

Three dimensions of NGSS reference



3-D learning engages students in using scientific and engineering practices and applying crosscutting concepts as tools to develop understanding of and solve challenging problems related to disciplinary core ideas.

Science and Engineering Practices

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| <ol style="list-style-type: none">1. Asking Questions and Defining Problems2. Developing and Using Models3. Planning and Carrying Out Investigations4. Analyzing and Interpreting Data | <ol style="list-style-type: none">5. Using Mathematics and Computational Thinking6. Constructing Explanations and Designing Solutions7. Engaging in Argument from Evidence8. Obtaining, Evaluating, and Communicating Information |
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Disciplinary Core Ideas

Earth and Space Sciences:

ESS1: Earth's Place in the Universe
ESS2: Earth's Systems
ESS3: Earth and Human Activity

Life Sciences:

LS1: From Molecules to Organisms
LS2: Ecosystems
LS3: Heredity
LS4: Biological Evolution

Physical Sciences:

PS1: Matter and its Interactions
PS2: Motion and Stability
PS3: Energy
PS4: Waves and their Applications

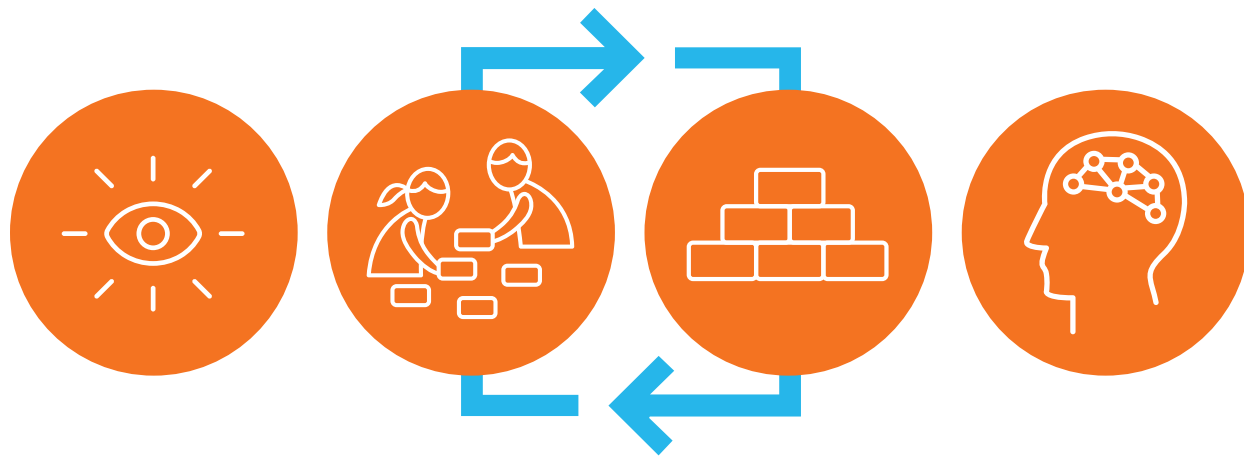
Engineering, Technology and the Applications of Science:

ETS1: Engineering Design
ETS2: Links among Engineering Technology, Science and Society

Crosscutting Concepts

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| <ol style="list-style-type: none">1. Patterns2. Cause and Effect3. Scale, Proportion, and Quantity4. Systems and System Models | <ol style="list-style-type: none">5. Energy and Matter6. Structure and Function7. Stability and Change |
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Amplify Science approach



Introduce a **phenomenon**
and a related problem

Collect **evidence** from
multiple sources

Build increasingly
complex **explanations**

Apply knowledge to a
different context

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