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Description automatically generated with medium confidenceNext Generation Science Standards at a Glance

**Tip Sheet**



**What to do:** Use this overview of the Next Generation Science Standards to help you design activities that address important science concepts and skills. Consult school-day teachers to identify which ones your students need to master. For more about the standards, visit [http://www.nextgenscience.org](http://www.nextgenscience.org/).

**Why it matters:** Activities that address the three dimensions described below can help students learn content, the scientific approach, and universal ideas at the same time, which reflects how science is practiced in the real world.

# Dimension 1: Science and Engineering Practices

Science and engineering practices are behaviors that scientists use to investigate the natural world and engineers use to design solutions to problems. These practices demand both knowledge and skills. Examples include:

* 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
* Obtaining, evaluating, and communicating information

# Dimension 2: Crosscutting Concepts

Crosscutting concepts are universal ideas that students will encounter across various scientific fields of study such as geology, biology, astronomy, and engineering. Here are examples:

* Patterns, similarity, and difference
* Cause and effect
* Scale, proportion, and quantity
* Systems and system models
* Energy and matter
* Structure and function
* Stability and change

*Research is formalized curiosity.  
It is poking and prying with a purpose.*

— Zora Neale Hurston

# Dimension 3: Disciplinary Core Ideas

Core ideas in the four domains listed below help to focus curriculum, instruction, and assessment on the most important aspects of science. The ideas help to organize concepts, provide tools for understanding or investigating ideas, relate to societal or personal concerns, and can be taught and learned at increasing levels of depth and sophistication over multiple grades. They include:

## Physical Sciences Core Ideas

* Matter and its interactions
* Motion and stability
* Energy
* Waves and their applications

## Life Sciences Core Ideas

* From molecules to organisms
* Ecosystems
* Heredity
* Biological evolution

## Earth and Space Sciences Core Ideas

* Earth’s place in the universe
* Earth’s systems
* Earth and human activity

## Engineering, Technology, and Applications of Science Core Ideas

* Engineering design
* Links among engineering, technology, science, and society



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