

K-12 Science Presentation

February 8, 2016

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Next Generation Science Standards (NGSS)

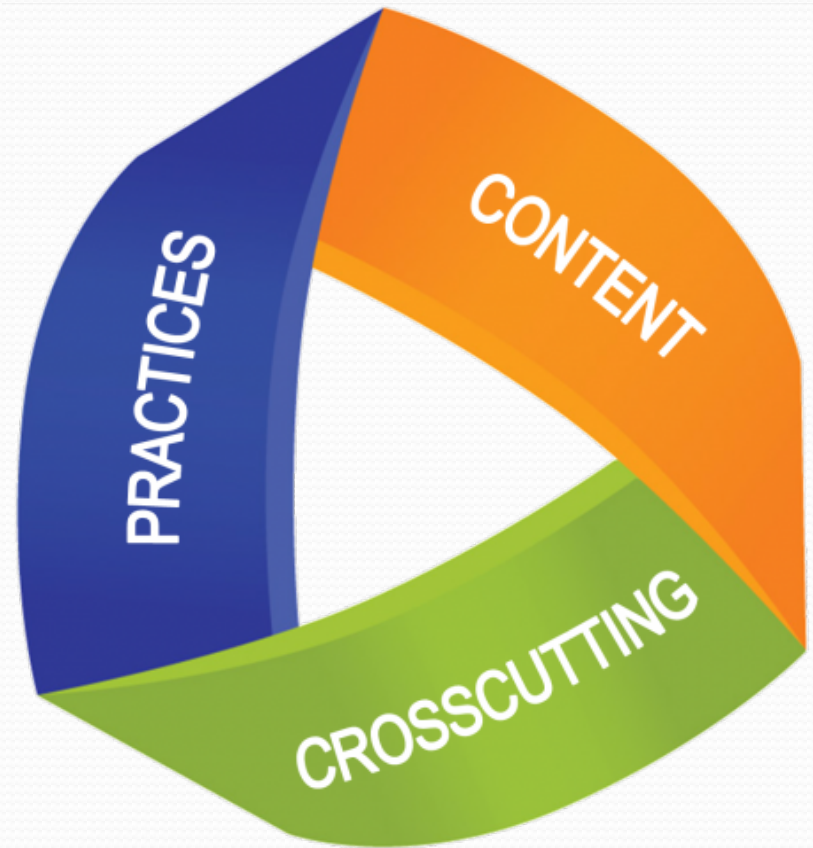
- Adopted by NJ in July of 2014
- Grades 6-12 compliance in September 2016
- Grades K-5 compliance in September 2017
- Paradigm shift in science education

Next Generation Science Standards (NGSS)

- Goal: to produce students who can succeed in a global information economy fueled by advances and innovation in science, engineering, and technology.
- Based on A Framework for Science Education K-12, by the National Research Council (NRC) of the National Academy of Sciences.

3 Dimensions of NGSS

- Disciplinary Core Ideas (DCIs)
- Science and Engineering Practices (SEPs)
- Crosscutting Concepts (CCCs)



Disciplinary Core Ideas

- Life Science
- Physical Science
- Earth and Space Science
- Engineering Design

8 Science & Engineering Practices

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data

8 Science & Engineering Practices

- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

7 Crosscutting Concepts

- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

NGSS vs. Current Standards

- Engineering component in all science courses K-12
- More emphasis on big ideas
- More experiences in the practices of science and engineering

NGSS vs. Current Standards

- Integration with LA and Math common core
- More guidance on vertical alignment of curriculum
- Greater use of teacher strategies that are research based such as project-based learning

NGSS Preparation 2013-2015

- Middle school curriculum was analyzed in Fall of 2013 and adjusted to emphasized topics included in NGSS
- Purchased textbooks to support NGSS for Biology in 2013, Physics in 2014, for Earth Science in 2015
- Writing curriculum for all levels of middle school science, Biology, Chemistry, Earth Science, Honors Environmental Science, and Physics

NGSS Preparation 2013-2015

- Teachers increase knowledge through monthly department meetings and professional development opportunities
- Majority of 6-12 teachers attended out of district professional development
- Elementary NGSS Orientation held at each elementary school Spring 2015

Grades 6-12 Two Year Plan

2015-2016

- Curricula completed by March 1
- Spring 2016 teachers with new curricula will meet to familiarize themselves and use time to collaborate on assessments, labs, projects, and lessons.
- Recommend the adoption of NGSS aligned textbooks for Chemistry and Honors Environmental Science for September 2017.

Grades 6-12 Two Year Plan

2016-2017

- Continue to write curricula according to the 5-year cycle schedule
- Determine if there is a middle school program aligned to NGSS to pilot and recommend for the 2017-2018 school year

Ongoing:

- Provide professional development
- Monitor lesson plans and instructional practices for NGSS compliance

Grades K-5 Two Year Plan

2015-2016

- NGSS Orientation held a second time at every elementary school
- Establish an Elementary Science Committee
- Examine the current curriculum and recommend adjustments to the scope and sequence to better prepare teachers
- June 2016 committee determines programs aligned to NGSS to pilot in Fall of 2016

Grades K-5 Two Year Plan

2016-2017

- Evaluate feedback on the NGSS programs and make a recommendation to the district for September 2017
- Collaborate with Language Arts and Math supervisors for interdisciplinary opportunities
- Write K-5 curriculum during the 2016-2017 school year.
- Provide professional development by grade

New Jersey Biology Competency Test (NJBCT)

- Sequence of units adjusted June 2015
- All teachers are within two days of the required scope and sequence
- Teachers analyzed quarterly assessments and developed action plans for their students.

New Jersey Biology Competency Test (NJBCT)

- Focus on improving students' technical reading skills and interpreting data.
- Teachers report to supervisor and contact parents if marking period grades are below a C, monitor struggling students, and provide support.

Rutgers Health Science Courses

- Obtained Career and Technical Education (CTE) program status in August 2015
- Access to Perkins funds to support the program and reduction in cost of Rutgers end of course exams
- Two new courses launched with 100 students enrolled

Rutgers Health Science Courses

- Students can earn up to 13 college credits from Rutgers
- Dynamics of Health Care in Society; Anatomy and Physiology; Fundamentals of Health and Wellness; and Medical Terminology

Contact Information

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