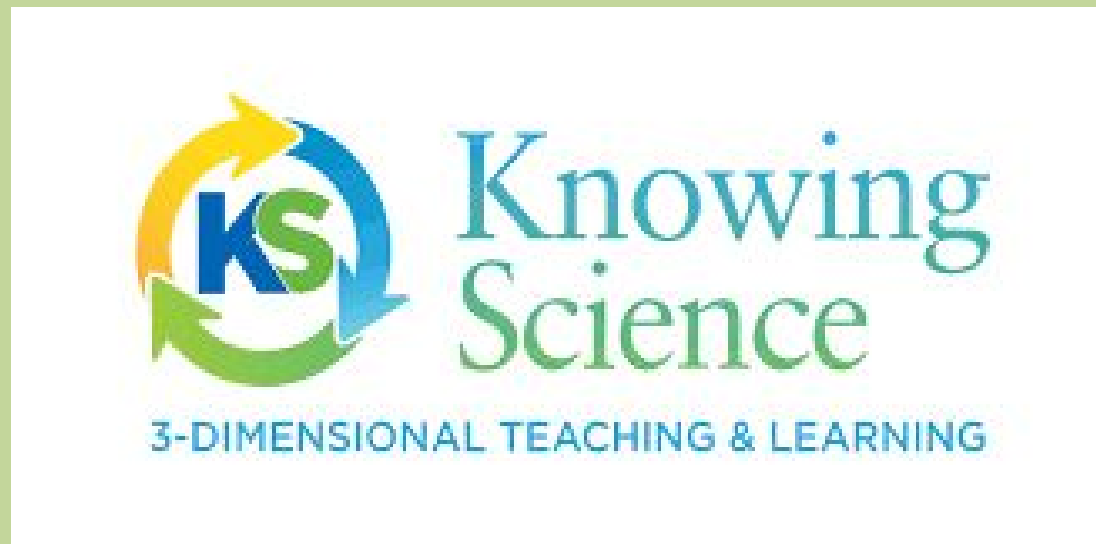


A K-5 Science Update & Overview

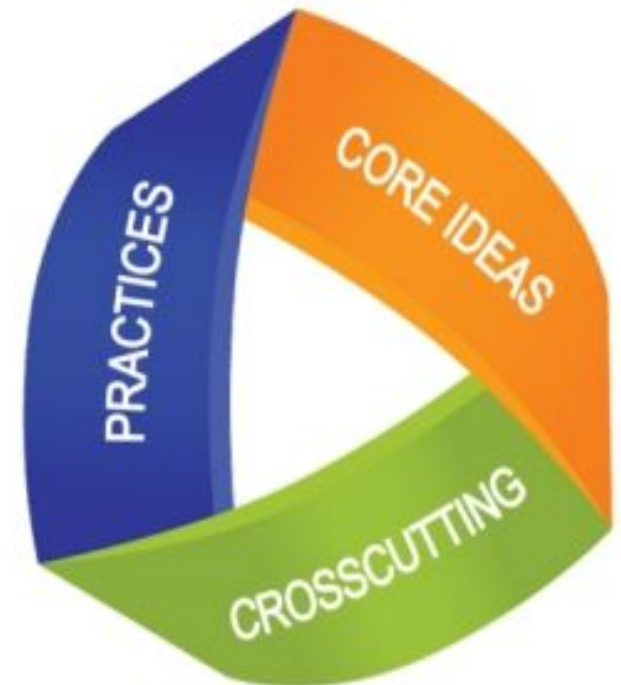


**Millburn Township Public Schools
Curriculum & Instruction**

February 5, 2018

Tonight We Will....

- Share what the New Jersey Learning Standards are all about with focus on “shifts.”
- Share how we got to where we are.
- Share where we are.
- Share where we are going.



Next Generation Science Standards: Three Dimensions Intertwined



Science Disciplinary Core Ideas

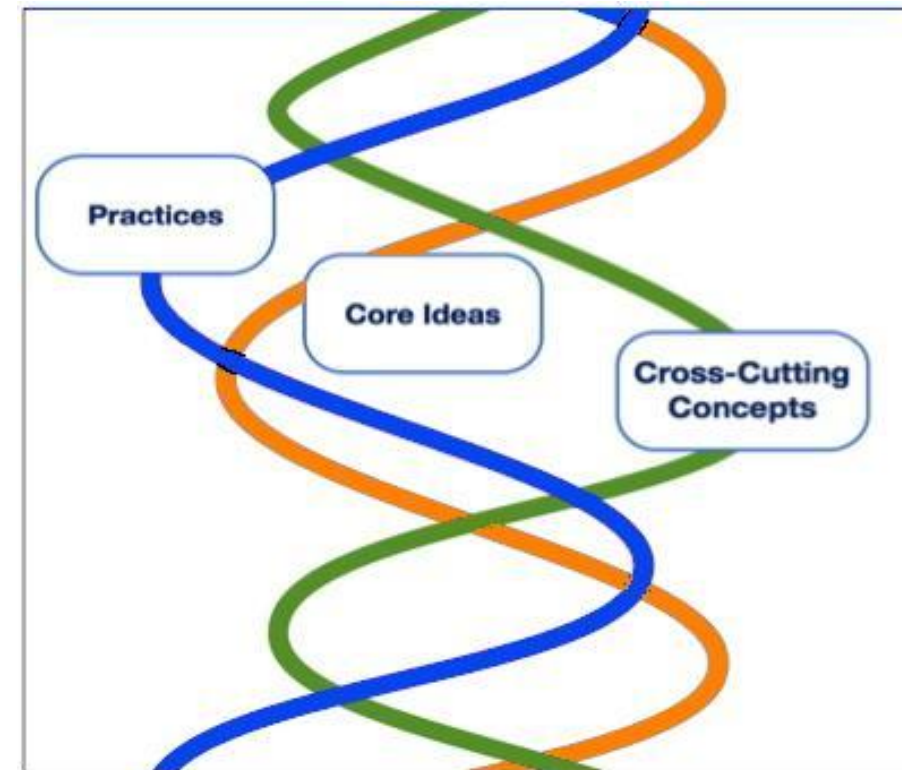
(the content)

Science and Engineering Practices

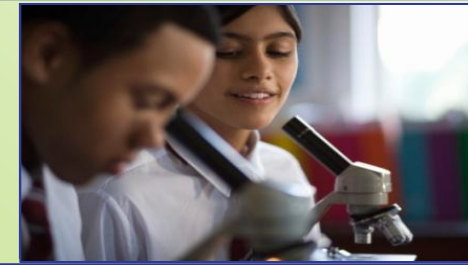
(how science is carried out in the real world)

Cross-Cutting Concepts

(science ideas that permeate all the sciences)



Disciplinary Core Ideas



Physical Science

- Matter & Its Interactions (PS1)
- Motion and Stability: Forces & Interactions (PS2)
- Energy (PS3)
- Waves & Their Application in Technologies for Information Transfer (PS4)

Earth & Space Science

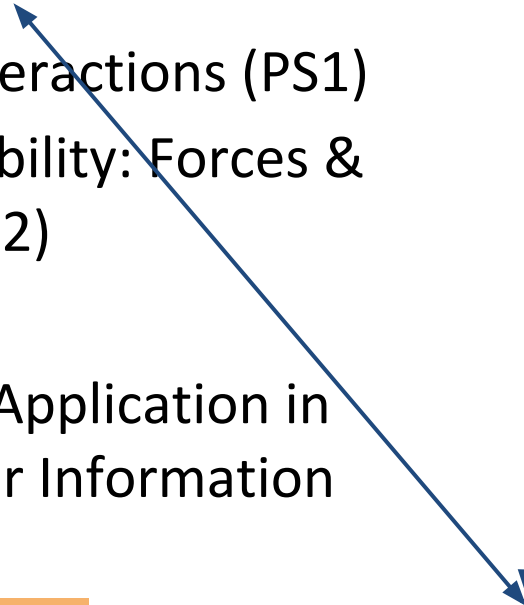
- Earth's Place in the Universe (ESS1)
- Earth's Systems (ESS2)
- Earth & Human Activity (ESS3)

Life Science

- From Molecules to Organisms: Structures & Processes (LS1)
- Ecosystems: Interactions, Energy, and Dynamics (LS1)
- Heredity: Inheritance & Variation of Traits (LS1)
- Biological Evolution: Unity & Diversity (LS1)

Engineering Design

- Defining and Delimiting Engineering Problems (ETS1.A)
- Developing Possible Solutions (ETS1.B)
- Optimizing the Design Solution (ETS1.3)



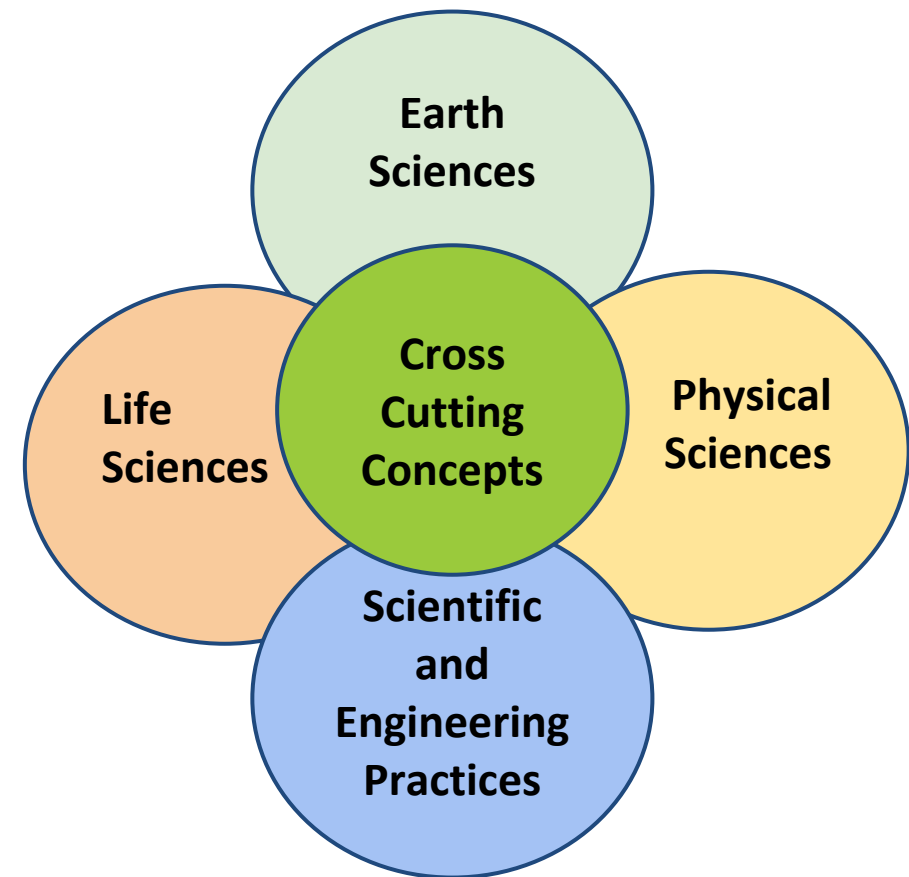
Scientific and Engineering Practices



Crosscutting Concepts



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



A New Vision for Science Education



Science Education Should Involve Less:

- Rote memorization
- Teachers providing information to the whole class
- Students answering study guide or textbook questions
- Cookie cutter labs
- Worksheets

Science Education Should Involve More:

- Facts and vocabulary introduced in learning as needed
- Students conducting investigations, solving problems, and engaging in discussions with teachers' guidance
- Students reading multiple sources, including science-related magazine and journal articles and web-based resources; students developing summaries of information.
- Student writing of journals, reports, posters, and media presentations that explain and argue

From 5/26/15 Board of Ed. Meeting



2015

2016

2017

Grades 6-12

Curriculum Review, Rewrite and Professional Development

NGSS Curriculum Implemented

Grades K-5

Curriculum Review, Rewrite and Professional Development

NGSS Curriculum Implemented

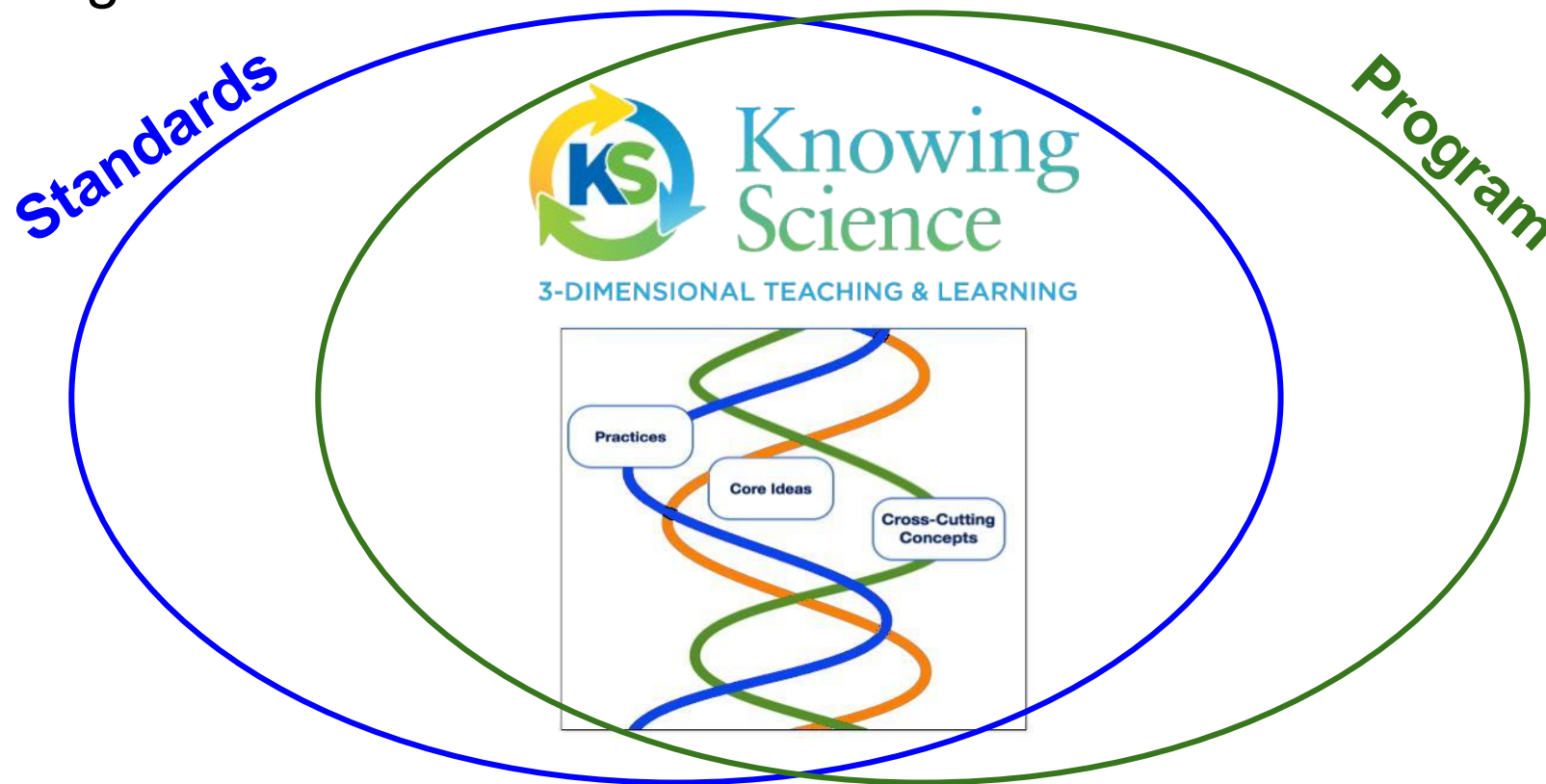
Ushering-in Knowing Science



- Evaluated several programs
- Ultimately whittled down to two programs
 - Decision made based on best alignment with NJSLS
- A committee of teachers and administrators was convened
- The committee ultimately selected the Knowing Science program

Knowing Science: An Overview of Our K-5 Science Program

- Returning to the New Jersey Student Learning Standards for Science (NJSLS), we know that students must interact with all three dimensions of science learning in order to be “scientifically literate.”
- Of the programs evaluated, Knowing Science aligns directly to the NJSLS, and integrates all three dimensions into each lesson.



Knowing Science: Year One



Successes

According to teacher feedback (oral and written):

- Students demonstrate a deeper understanding of concepts (program emphasizes mastery)
- Cross curricular connections are readily made
- Lessons readily available for extended learning

Addressing Growth Areas



Growth Areas

According to teacher feedback (oral and written):

- Certain procedures within lessons need to be modified
Summer: A teacher committee will convene to revise the program's scope and sequence, and provide specific guidance for all lessons.
- Issues with materials
Continued communication with Knowing Science.
Knowing Science has also addressed issues directly through use of their "teacher resources" web page.
- Issues with teachers' manuals ("teacher friendly" language, etc)
Summer: A teacher committee will convene to revise the program's scope and sequence, and provide specific guidance for all lessons.

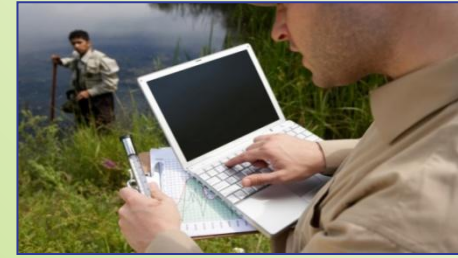
Knowing Science: Materials



Grade 1: Physical Science Kit

*Kits designed to be teacher friendly.

Professional Development



- Grade Level Meetings (opening day)
- 1/2 day Fall In-Service Conducted by Knowing Science
- 1/2 day Fall In-Service: “Unpacking”
- Professional Learning Community Time
- 16-17 Front Loading Work
- 2017 Summer Curriculum Work (including development of curriculum and supplemental materials)
- Science Cohort



Looking Ahead



Next Steps

- Continue cohort leadership work
- Gather teacher survey data
- Look to film exemplary lessons
- Summer revision work
 - Make adjustments to
 - scope and sequence
 - curriculum
- Focus on “notebooking”
- Begin to develop assessment bank
- Continue to collaborate with Knowing Science Districts
- Begin formal observations (following this year’s information-gathering observations)

Questions?

