers to analyze and plan instruction that is responsive to the rich, complex student data these lessons and related assessments produce. Policy-related hurdles also must be addressed, as they often become the strongest barriers to transforming instruction, such as reduced instructional time for science so that teachers cannot implement the lessons or unchanged tools for teacher evaluation such that adopting new practices could harm their performance reviews. This is in addition to the challenge of shifting the role of teachers to support students being the ones to ask questions, investigate, and work with evidence and models.

The Building Science Leaders Network (BSLN) is a 3-year program that guides teams through developing their own disciplinary leadership knowledge and practices to dismantle these hurdles and implement new, sustainable systems for improving science teaching and learning.



Providing teachers with access to HQIM is necessary for mobilizing a transformation in science teaching across the United States, but ...

- ▶ Early signs are underscoring that simple access to HQIM is not enough.²

and ...

- ▶ All parts of the instructional system need to work in concert to improve science teaching and learning.³

which means ...

- ▶ Leaders need to clear a path for job-embedded opportunities for teachers to learn how to work with the materials,, at a time when few teachers are getting professional learning (PL) focused on science teaching.⁴

Year 1

Year 1 activities attend to each layer of the system. Teams learn the foundational knowledge and practices of science leadership and how they can foster the interactions of teachers, students, and resources to support rigorous and equitable science learning environments. Teams also take a systemic perspective (Figure 1), considering the processes for initiating and sustaining equitable systemic change. With these lenses, teams begin developing their identity as science leaders responsible for clearing barriers and cultivating expertise among teachers and administrators.

Year 2

In **Year 2**, teams use data-driven improvement cycles to take action and implement supports for teachers to use HQIM to facilitate student sensemaking in science.

Year 3

In **Year 3**, teams shift their attention beyond their own direct areas of influence and use data to plan and carry out actions needed for systemwide change. These actions attend to the people, policies, processes, and practices that can amplify and sustain improvements to science teaching and learning.

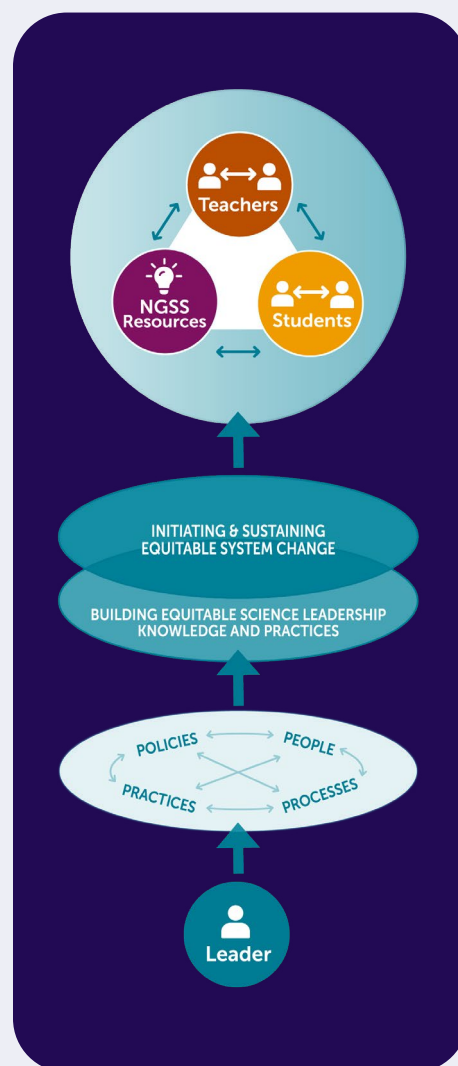


Figure 1. BSLN Framework for Leading System Change

“By having team members from different areas, the director of curriculum and instruction, teachers, and instructional coaches, you get different viewpoints. We have been able to view science from all lenses and come up with new ideas. The variety of perspectives strengthens collaboration, helps connect classroom practice to district goals, and supports more thoughtful, well-rounded planning that better meets the needs of educators and students.”

A Framework for Supporting Student Sensemaking

BSLN participants were encountering a common pitfall with science: a focus on implementing the standards at the expense of envisioning a way to transform learning and instruction by engaging students in meaning-making. The Framework for Supporting Student Sensemaking (Sensemaking Framework) emerged from this need to refocus around a common vision for shifting classroom practice in order to successfully leverage the benefits of their HQIM and meet the intent of the standards.

Although many of the adopted instructional materials are designed to foreground key elements of the Sensemaking Framework, leaders found that teachers still needed to develop instructional practices that center students in the classroom. BSLN resources elaborate on each element of the Sensemaking Framework, as shown in the excerpt here, and detail concrete examples of evidence for each element. Leaders work with teachers to select focal features of sensemaking that they will use to deepen their instructional practice, and these focal features are used to ground sequences of PL activities and subsequent classroom observation/feedback cycles.

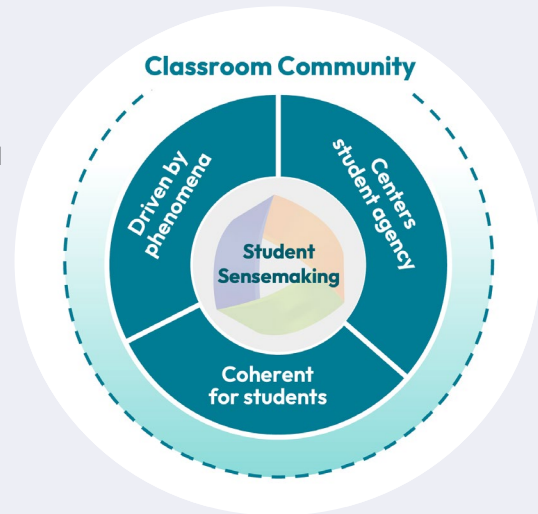


Figure 2. The Framework for Supporting Student Sensemaking

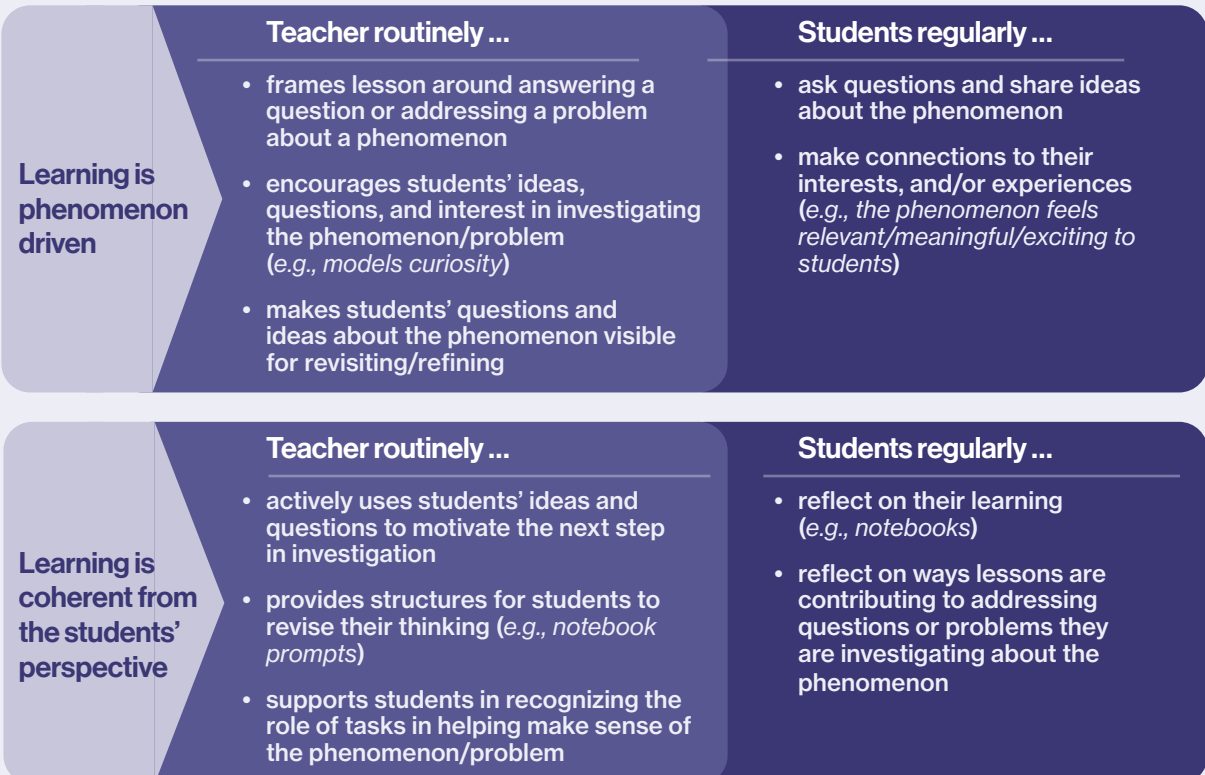
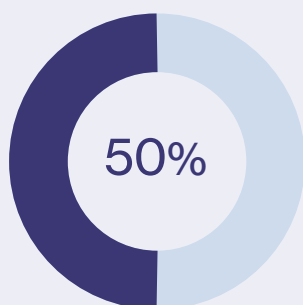


Figure 3. From the Sensemaking Framework Showing Select Teacher Practices and Student Behaviors That Can Be Observed as Evidence of the Element in Science Classrooms

Reflections on Supporting the Move Toward Sensemaking in Science

Teams in their first year of BSLN saw the greatest growth in their preparation as science leaders.



Before joining BSLN, only 50 percent of leaders felt prepared to support teachers in implementing the Framework-based standards.



After 1 year in the network, 100% of leaders felt prepared to support teachers.



After 2 years in the network, nearly all leaders (95%) felt prepared to provide **even deeper supports**, such as engaging teachers in student work analysis to reflect on progress with the standards.

Year 2 BSLN participants used the focal areas of the Sensemaking Framework they selected to support their work of strengthening and scaling their improvements by

- developing and implementing continuous improvement plans, including strategic plans that coordinate PL opportunities at all levels of the system in working in concert to improve science teaching;
- diving deep into the curriculum to plan and implement ongoing, embedded PL to support teachers in using HQIM—in concert with high-leverage instruction and assessment practices—to engage students in scientific sensemaking; and
- creating systems to extend PL supports into the classroom with observation and feedback tools and processes that continue to cultivate teachers' development of focal instruction and assessment practices.

Several themes emerged from the teams' reflections about **factors that were instrumental** in enabling them to transform science teaching and learning in their school or district.

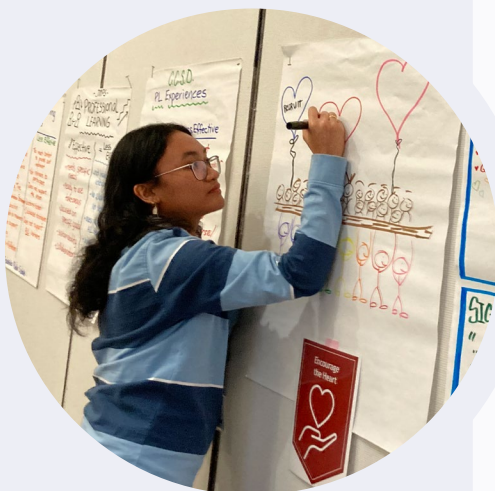
Resources that help leaders envision sensemaking in action gives them a common language that helps establish a concrete set of goals for each level of the system.

“The [sensemaking] framework helped me better recognize how students engage in the [3 dimensions]. It has improved my ability to provide meaningful feedback to teachers and peers by focusing more on student thinking, inquiry, and real-world application of science concepts.”



Teams composed of members with diverse roles are vital to effective planning. Bringing a variety of perspectives helps connect classroom practice to district goals, helping teams ensure that they are meeting the needs of leaders, educators, and students.

Implementing new HQIM for science demands new approaches to instruction. PL needs to support teachers in focusing on student thinking and developing the high-leverage instruction, assessment practices, and data-informed planning that enable them to use their HQIM to work toward the Framework's vision.



“Learning the steps and strategies of [professional learning communities (PLCs)] through an NGSS pedagogy lens has strengthened my work at my school site by making collaboration more intentional and instruction more coherent.

Using PLC structures such as setting shared learning goals, analyzing student evidence, and planning instruction collaboratively has helped our team stay focused on student thinking rather than just activities or pacing.”

The tools that district teams are creating for strategic planning are vital for raising the awareness of decision-makers about the ways each component of the instructional system can be made more coherent and what it would take to bring them into alignment.

The network and the district teams **offer some consistency that enables improvement work to continue** even as policy and personnel change.



“During a period of uncertainty for my school, I was able to take the vision and leadership tenets to the staff to instill and provide support in them seeing themselves as leaders.”

The work the BSLN teams are doing to synchronize their systems around a vision for sensemaking in science is extending to subjects beyond science.

The bottom line is that collaboration is key. BSLN participants cited working with their team and the broader BSLN community as vital to their ability to affect change at home because this collaboration:

- helps them plan with a bigger picture in view,
- provides them with complementary knowledge and perspectives,
- helps them feel less alone in their struggles and come up with solutions together, and
- opens their eyes to the people and resources to tap into when they struggle

“I feel like prior to joining this group, I was unprepared to support teachers and the shifts and teaching science. My goals have now changed from how I can support them to how I can grow the practice and how I can better support not only my school, but the entire district.”

Endnotes

- 1 National Research Council (2012). *A Framework for K-12 Science Education: Practices, crosscutting concepts, and core ideas*. The National Academies Press.
- 2 RAND Corporation. (n.d.). *Coherent instructional systems*. <https://www.rand.org/education-employment-infrastructure/projects/coherent-instructional-systems.html>
- 3 Shapiro, A. (2026). *Standards-aligned instructional materials use and science practices in K-12 schools: Findings from the Spring 2025 American Instructional Resources Survey*. RAND Corporation. https://www.rand.org/content/dam/rand/pubs/research_reports/RRA4500/RRA4594-3/RAND_RRA4594-3.pdf
- 4 Horizon Research, Inc. (2019). *Highlights from the 2018 NSSME+*. <https://www.horizon-research.com/NSSME/wp-content/uploads/2019/01/Highlights-from-2018-NSSME.pdf>