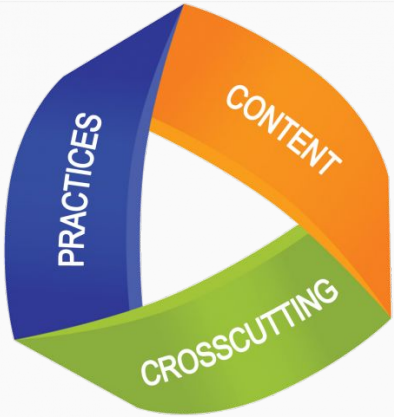
Implementing

Dr. Steve Kellett

Slides are available at goo.gl/RRHH0w

NGSS- What is it?

National (US) standards for science

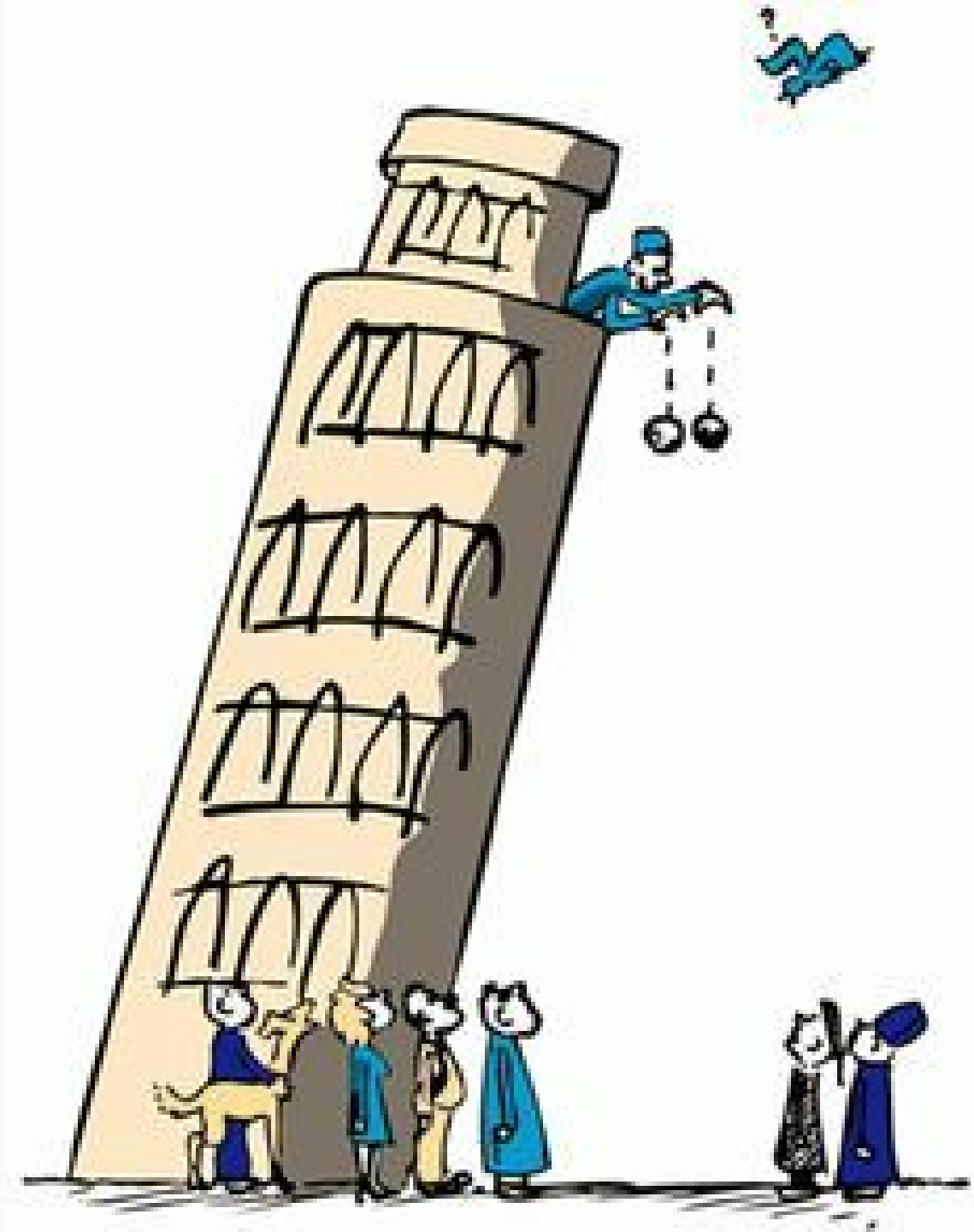


Facts are not science-as the dictionary is not literature.

- Martin H. Fischer

The Goal of the NGSS

By the end of the 12th grade, students should be able to engage in public discussions on science related issues, to be critical consumers of scientific information, and to continue to learn about science throughout their lives.



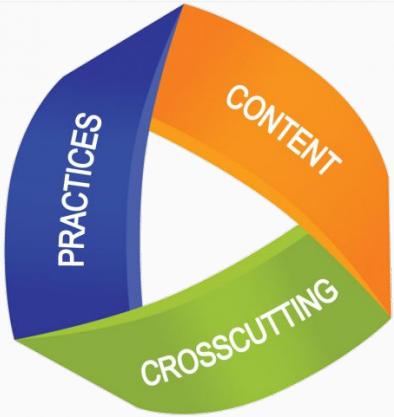
It is astonishing to realize that until Galileo performed his experiments on the acceleration of gravity in the early seventeenth century, nobody questioned Aristotle's falling balls. Nobody said, "Show Me!"

-Neil deGrasse Tyson

Practices

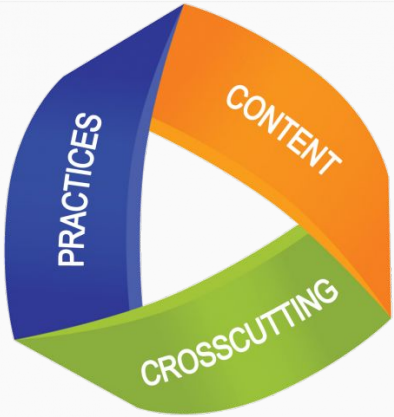
Behaviors that scientists engage in as they investigate and build models and theories about the world.

Engineering practices that engineers use as they design and build systems.



Crosscutting Ideas

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



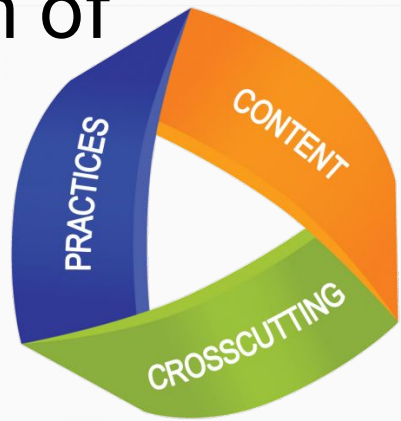
Content

Physical Sciences

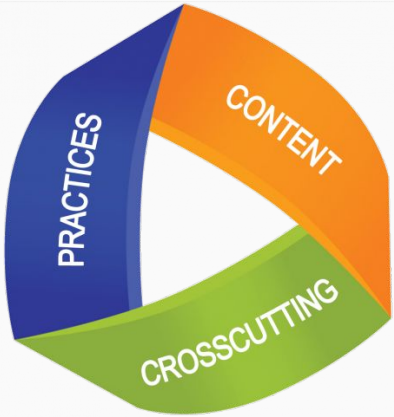
Life Sciences

Earth and Space Sciences

Engineering Technology and Application of Science



Comparing Standards:



Old: Standard 4: Understands the principles of heredity and related concepts

4.4.2 Knows ways in which genes (segments of DNA molecules) may be altered and combined to create genetic variation within a species

4.4.4 Knows that mutations and new gene combinations may have positive, negative, or no effects on the organism

4.4.6 Knows features of human genetics (e.g., most of the cells in a human contain two copies of each of 22 chromosomes; in addition, one pair of chromosomes determines sex [XX or XY]; transmission of genetic information to offspring occurs through egg and sperm cells that contain only one representative from each chromosome pair; dominant and recessive traits explain how variations that are hidden in one generation can be expressed in the next)

4.4.7 Understand the concepts of cloning, stem cells, and genetic diseases

New: HS.Inheritance and Variation of Traits

HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

HS-LS3-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.

HS-LS3-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

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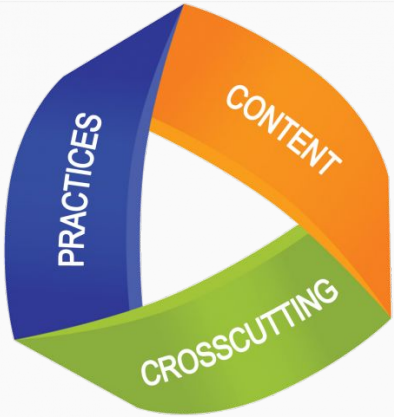
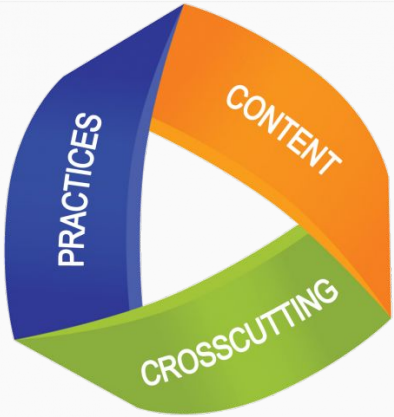
Questions?



Top 5 Tips



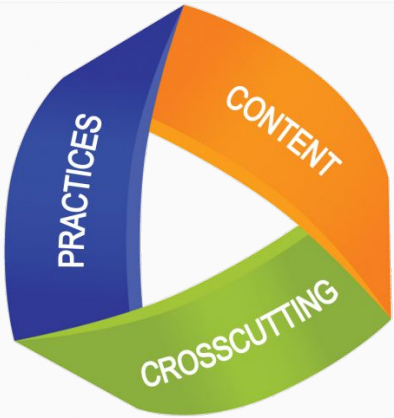
Top 5 Tips

1. Understand what you are doing and why - the “Big Picture”

Develop and articulate your vision

This should be a collaborative process

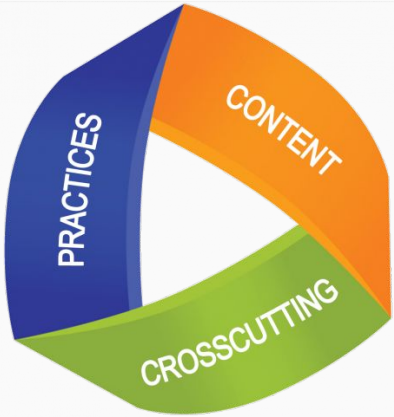
Identify school wide links



Top 5 Tips

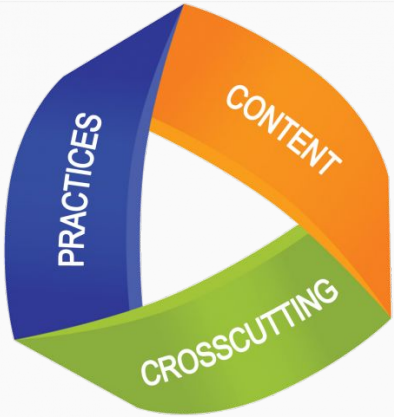
2. Cut content

Sample Grade 2 Unit



Top 5 Tips

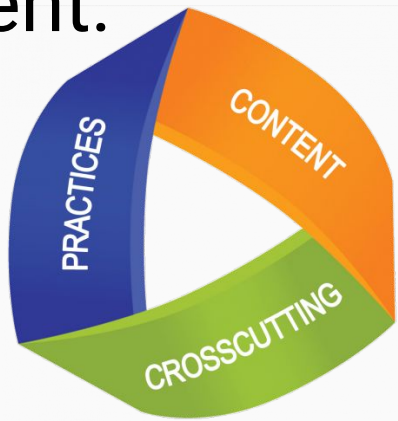
3. Find resources and supplies, but don’t rely on any one tool



Top 5 Tips

4. Find appropriate pacing for your school. It won't be fully implemented in one year.

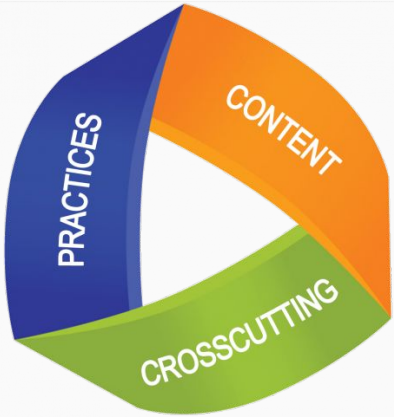
Implementation is a process–not an event.



Top 5 Tips

5. Get to know and understand how the standards are written.

Sample Grade 2 Unit



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