

This document outlines the key conceptual shifts in the Next Generation Science Standards (NGSS), emphasizing a more integrated, coherent, and application-focused approach to K–12 science education.

**Overview of NGSS Conceptual Shifts** The NGSS aim to improve science education by aligning standards with a new vision based on the Framework for K–12 Science Education. They promote interconnected learning, emphasizing practices, crosscutting concepts, and core ideas, moving away from traditional isolated facts.

**Interconnected Nature of Science** Students should engage with science as practiced in the real world, integrating three dimensions—science and engineering practices, crosscutting concepts, and disciplinary core ideas—within instruction and assessment. This integration fosters contextual understanding, application, and deeper comprehension, moving beyond memorization.

**Performance Expectations, Not Curriculum** NGSS define what students should know and do by the end of a grade or grade band, but do not prescribe specific curricula. Instruction should support the practices and concepts outlined, with an emphasis on applying knowledge through modeling and other practices throughout the year, not just in isolated units.

**Coherent, Long-term Learning Progressions** Core ideas are developed progressively from K–12, with a focus on coherence and depth. Learning progressions map how understanding matures over time, requiring content from earlier grades to be mastered for success later, ensuring cumulative and connected scientific literacy.

**Deeper Content Understanding and Application** The standards prioritize understanding core ideas over memorizing facts. Engaging in scientific practices helps students develop expertise, enabling them to organize and apply knowledge effectively, fostering critical thinking and problem-solving skills.

**Integration of Science, Engineering, and Technology** Engineering and technology are integrated into science education at all levels, elevating design and technological concepts to the same importance as scientific inquiry. This integration addresses societal challenges and provides practical opportunities for applying scientific knowledge.

**Preparation for College, Careers, and Citizenship** The NGSS aim to equip all students with scientific literacy necessary for informed decision-making, innovation, and participation in a complex world, emphasizing the relevance of science to everyday life and future opportunities.

**Alignment with Common Core Standards** The NGSS are aligned with the Common Core State Standards in English and Math, promoting a cohesive educational experience. This alignment supports equitable access to standards and enhances language and literacy development within science learning.

Overall, the NGSS represent a shift toward a more integrated, practice-oriented, and coherent science education that prepares students for higher education, careers, and active citizenship.