FLINN SCIENTIFIC

Next Generation Science Standards

Basic Glossary Terms

Anchoring Phenomena
Observable occurrences, meant to be puzzling to hook student interest. Usually require a number of lessons to study since they are rich and complex. Introduced to students through some sort of activity, such as a video, demonstration, first-hand experience or reading.

Assessment Boundary
A statement that provides guidance about the scope of the performance expectation at a particular grade level.

Bread Crumbs
When engaging in investigative phenomena, used to guide students toward the scientifically accepted understanding.

Bundling
The act of taking on multiple performance expectations in order to see the connections between discrete ideas and enhance phenomena-driven instruction.

Clarification Statement
Examples or additional explanations pertaining to and appearing beneath the performance expectation.

Coherence
Building on knowledge and using skills to gain in-depth understanding of connected concepts and content using the elements of phenomena, questioning, practices and ongoing new ideas.

Components
Referring to a scientific model, the relevant parts of a developing model being used to explain phenomena or an aspect of the phenomena.

Connection Boxes
Three Connection Boxes appear below the Foundation Boxes and are designed to show how the performance expectations for each standard connect to other performance expectations in science and Common Core State Standards (CCSS).

Crosscutting Concepts (CCCs)
Used to connect knowledge from various fields of science together. The "lens" by which students study a particular phenomenon. There are 7 Crosscutting Concepts: Patterns, Cause and Effect, Scale, Proportion and Quantity, Systems and System Models, Energy and Matter, Structure and Function and Stability and Change. For descriptions on each of the 7 CCCs, visit **https://ngss.nsta.org/CrosscuttingConceptsFull.aspx.**

Disciplinary Core Ideas (DCIs)
Focus on the key organizing curricular aspects of science for K–12 education, including multiple science domains and/or engineering disciplines. They are taught at increasing levels of depth and sophistication from elementary to middle to high school, are usually related to student interests and experiences and provide tools for investigating complex ideas and scientific problems. All DCIs are grouped in four domains for all grade levels: physical sciences; life sciences; earth and space sciences; and engineering, technology and applications of science. Each DCI is broken into discrete elements that take place in a lesson or unit of study. For descriptions of each domain, visit **https://ngss.nsta.org/DisciplinaryCoreIdeasTop.aspx.**

Driving Questions
Questions that jump start inquiry, they serve as big ideas, a guide with a focus on project-based teacher planning and a challenge and frame for student work. They are used to engage students in the study of phenomena.

Elements
Bullet points that appear beneath the science and engineering practices, disciplinary core ideas and crosscutting concepts that make up the Foundation Box. They are specific to each grade level.

EQuIP Rubric
EQuIP stands for Educators Evaluating the Quality of Instructional Products. The rubric was developed to help educators evaluate materials aligned to both Next Generation Science Standards (NGSS) & the Common Core State Standards (CCSS).

Everyday Phenomena
Come from students' personal experiences or ideas in their world; can be used as either anchoring or investigative phenomena.

Formative Assessment
Strategies used during instruction that assist with ongoing teaching and learning and help improve student understanding and achievement of intended instructional outcomes. Example strategies include graphic organizers, think-pair-share, jigsaws, higher order questioning, analyzing student work and exit tickets.

Foundation Box
Appears beneath what is being assessed and contains the science and engineering practices, disciplinary core ideas and crosscutting concepts that are used to develop the performance expectations.

Information Frame
Instruction that encourages students to know information but not necessarily to understand science.

Investigative Phenomena
Evidence for students to use when developing their models.

Models
What scientists use to explain phenomena. Types of models include consensus, which are used to gain collective judgment; and incremental, which are designed, implemented and tested over time or the life of the lesson or storyline.

Performance Expectations
Performance expectations state "what students should be able to do in order to demonstrate that they have met the standard." Each performance expectation combines science and engineering practices, disciplinary core ideas and crosscutting concepts into a single statement of what is to be assessed.

Phenomena
Something in the world that is happening—an event or a specific example of a general process that we need science to explain. Usually something observable by the senses. Students explain phenomena using the science and engineering practices. With carefully selected phenomena, teachers guide students to the scientific understandings of the world described in disciplinary core ideas. Types include anchoring, which serve as a hook or way to engage students in the learning; investigative, which are used to assist students in developing and building models as well as explain their thinking on the questions surrounding the phenomena; and everyday, which come from students' personal experiences or ideas in their world. Everyday phenomena can be either anchoring or investigative.

Progression
The basis on which student performance expectations in the NGSS are built. It is studying and understanding how students learn over time and with developing levels of depth.

Science & Engineering Practices (SEP)
The process and behaviors that scientists engage in to create scientific models and engineers use to develop and design models and systems. There are 8 practices: asking questions and defining problems; developing and using models; planning and carrying out investigations; analyzing and interpreting data; using mathematics and computational thinking; constructing explanations and

designing solutions; engaging in argument from evidence; and obtaining, evaluating, and communicating information. For detailed descriptions of each of the practices, visit **https://ngss.nsta.org/PracticesFull.aspx.**

Science Storylines
A coherent sequence of lessons in which each step is driven by students' questions that arise from their interactions with phenomena. See **www.nextgenstorylines.org.**

Sense-Making Frame
Instruction that encourages students to focus on a concept of science and develop deep understanding. It is based on figuring things out rather than acquiring information. There is an emphasis on combining knowledge with practice and teaching students to develop ideas and evaluate them according to scientific principles.

Summative Assessment
Comprehensive tests or exams designed to evaluate student learning at the end of an instructional unit or timeframe for learning. Examples include end of chapter tests, state or district benchmark exams, measures for annual yearly progress and report cards.

The "Framework"
Developed by the National Research Council (NRC) in 2011, A Framework for K–12 Science Education is the seminal document from which the NGSS are derived.

Three-Dimensional Learning
Learning that combines the NGSS foundations of disciplinary core ideas, science and engineering practices and crosscutting concept in a lesson or unit.

SOURCES

NGSS, For States, By States, "How to Read the Next Generation Science Standards (NGSS)"

NGSS@NSTA - A Look at the Next Generation Science Standards https://www.nextgenscience.org/glossary

Making Sense of the 3D's at STEM Forum - Live Workshop

NGSS@NSTA - www.nsta.org/ngss - "Inside the NGSS Box"

https://www.bie.org/object/webinars_archived/driving_questions

https://www.nap.edu/read/18290/chapter/12

SCIENCE AND ENGINEERING PRACTICES IN THE NEXT GENERATION SCIENCE STANDARDS

Matrix of Disciplinary Core Ideas http://nstahosted.org/pdfs/ngss/20130509/MatrixOfDisciplinaryCoreIdeasIn-NGSS-May2013.pdf

Formative Assessment; https://www.nextgenscience.org/glossary/formative-assessment

Return to Next Generation Standards Product Page