



PARAMOUNT UNIFIED SCHOOL DISTRICT

OUR MISSION IS TO ENSURE LEARNING AND SUCCESS FOR EACH STUDENT BY PROVIDING A QUALITY EDUCATION.

Next Generation Science Standards Overview and Update

Board of Education Meeting
February 10, 2016

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Purpose of Presentation

- Provide an overview of the Next Generation Science Standards (NGSS)
- Differentiate between the current California science standards and NGSS
- Review action plan for 2015-2016
- Review implementation timeline for 2016-17 and 2017-18

Why new science standards?

- U.S. students aren't prepared to compete in a global job market that requires a deep understanding of science and engineering
- Inefficiencies of the 1998 California Science Standards
 - Call for knowing an abundance of disconnected facts.
 - Provide little or no opportunities for students to engage in the process of inquiry.
 - Expectations are broad and subject to teacher interpretation.

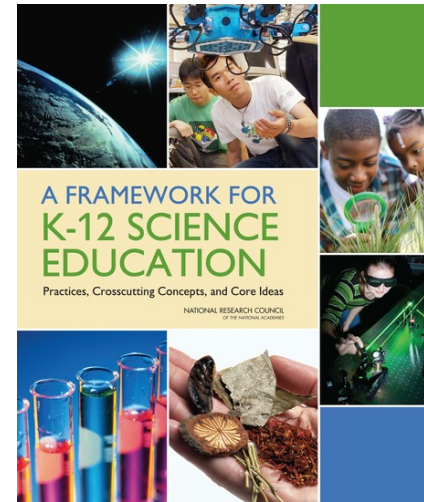
CALIFORNIA CONTENT STANDARDS: EARTH SCIENCES

Earth's Place in the Universe

1. Astronomy and planetary exploration reveal the solar system's structure, scale, and change over time. As a basis for understanding this concept:
 - a. Students **know** how the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system.
 - b. Students **know** the evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.
 - c. Students **know** the evidence from geological studies of Earth and other planets suggest that the early Earth was very different from Earth today.
 - d. Students **know** the evidence indicating that the planets are much closer to Earth than the stars are.
 - e. Students **know** the Sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium.
 - f. Students **know** the evidence for the dramatic effects that asteroid impacts have had in shaping the surface of planets and their moons and in mass extinctions of life on Earth.
 - g.*Students **know** the evidence for the existence of planets orbiting other stars.

NGSS Overview

- New K-12 Science Standards based on the Framework for Science Education
- Rich in content and practice
- Arranged in coherent manner across disciplines and grades
- Goal: To prepare all students for college, careers and life



NGSS: 3-Dimensional Learning

- ❖ NGSS define “Performance Expectations” as assessable statements of what students should be able to do if they understand the content
- ❖ Performance Expectations integrate three dimensions that focus on understanding and application:
 1. **Science and Engineering Practices:** Behaviors for investigating and building models
 2. **Disciplinary Core Ideas:** Key concepts specific to the course content
 3. **Crosscutting Concepts:** Concepts that link various science domains



1998 Standards vs. NGSS

1998 California Standards	NGSS
<ul style="list-style-type: none">• Memorization of facts & terminology...KNOW• Disconnected ideas• Teacher led-investigations• Reading textbooks to answer end-of-chapter questions	<ul style="list-style-type: none">• Deep understanding and application of concepts...DO• Ideas learned in context• Student-led investigations where students are engaged in science and engineering practices• Reading multiple sources and synthesizing information

Implications of NGSS

To implement the NGSS effectively, the following conceptual shifts must be made:

- Science education must address the three dimensions.
- Deeper understanding and application of content.
- Integration of science and engineering.
- Prepare students for college, careers, and life.

Implementation Timeline



2015-2016 Awareness Activities

- ❖ Hired a K-12 Science Curriculum Specialist
- ❖ Developed a Lead Teacher Structure for grades 6-12
 - *Teachers meet monthly and are expected to share information with their science departments and implement NGSS-aligned strategies in their classroom*
- ❖ Developed Grades 6-12 Curriculum and Assessment Development Teams
 - *Teachers meet quarterly to develop summative assessments that align to NGSS performance expectations*
- ❖ Provided training to all 7th grade teachers on the improved *Keeping Safe from HIV* program
- ❖ Implement Science Days at elementary schools
- ❖ Assess health education needs through the California Healthy Kids Survey data

Implementation Timeline

2016-2017 Transition

- Professional development opportunities for all grades 6-12 science teachers
- Lead Teacher Structure
- Curriculum and Assessment Development Teams
- K-5 Science Awareness
- Pilot Test of the NGSS Assessment (for selected districts)

2017-2018 Early Implementation

- Additional professional development opportunities
- Lead Teacher Structure
- Curriculum and Assessment Development Teams
- Textbook Adoption
- Field Test of the NGSS Assessment

Next Generation Science Standards....



A New Vision for Science Education