NATIONAL ACADEMIES Sciences Engineering Medicine

Collaborative for Advancing Science Teaching and Learning in K-12 Webinar Series for the Japan Society for Science Education

Webinar 1: What Is Three-Dimensional Learning in Science?

July 30, 2026 · 7:00–8:00AM ET · Register Now!

This webinar will introduce the conceptual foundations of three-dimensional learning in science as articulated in the *Framework for K–12 Science Education* and the Next Generation Science Standards (NGSS) in the United States. Participants will explore how the integration of three dimensions–disciplinary core ideas, science and engineering practices, and crosscutting concepts–represents a significant departure from traditional approaches to science instruction, shifting the emphasis from knowledge recall toward students actively constructing explanations of natural phenomena. The session will provide a clear grounding in the rationale, structure, and goals of this instructional vision. Participants will come away with a concrete understanding of how three-dimensional learning differs from prior standards-based approaches and what it looks like in classroom practice.

Webinar 2: Human Capital and Infrastructure Needs for Supporting Three-Dimensional Learning in the Classroom

August 20, 2026 · 7:00–8:00AM ET · Register Now!

Realizing the vision of three-dimensional science learning requires sustained investment in both human capacity and institutional infrastructure. This webinar will examine the conditions necessary to support three-dimensional instruction at scale, including teacher preparation and professional learning, high-quality instructional materials, aligned assessment systems, and supportive leadership at the school and district levels. Participants will consider the interconnected roles of educators, administrators, teacher educators, and policymakers in building and sustaining these systems of support. A key takeaway will be a framework for identifying which capacity-building priorities are most critical at different stages of standards implementation–offering participants a lens they can apply to their own national or regional contexts.

Webinar 3: Common Implementation Challenges and Strategies for Addressing Them

October 22, 2026 · 7:00–8:00AM ET · Register Now!

The path from adopting ambitious science standards to achieving consistent, equitable classroom instruction presents significant challenges for education systems at every level. This webinar will address the most prevalent obstacles encountered during implementation of Framework-inspired standards in the United States, including competing instructional priorities, limited time allocated to science, assessment systems misaligned with three-dimensional learning goals, and inequitable access to high-quality science education. Presenters will share evidence-informed strategies and illustrative examples from states and districts that have made meaningful progress in overcoming these barriers. Participants will leave with at least two to three actionable strategies for addressing implementation challenges that are common across diverse educational contexts, including those outside the United States.

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More about CASTL-K12:

The Collaborative for Advancing Science Teaching and Learning in K-12 (CASTL-K12) at the U.S. National Academies of Sciences, Engineering, and Medicine convenes science education stakeholders at the local, state, and national levels to develop evidence-based policies and practices for implementing and supporting state-level science standards aligned to the vision of *A Framework for K-12 Science Education*. CASTL-K12 serves a coordinating body to bring together a diverse cadre of Core Member Organizations to pursue three primary goals:

- launch and coordinate a networked community of practice for actors at all levels and across sectors to create the conditions necessary for implementation of Framework-grounded standards,
- build on and share existing evidence-based policies, tools, and examples for actors to leverage in their work promoting standards implementation, and
- develop a coherent set of policy, research, and practice agendas that collectively support a clear vision for implementation of science standards in the United States.

To achieve these goals, Core Member Organizations have committed to participate in Topical Working Group aimed at improving implementation in specific areas, including: Elementary Science; Retaining and Sustaining High-Quality Science Educators; Empowering School and Instructional Leaders; and Understanding and Navigating the Policy Conditions for Implementation.

The work of CASTL-K12 is supported by a National Academies-appointed Steering Committee and our Funder Advisory Network. As part of these efforts, core members can ground their ongoing work in the best available research and evidence on successful implementation of standards and help drive the national conversation on the future of science education in the United States.

Please visit our website for more information about CASTL-K12:
https://www.nationalacademies.org/units/DBASSE-BOSE-23-02

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