

The Next Generation Science Standards

Crosscutting Concepts



The Framework

Every NGSS standard has three dimensions:



Science and Engineering Practices

- *the major practices that scientists employ as they investigate and build models and theories about the world*
- *a key set of engineering practices that engineers use as they design and build systems*

The “How”

Disciplinary Core Ideas (DCI)

- *...an important role of science education is not to teach “all the facts” but rather to prepare students with sufficient core knowledge so that they can later acquire additional information on their own.*

The
“What”

Crosscutting Concepts

- *The crosscutting concepts have application across all domains of science*

The
Themes

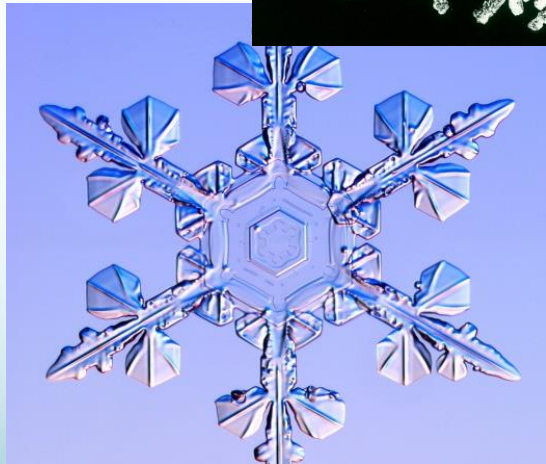
Crosscutting Concepts

What they are!

- They are considered *fundamental* to understanding science and engineering.
- They *bridges* of great value across all disciplines.
- They are *ties* that bind all learning together, allowing students to see how different science subjects are interconnected – and relevant to their lives.

Lenses for looking at Snowflakes

Identify a question about snowflakes for each of the CCC.



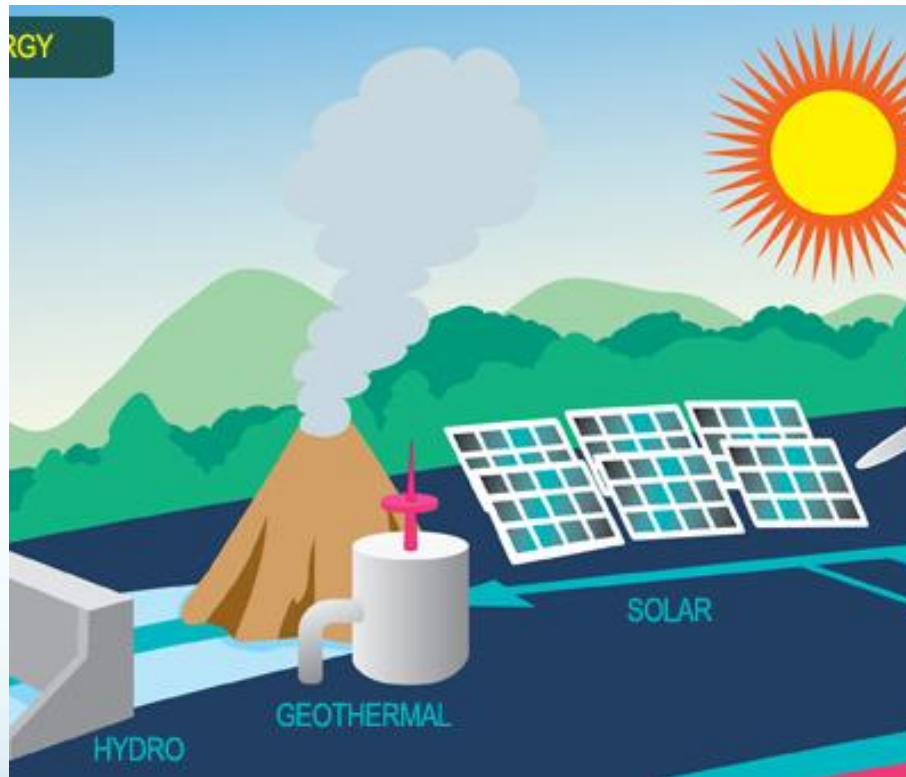
1. Patterns
2. Cause and Effect
3. Scale, Proportion, & Quantity
4. Systems and System Models
5. Energy and Matter in Systems
6. Structure and Function
7. Stability and Change of Systems

Cause & Effect Activity

- What is a Hypothesis?
- Is it a Theory?
- Is it a Law?
- What is the difference?
- Can a theory become a law?

Relate to the Inquiry Cube Activity

5. Energy and matter: Flows, cycles, and conservation



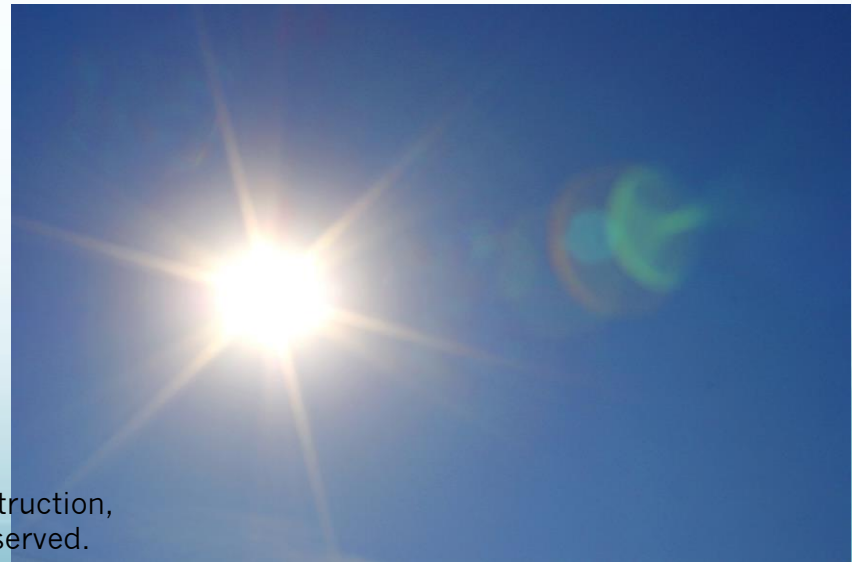
Energy and matter: Flows, cycles, and conservation

- In Science, we follow the flow of matter and energy in a system to better understand how the system works.
- In Engineering, we follow the flow of matter and energy in a system to improve how the system works.



Learning Progression

- Refer to Appendix G
- Page 9
- Think, Pair, Share
- Lesson for your classroom



In Summary

- Explore the meaning and implications of each of the Cross-Cutting Concepts.
- View the Bozeman presentation on each Cross-Cutting Concept.
- Work with colleagues to develop **Learning Progressions.**
- Enjoy the creative process.

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