



Science Education for a New Generation

Progressing from A K-12 Framework to Next Generation Science Standards

In 2008, discussions began among states and science education organizations interested in working collaboratively with the National Research Council (NRC) to develop shared science education standards. After many meetings and discussions, the Board on Science Education led an effort to obtain funding for this endeavor. In the fall of 2009, the board appointed an 18-member committee consisting of scientists and education experts to develop a framework for science education. The resulting report, *A Framework for K-12 Science Education*, identifies the key scientific practices, concepts, and ideas that all students should know and be able to do at the end of grade-bands K-2, 3-5, 6-8, and at the completion of high school. Additionally, the report provides a foundation of research for the actions recommended for new science standards. The recommendations include broad goals and a clear vision for science education.

Building on the release of the NRC Framework, twenty-six states and Achieve have joined together to lead the development of the Next Generation Science Standards (NGSS). Participating as a Lead State in this effort provides the opportunity to inform and shape the development of the standards. It also commits states to seriously consider adopting the finalized NGSS through the normal state process for adoption and implementation of standards.

NGSS will be based upon the vision of what it means to be proficient in science described in the Framework. This vision rests on a view of science as both a body of knowledge and an evidence-based, model and theory building enterprise that continually extends, refines, and revises knowledge. It presents three dimensions that will be combined to form each standard: Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas. The NGSS will provide a stronger emphasis on progressions of learning to ensure students are well supported over time as they move from early and experiential conceptions of science and engineering principles to more scientifically accurate and sophisticated conceptions of those principles. The NGSS will describe college and career readiness from a scientific perspective that is informed by international benchmarks (science expectations from other countries). Finally, the NGSS will draw more explicit connections to the Common Core State Standards in English Language Arts/Literacy and Mathematics.

What is the role of educators at this time?

Educators with a deep understanding of the Framework are critical for providing informed input during the standards' development process. There will be two opportunities to provide feedback about the NGSS. The first opportunity will be in May 2012 when the NGSS draft is released. The second opportunity will be in late November. Work can begin through dialogue with colleagues, engagement of professional learning communities in studying the Framework, and professional reflection on the nature of meaningful changes in each aspect of the science education system. Deep understanding should lead to new ways of conceptualizing assessment of curriculum, instruction, and professional development. A shift to a new vision for student learning in science should change the way professional development is developed and delivered. These early steps for educators are clearly predicated on a deep understanding of the Framework. The science education community as a whole needs to engage in this change by initiating discussions, developing plans of action, and mobilizing support and resources at the local, state, regional, and national levels.