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## Preparing for the New Science Standards

### Expert Presenters:

**Alan King**, curriculum director, Kansas City school district, Kan.; former science teacher; and Kansas state review team member for the Next Generation Science Standards

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**Peter McLaren**, science and technology specialist, Rhode Island Department of Education; past president, Council of State Science Supervisors; and member of writing team for the NGSS

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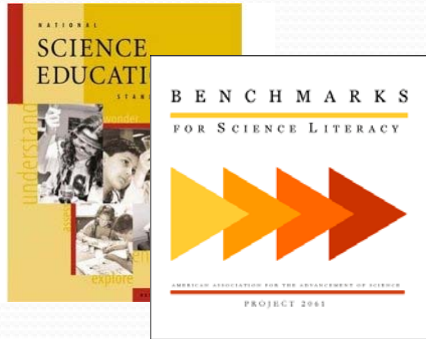
# Preparing for the Next Generation Science Standards – A State's Perspective



Peter J. McLaren  
Science and Technology Specialist  
R.I. Department of Education  
Past-President  
Council of State Science Supervisors

# Next Generation Science Standards:

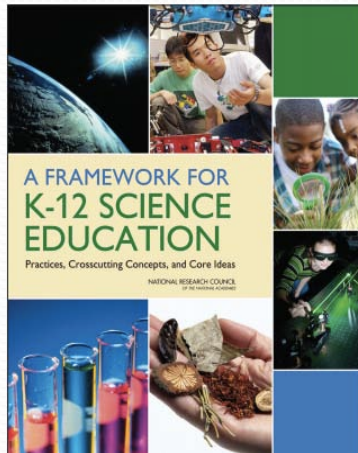
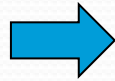
## Building on the Past; Preparing for the Future



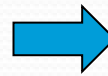
1990s

Phase I

Phase II

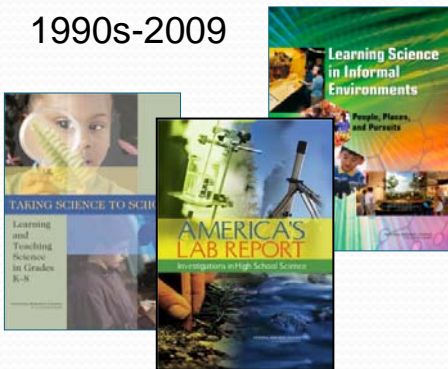


1/2010 - 7/2011



7/2011 – March 2013

1990s-2009



# Conceptual Shifts in the NGSS

1. K-12 Science education should reflect the interconnected Nature of Science as it is practiced and experienced in the real world.
2. The Next Generation Science Standards are student performance expectations – NOT curriculum.
3. The science concepts build coherently from K-12.
4. The NGSS focus on deeper understanding of content as well as application of content.
5. Science and Engineering are integrated in the NGSS from K–12.
6. NGSS content is focused on preparing students for the next generation workforce.
7. The NGSS and Common Core State Standards ( English Language Arts and Mathematics) are aligned.



# Science and Engineering Practices- Not just Teaching Strategies

- Science and Engineering Practices are how scientific knowledge is acquired;
- Students can only fully understand scientific and engineering ideas by engaging in the practices of inquiry and the discourses;
- While Practices should be used in instruction, all students need to demonstrate achievement in their use and application



# Multiple Reviews of NGSS

- Lead States

- Strategic Leadership Teams

- Critical Stakeholders

- representing education, science, business and industry

- Public Reviews

- Over 200,000 comments

# Implementation at the State Level

...has already begun

- Messaging, briefings, fact sheets
- Professional Development around the Framework
- Capacity building
- Review and input during development

# Transitional Implementation

- Go Slow...Be Reflective...Embrace Collaboration
- Build awareness within the state
- KEY - Understanding of the Framework and the NGSS
  - Educators, principals, administrators
- Create and share models and exemplars of what NGSS “looks like”
  - In the classroom
  - In curricula
  - In professional development
  - In assessment (classroom, school, district, state, national)
  - In Pre-Service education
  - In resources and materials

# The Good News

Having science standards that are national and common means states can:

- share models of success
- Develop lessons and units
- Establish clear publisher's Criteria
- Develop quality science education PD

# Support For States

- Council of State Science Supervisors
  - Building Capacity for State Science Education
- National Science Teachers Association
  - NGSS@NSTA project
- National Research Council
  - Developing Assessment of Science Proficiency in K-12 Report (Summer, 2013 Release)

# Final Thoughts

- Go Slow
- Awareness and understanding
- Open communication
- Share successes
- Be patient

# Thank you!

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# Next Generation Science Standards: A District's Perspective

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# The States' Review of the Standards



# Kansas Stakeholders

Elementary Education

Business and Industry

Parents

Informal Science Educators

Kansas State Board of Education Members

Post-Secondary Education

Secondary Education

# The Review Process

- Mixture of Group and Individual Feedback
- 4 Confidential Drafts/2 Public Drafts
- 3 Face-to-Face/Multiple Online Meetings
- Focused on grade levels and content
- Small Group Summarized Kansas Feedback

# The Influence of the Kansas Team

- Web-based presentation
- Consistency in voice
- Balancing content and grain size across the grade levels
- Engineering
- Keeping the focus on depth over breadth
- Additional support materials

# Kansas City, Kansas Public Schools

- 20,000+ students
- 43% Hispanic, 35% African American, 13% White, 5% Asian, 4% Other
- 16% Receive Special Education Services
- 34% Receive ESL Support
- 85% Free/Reduced Lunch
- 58 Home Languages



# Why start now?

- Common Core Implementation Experience
- Literacy Across the Content Areas
- Understanding of the Framework =  
Foundational Understanding of Our Science  
Curriculum
- Opportunity to provide input on the standards



# Initial Teacher Reactions

- Who is writing the standards?
- What if the standards aren't approved by the State Board?
- Why not wait until the standards are finished and approved?



# Our District's Implementation

- Focused on the Framework
- Overview of the Framework at the surface level
- Studied a particular practice or cross-cutting concept
- Presented their learning in a show case

# Teacher Responses

- Content VS Practices
- Initial thoughts of “I already do this”
- After study, “I don’t go to this level of depth”
- Sacred cows
- “Making this a reality is going to take a lot of work”



# Impact on Our District

- Disciplinary Core Ideas provide a baseline focus—advanced courses will have a consistent foundation
- The cross-cutting concepts provide explicit connections between various contents
- Middle School—discipline approach VS integrated approach
- Inquiry is no longer a static process. The practices are how we do business.

# Next Steps

- Continue the focus not on what we teach, but on what the students are learning
- Matching our instruction to the vision of the framework
- Determine what gets taught and when (pacing guides)
- Finding and addressing our students' misconceptions

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Q & A



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## Preparing for the New Science Standards

### Required Reading from *Education Week*:

#### [Common Science Standards Face Capacity Issues](#)

With the completion of new standards intended to reshape science education, the real heavy lifting now begins. Capacity challenges for states and school districts are immense as they contemplate taking on the new standards, which call for bringing greater depth to science understanding and asking students to apply that knowledge through the practices of scientific inquiry and engineering design.

#### [Teachers Gear Up for Science Standards](#)

Well before the Next Generation Science Standards became final in April, teachers in pockets around the country were already exploring the vision for science education espoused by the document and bringing elements of that approach to the classroom.