



How should districts and schools focus professional development when starting to implement NGSS?

What Is The Issue?

The changes called for in the [Framework for K-12 Science Education](#) and [NGSS](#) require significant learning for teachers of K-12 science. Teacher learning will take time. It needs to be sequenced so that topics addressed can be put to immediate use and also fuel professional learning into the future. Long-term professional development (PD) plans should be informed by emerging developments in NGSS-aligned resources, tools, and instructional materials as they are shared across states and networks.

WHY IT MATTERS TO YOU

- **Teachers** should prioritize learning based on what is actionable now, within their current curriculum, as members of their school science departments or grade-level teams.
- **District staff** and **PD providers** should coordinate their plans with existing material resources and adoption timelines, local expertise, and other district initiatives.
- **School leaders** should support the coordination of school and district initiatives and consider the purview of school vs. district leadership.

Things To Consider

- Be selective about the scope of the PD in order to avoid overwhelming participants. Without intensive support, teachers can't effectively learn and put into practice new content, pedagogical content, and curriculum. Focus PD on specific, high-leverage teaching moves—don't try to “cover” all of the standards.
- [Integrate Disciplinary Core Ideas \(DCIs\) with Practices and connect to Cross-Cutting Concepts \(CCCs\)](#). Focusing early PD efforts on DCIs and/or CCCs in absence of the Practices will likely result in educators teaching new content in old ways—and fail to achieve the integrated vision of the NGSS and Framework. Emphasize learning DCIs through Practices. [CCCs require systemic, repeated, and coherent attention throughout a curriculum across multiple grade levels](#), so they're difficult to put into practice in the short term.
- From this 3D perspective on learning, focus early PD efforts on a subset of the Science and Engineering Practices. This can support changes in instruction in the short term while laying important groundwork for future PD. Less is more.
- Consider the state of current instruction in your local context when prioritizing practices. [Constructing Explanations](#), [Designing Solutions](#), and [Engaging in Argument from Evidence](#) may be productive starting points because aspects of these practices may be recognizable in current instruction, but are not so familiar as to elicit the response, “This is nothing new.” A focus on these practices [naturally leads to consideration of the other practices](#).
- Coordinate with other policy initiatives. Many initiatives compete for attention and place demands on teachers (e.g., Common Core, Teacher Evaluation, Standards-Based Grading). NGSS PD will be more successful if it is integrated with other policy initiatives and resources and responds to challenges teachers already feel.

Attending To Equity

- Focusing instruction on Science and Engineering Practices is particularly demanding for English Learners, and [teachers must intentionally build a classroom culture that values and builds on contributions from students of all backgrounds](#). PD for teachers should support [inclusive classroom cultures for all learners](#).
- Integrating Science and Engineering Practices into instruction creates classroom experiences that parallel scientific ones. [All students should have opportunities](#) to engage in scientific practices and engineering design in order to deepen their understanding of STEM disciplines and to develop STEM-related identities.

REFLECTION QUESTIONS

- What resources (time, money, materials, and expertise) do you have to invest in PD?
- What challenges faced by teachers, including those not related to NGSS, will your PD address?
- How will learning in early stages of your PD serve as a resource for learning in later stages?
- How will you plan to assess early effectiveness of your PD and modify in response?

Recommended Actions You Can Take

- Analyze the policy landscape in which your PD will occur and coordinate with local and district administration.
- A limited number of NGSS-aligned curricula are currently available. However, few districts are likely to pursue curriculum adoptions immediately. [Consider curriculum adaptation with a focus on Practices for early PD efforts](#). Review current instructional materials and determine which ones can be adapted to emphasize the Practices.
- Form a strong team of practitioners and PD providers (and, if possible, scientists and educational researchers) to make adaptations, test them, and refine them.

ALSO SEE STEM TEACHING TOOLS:

- #4 [Multiple Instructional Models](#)
- #5 [Curriculum Adaptation](#)
- #14 [Why NGSS?](#)

