
# Development of the Next Generation Science Standards

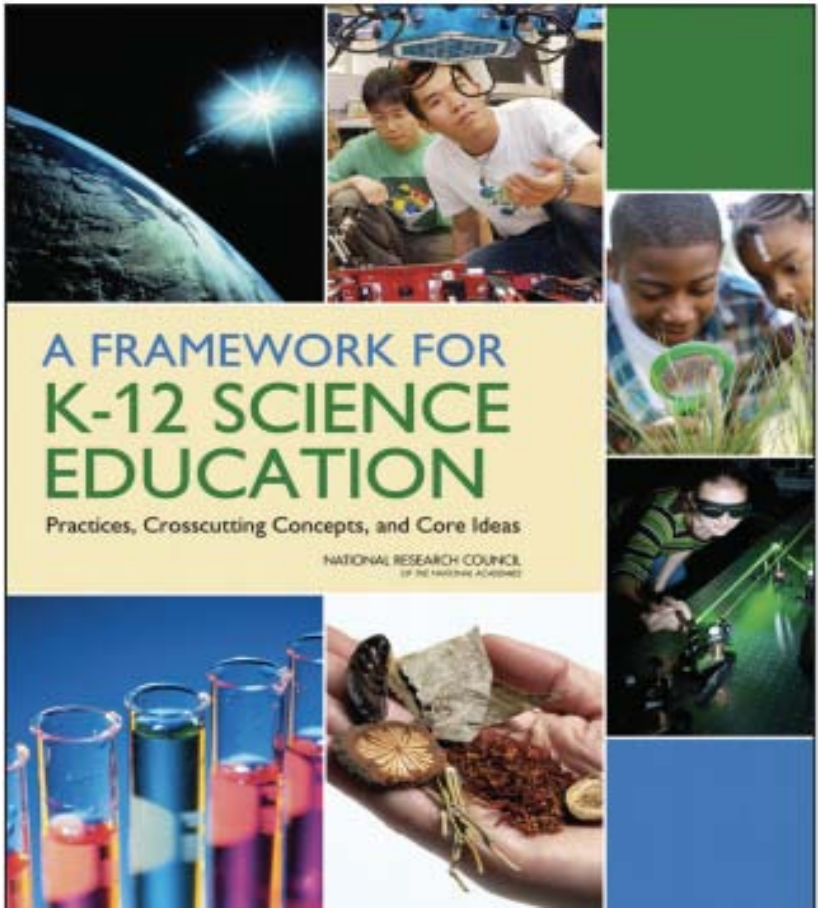
## May 22, 2012

# Overview for Today's Webinar

- The Framework of K-12 Science Education
- Development of the Next Generation Science Standards
- Reviewing the Next Generation Science Standards

# The Framework for K-12 Science Education

# The Framework outlines a vision of science learning that leads to a new vision of teaching.




Download the Framework for K-12 Science Education
http://www.nap.edu/catalog.php?record_id=13165

# Vision for Science Education

All students, over multiple years of school, actively engage in science and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields.

# Who developed the Framework?

- The National Research Council (NRC) / National Academy of Sciences
- Team of 18: scientists, two Nobel laureates, cognitive scientists, science education researchers, and science education standards and policy experts
- Four design teams in each core area
- Framework published July 19, 2011

# Structure of the Framework

The Framework for K-12 Science Education contains three dimensions:

- Dimension 1 – Scientific and Engineering Practices
- Dimension 2 – Crosscutting Concepts
- Dimension 3 – Disciplinary Core Ideas

# Scientific and Engineering Practices

1. Asking questions and defining problems
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Developing explanations and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

# Dimension 2: Crosscutting Concepts

Have application across all domains of science and link the different domains of science.

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

# Dimension 2: Crosscutting Concepts

- Make explicit for students
- Provide structure to integrate knowledge across disciplinary boundaries
  - Coherent and scientifically-based view of the world
  - Students value and use science and engineering practices
  - Supports understanding of science and engineering to explain novel phenomena

# Dimension 3: Disciplinary Core Ideas

Focus K–12 science curriculum, instruction, and assessments on the most important aspects of science.

Four domains:

- life science
- physical science
- Earth and space science
- engineering, technology and applications of science

# Dimension 3: Disciplinary Core Ideas

To be core, ideas met at least two criteria (ideally all four):

- Broad importance or be a key organizing concept of a single discipline
- Key tool for understanding or investigating more complex ideas and solving problems
- Relate to students, societal, or personal concerns that require scientific or technological knowledge
- Cross multiple grades at increasing levels of depth and sophistication

# Disciplinary Core Ideas: Physical Sciences

- PS1 Matter and its interactions
- PS2 Motion and stability: Forces and interactions
- PS3 Energy
- PS4 Waves and their applications in technologies for information transfer

# Disciplinary Core Ideas: Life Sciences

- LS1 From molecules to organisms: Structures and processes
- LS2 Ecosystems: Interactions, energy, and dynamics
- LS3 Heredity: Inheritance and variation of traits
- LS4 Biological evolution: Unity and diversity

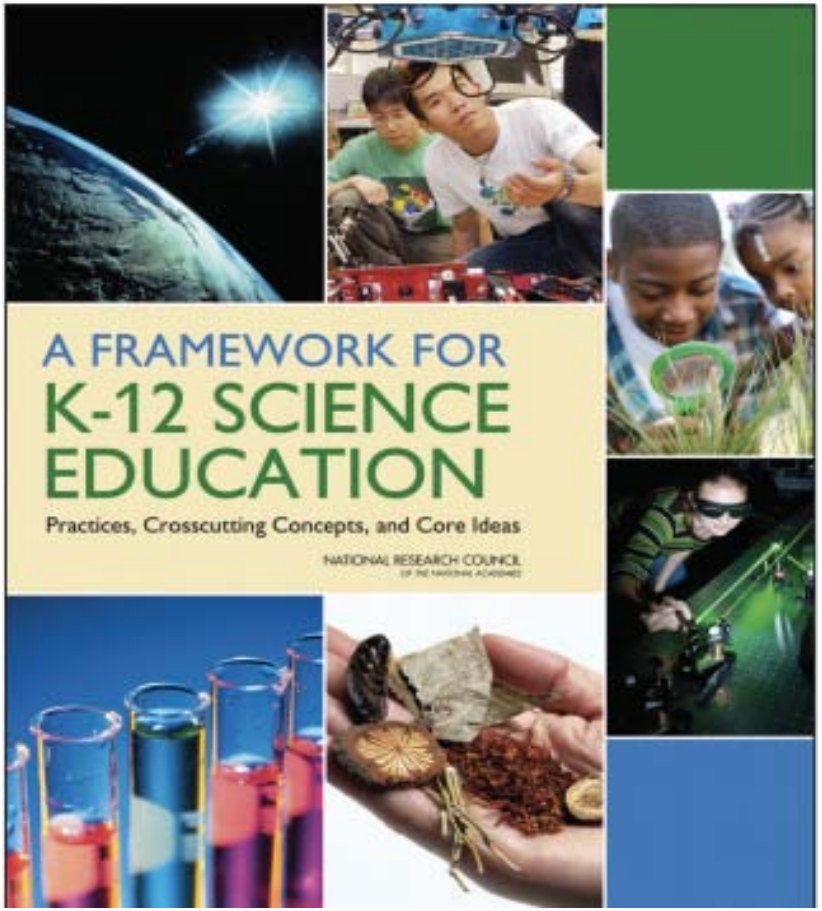
# Disciplinary Core Ideas: Earth and Space Sciences

- ESS1 Earth’s place in the universe
- ESS2 Earth’s systems
- ESS3 Earth and human activity

# Disciplinary Core Ideas: Engineering, Technology and Applications of Science

- ETS1 Engineering design
- ETS2 Links among engineering, technology, science and society

# Questions?


A FRAMEWORK FOR
K-12 SCIENCE
EDUCATION
Practices, Crosscutting Concepts, and Core Ideas
NATIONAL RESEARCH COUNCIL

# Development of the Next Generation Science Standards

# Vision for Next Generation Science Standards

- Provide all students access to a challenging science education that will prepare them for post-secondary options
- Rich in content and arranged in a coherent manner across grades
- Based on the Framework for K-12 Science Education
- Collaborative, state-led process
- Anticipated to be completed in early 2013

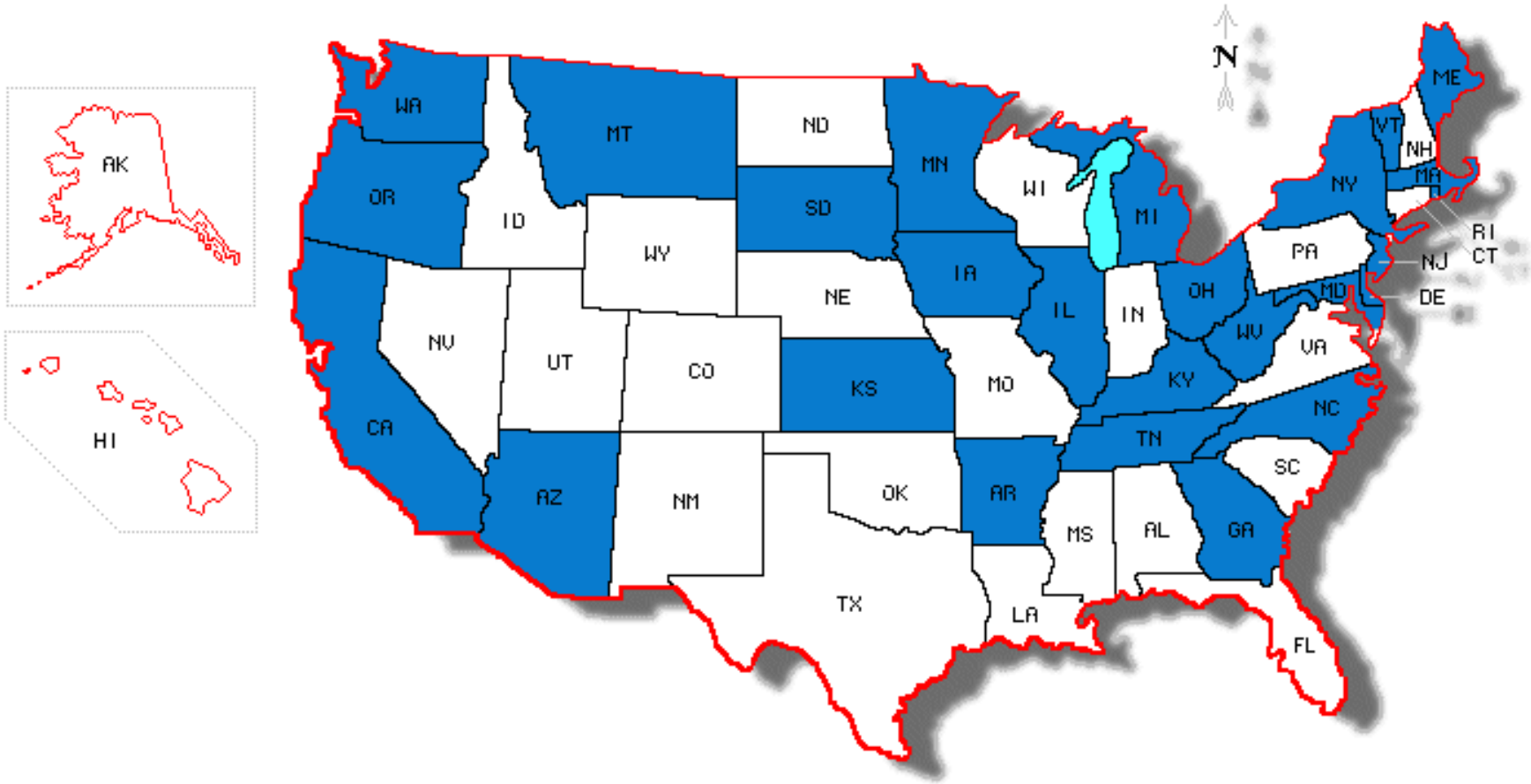
# Shifts in the Next Generation Science Standards

- Standards as performance expectations
- Science and engineering practices and the crosscutting concepts are continuums
- Greater focus on understanding and application of content rather than memorization of scientific facts
- Science concepts build over K-12
- Integration of science and engineering
- Coordination with Common Core ELA and Mathematics Standards

# NGSS Writing Team

- NGSS based on the *Framework for K-12 Science Education*
- 41 members
  - Led by the education community (teachers, administrators, higher ed, standards/assessment experts)
  - Scientists, engineers, workforce development
- Reviewed by broad stakeholder groups

# NGSS Lead States



# Arizona Stakeholders

- Represent education, science, business and industry and have interest in the NGSS, including:
  - Elementary, middle, and high school science teachers from district and charter schools in urban and rural communities
  - Science coordinators/directors and administration
  - Postsecondary education, including science education, life science, physical science, Earth/space science, and engineering and technology
  - Business, industry, and workforce development
  - Informal education and non-profit foundations
  - Professional organizations in science education and engineering

- Critique confidential drafts of the standards and provide feedback to the writers and Achieve.

# From Framework to Standards

The Framework for K-12 Science Education contains three dimensions:

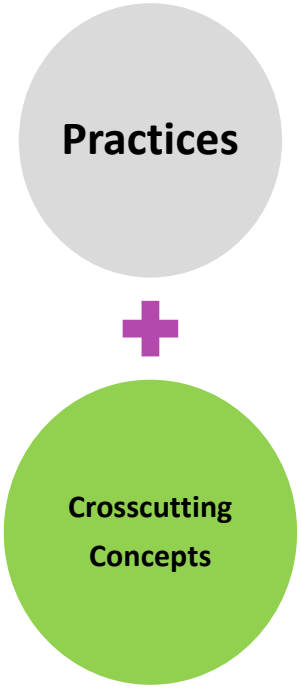
- **Dimension 1**
  Scientific and Engineering Practices


1. Asking questions and defining problems
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Developing explanations and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

# From Framework to Standards

The Framework for K-12 Science Education contains three dimensions:

- **Dimension 1** Scientific and Engineering Practices
- **Dimension 2** Crosscutting Concepts

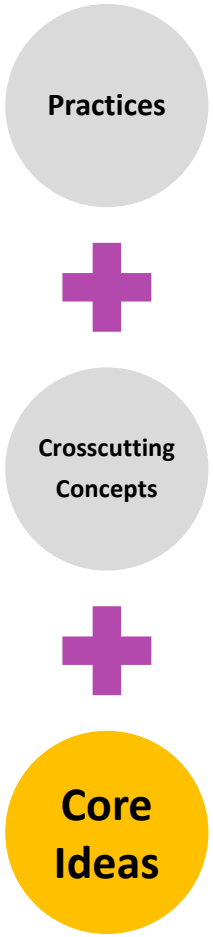



- Patterns, similarity, and diversity
- Cause and effect
- Scale, proportion and quantity
- Systems and system models
- Energy and matter
- Structure and function
- Stability and change

# From Framework to Standards

The Framework for K-12 Science Education contains three dimensions:

- **Dimension 1** Scientific and Engineering Practices
- **Dimension 2** Crosscutting Concepts
- **Dimension 3** Disciplinary Core Ideas

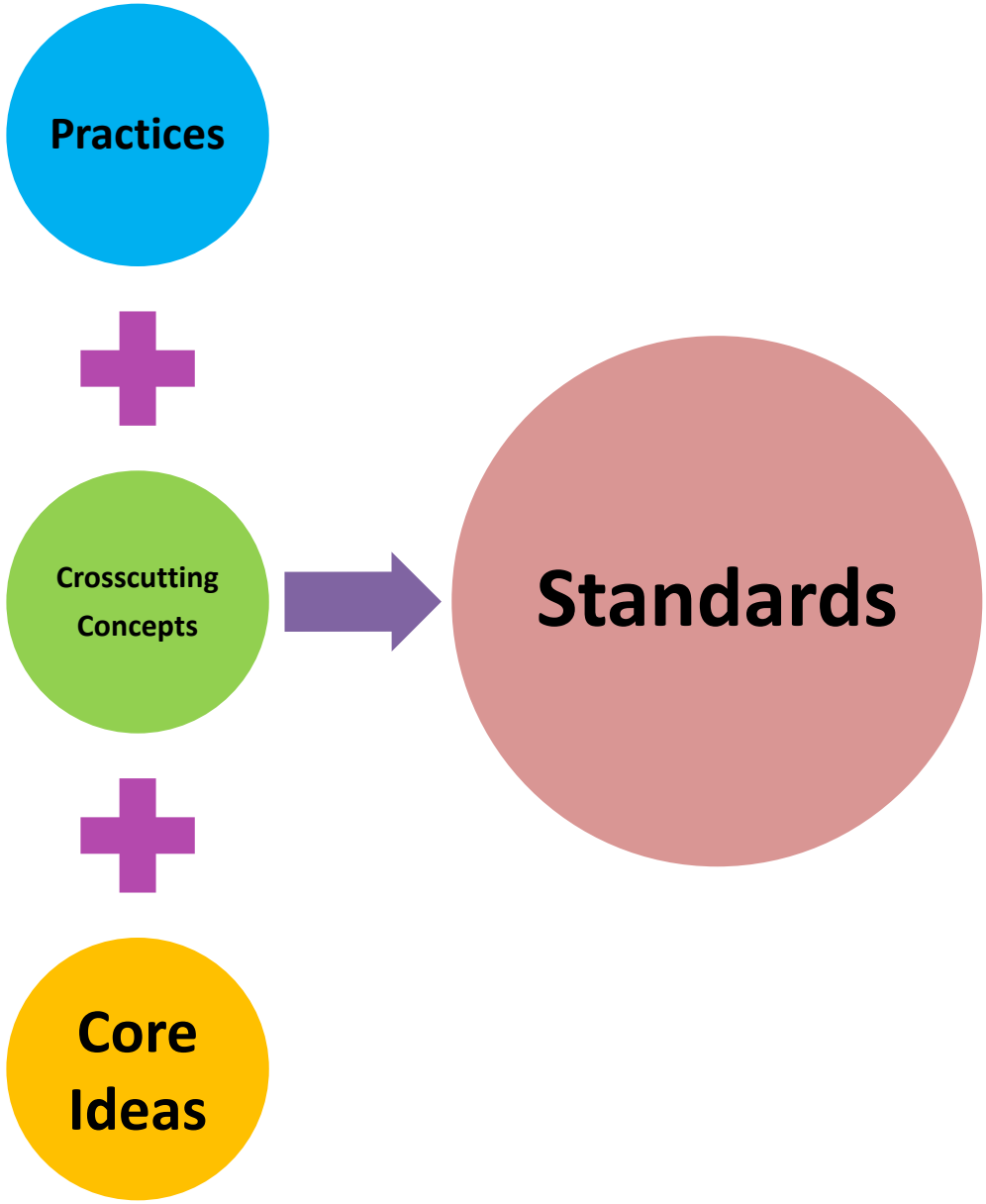



- **Physical Science**
  - PS1 Matter and its interactions
  - PS2 Motion and stability: Forces and interactions
  - PS3 Energy
  - PS4 Waves and their applications in technologies for information transfer
- **Life Sciences**
  - LS1 From molecules to organisms: Structures and processes
  - LS2 Ecosystems: Interactions, energy, and dynamics
  - LS3 Heredity: Inheritance and variation of traits
  - LS4 Biological evolution: Unity and diversity
- **Earth and Space Sciences**
  - ESS1 Earth's place in the universe
  - ESS2 Earth's systems
  - ESS3 Earth and human activity
- **Engineering, Technology, and Applications of Science**
  - ETS1 Engineering design
  - ETS2 Links among engineering, technology, science and society

# From Framework to Standards

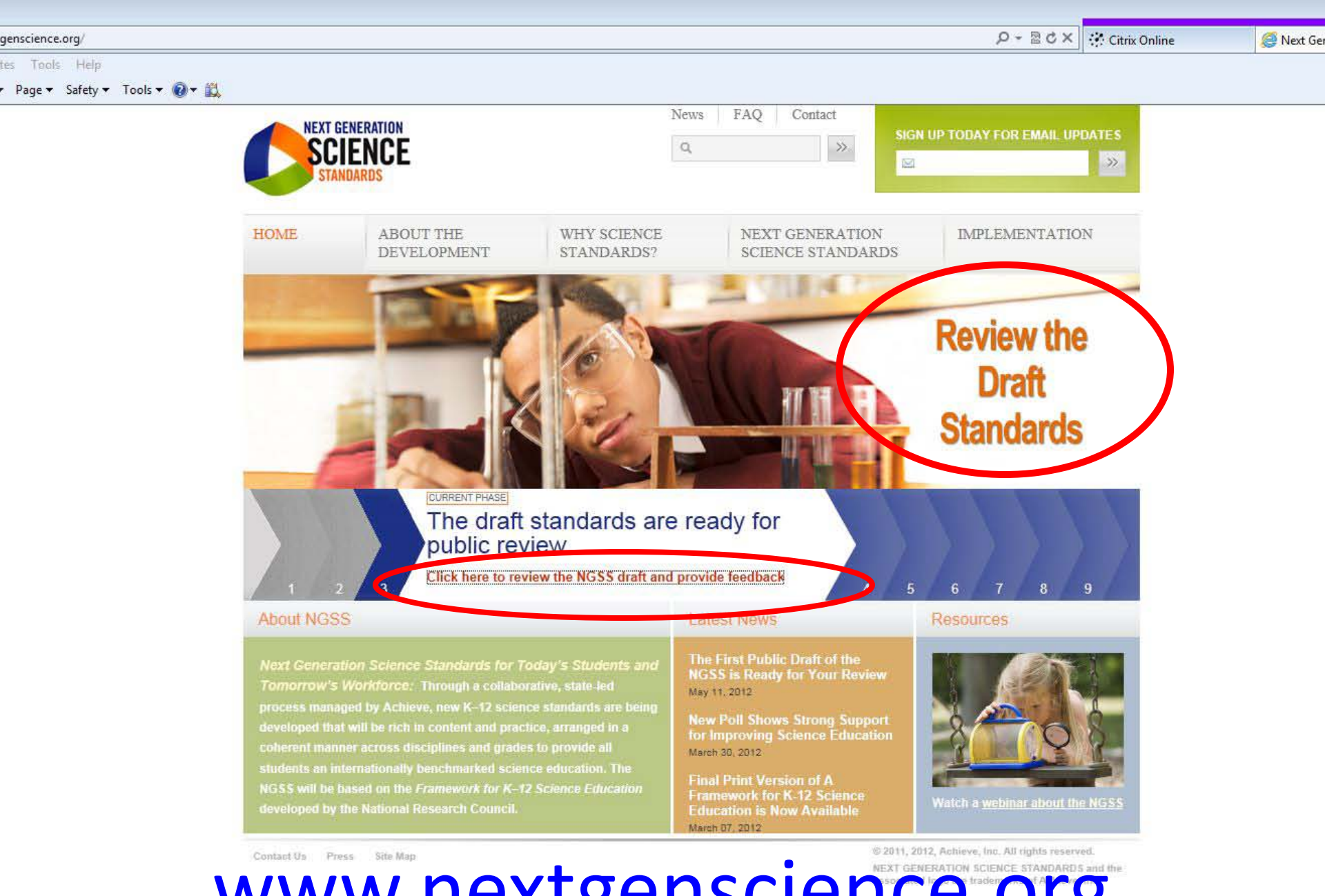
The Framework for K-12 Science Education contains three dimensions:

- **Dimension 1** Scientific and Engineering Practices
- **Dimension 2** Crosscutting Concepts
- **Dimension 3** Disciplinary Core Ideas



# Questions?

# Reviewing the Next Generation Science Standards




www.nextgenscience.org

## The Next Generation Science Standards

The first public draft of the Next Generation Science Standards is available from May 11 to June 1. We welcome and appreciate your feedback.

- How to Read the Standards
- NGSS May Draft Front Matter
- Go to the NGSS Survey / PDF
- What's different about the NGSS:
  - Conceptual Shifts in the NGSS
  - Engineering, Technology, and Applications of Science in the NGSS
  - The Nature of Science in the NGSS
- College- and Career-Readiness and the NGSS
- Diversity and Equity in the NGSS: All Standards, All Students
- Public Attitudes Toward Science Standards
- Video: Why NGSS?
- Practices and Crosscutting Progression Matrices

The NGSS have been written as student performance expectations grouped by topics, and can be viewed in the topical groupings or individually. The draft performance expectations are composed of the three dimensions from the NRC Framework. These draft performance expectations describe how students will demonstrate their understanding. Click on the links to the left to learn more about the standards, and choose one of the buttons below to explore and provide comments on the standards.

Feedback collected during the comment period will be organized and shared with the leading states and writing team members. After the feedback is considered, a feedback report will be issued that will explain how feedback was handled and why.

Search by topic

Search individual performance expectations

### What's New?

**The First Public Draft is Ready for Review!**

*Click here to read and provide comments on the first of two public drafts of the NGSS*

# Organization of the Standards by Grade

**Grades K-5 standards**

- individual grades

**Grades 6-8 standards**

- middle school band
- may assign standards to individual grades in the future

**High school standards**

- high school band
- may assign standards to individual grades/courses in the future

Standard code

Standard and performance expectations

Foundations box from Framework

Connections to Other Standards

# MS.PS-CR Chemical Reactions

**MS.PS-CR Chemical Reactions**

Students who demonstrate understanding can:

a. **Develop representations showing how atoms regroup during chemical reactions to account for the conservation of mass.** [Assessment Boundary: Representations should not involve bonding energy or valence electrons. Balancing equations are also not employed here.]

b. **Generate and revise explanations from the comparison of the physical and chemical properties of reacting substances to the properties of new substances produced through chemical reactions to show that new properties have emerged.** [Assessment Boundary: Comparison and analysis should not involve statistical techniques.]

c. **Construct explanations of energy being released or absorbed when simpler molecules are combined into complex molecules or complex molecules are broken down to simpler molecules.** [Clarification Statement: Simple molecules can include $H_2O$ and $CO_2$, and complex molecules can include $C_6H_{12}O_6$ in photosynthesis.] [Assessment Boundary: Further details of the photosynthesis process are not addressed.]

d. **Develop models to represent the movement of matter and energy in the cycling of carbon.** [Clarification Statement: Examples of the movement of matter and energy could include the cycling from carbon in the atmosphere to carbon in living things.] [Assessment Boundary: Further details of the photosynthesis process are not addressed.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

## Science and Engineering Practices

**Developing and Using Models**

Modeling in 6–8 builds on K–5 and progresses to developing, using, and revising models to explain, explore, and predict more abstract phenomena and design systems.

- Use and/or construct models to predict, explain, and/or collect data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs. (d)
- Pose models to describe mechanisms at unobservable scales. (a)

**Constructing Explanations and Designing Solutions**

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories.

- Construct explanations for other qualitative or quantitative relationships between variables. (b)
- Apply scientific reasoning to show why the data are adequate for the explanation or conclusion. (c)

## Disciplinary Core Ideas

**PS1.B: Chemical Reactions**

- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (a),(b)
- The total number of each type of atom is conserved, and thus the mass does not change. (a),(c)
- Some chemical reactions release energy, others store energy. (c)

**PS3.D: Energy in Chemical Processes and Everyday Life**

- The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (c),(d)
- Both the burning of fuel and cellular digestion in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (d)

## Crosscutting Concepts

**Patterns**

Macroscopic patterns are related to the nature of microscopic and atomic-level structure. Patterns in rates of change and other numerical relationships can provide information about natural and human designed systems. Patterns can be used to identify cause and effect relationships. Graphs and charts can be used to identify patterns in data. (b)

- [Clarification Statement for b: Comparing properties is a search for patterns; finding a change in pattern indicates a new substance.]

**Energy and Matter**

Matter is conserved because atoms are conserved in physical and chemical processes. Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. (a),(d)

Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system. (c)

*Connections to other DCIs in this grade-level:* **MS.LS-SFT, MS.LS-GDRO, MS.LS-MEOE, MS.ESS-WC, MS.ESS-ESP**

*Articulation to DCIs across grade-levels:* **5.SPM, HS.PS-CR, HS.PS-E, HS.LS-MEOE**

*Common Core State Standards Connections: (Note: these connections will be made more explicit and complete in future draft releases)*

*ELA –*

**RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

**W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research.

**W.6.8** Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.

**W.7.8** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

*Mathematics –*

**MP.2** Reason abstractly and quantitatively.

**MP.4** Model with mathematics.

**MP.7** Look for and make use of structure.

**MP.8** Look for and express regularity in repeated reasoning.

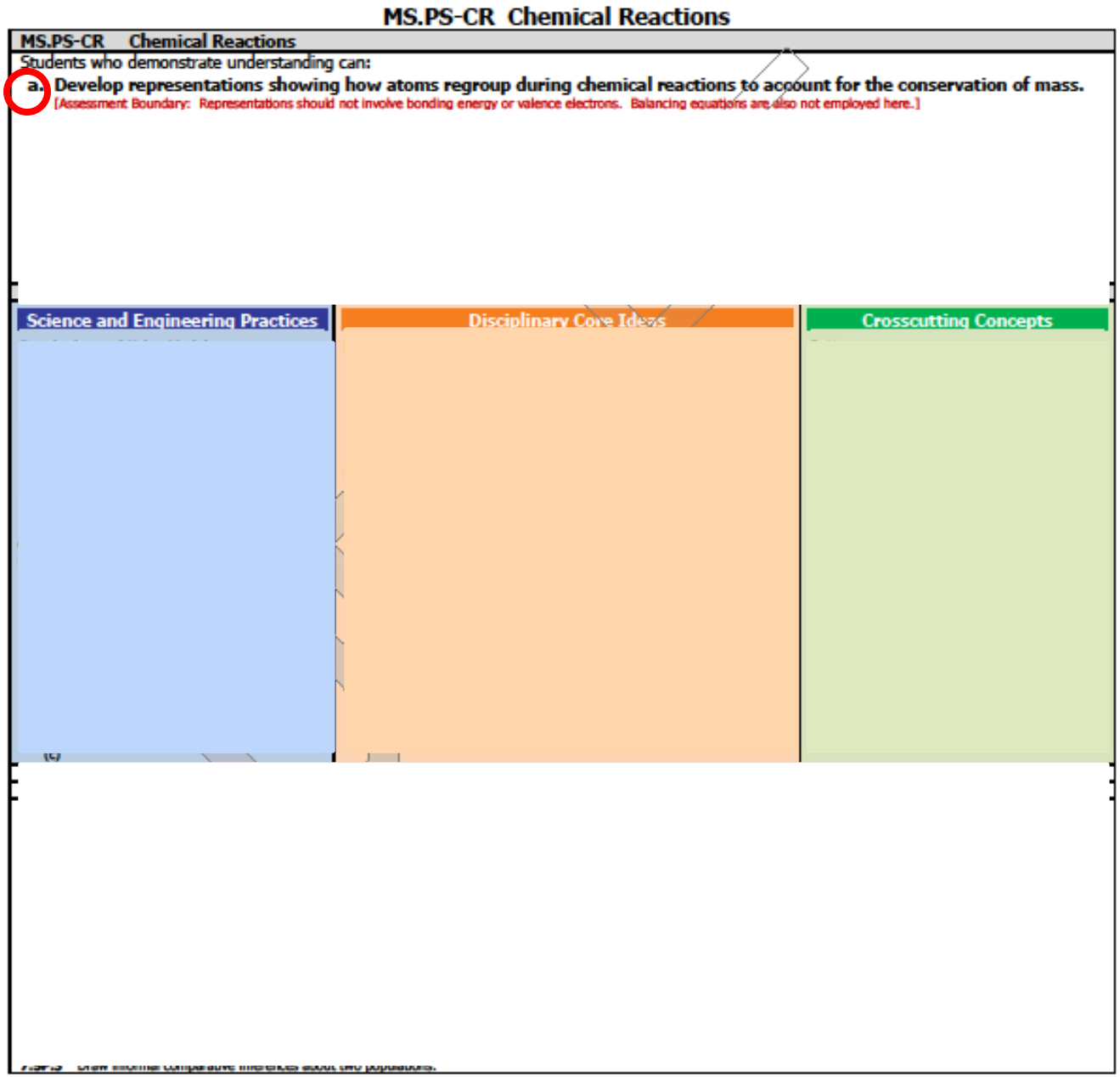
**6.SP** Develop understanding of statistical variability.

**6.EE** Represent and analyze quantitative relationships between dependent and independent variables.

**7.SP.3** Draw informal comparative inferences about two populations.

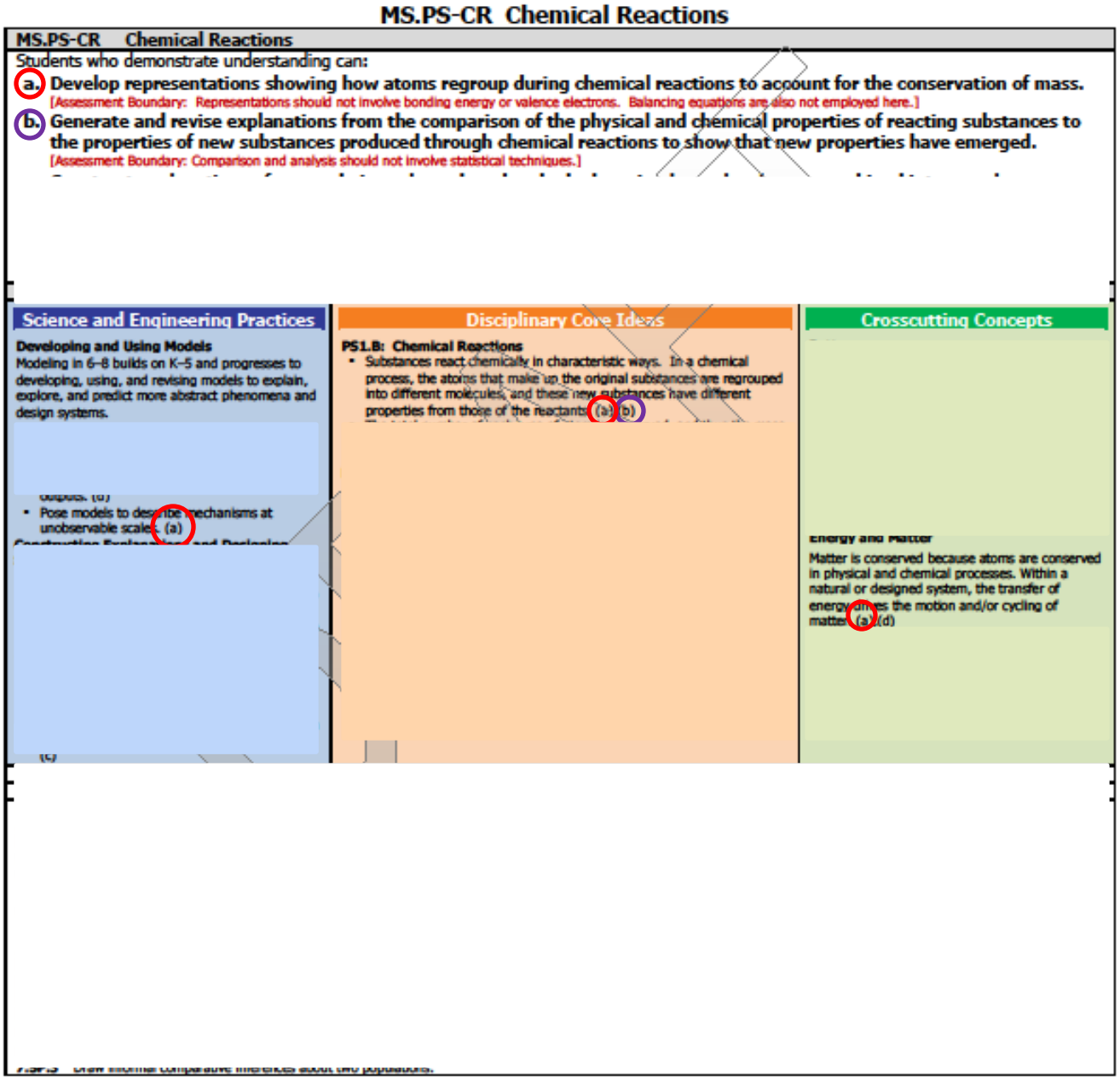
Standard and performance expectations

Foundations box from Framework



Standard and performance expectations

Foundations box from Framework



# MS.PS-CR Chemical Reactions

**MS.PS-CR Chemical Reactions**

Students who demonstrate understanding can:

**a. Develop representations showing how atoms regroup during chemical reactions to account for the conservation of mass.** [Assessment Boundary: Representations should not involve bonding energy or valence electrons. Balancing equations are also not employed here.]

**b. Generate and revise explanations from the comparison of the physical and chemical properties of reacting substances to the properties of new substances produced through chemical reactions to show that new properties have emerged.** [Assessment Boundary: Comparison and analysis should not involve statistical techniques.]

**c. Construct explanations of energy being released or absorbed when simpler molecules are combined into complex molecules or complex molecules are broken down to simpler molecules.** [Clarification Statement: Simple molecules can include $H_2O$ and $CO_2$, and complex molecules can include $C_6H_{12}O_6$ in photosynthesis.] [Assessment Boundary: Further details of the photosynthesis process are not addressed.]

**d. Develop models to represent the movement of matter and energy in the cycling of carbon.** [Clarification Statement: Examples of the movement of matter and energy could include the cycling from carbon in the atmosphere to carbon in living things.] [Assessment Boundary: Further details of the photosynthesis process are not addressed.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

## Science and Engineering Practices

**Developing and Using Models**

Modeling in 6–8 builds on K–5 and progresses to developing, using, and revising models to explain, explore, and predict more abstract phenomena and design systems.

- Use and/or construct models to predict, explain, and/or collect data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs. (d)
- Pose models to describe mechanisms at unobservable scales. (a)

**Constructing Explanations and Designing Solutions**

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories.

- Construct explanations for either qualitative or quantitative relationships between variables. (b)
- Apply scientific reasoning to show why the data are adequate for the explanation or conclusion. (c)

## Disciplinary Core Ideas

**PS1.B: Chemical Reactions**

- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (a),(b)
- The total number of each type of atom is conserved, and thus the mass does not change. (a),(c)
- Some chemical reactions release energy, others store energy. (c)

**PS3.D: Energy in Chemical Processes and Everyday Life**

- The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (c),(d)
- Both the burning of fuel and cellular digestion in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (d)

## Crosscutting Concepts

**Patterns**

Macroscopic patterns are related to the nature of microscopic and atomic-level structure. Patterns in rates of change and other numerical relationships can provide information about natural and human designed systems. Patterns can be used to identify cause and effect relationships. Graphs and charts can be used to identify patterns in data. (b)

- [Clarification Statement for b: Comparing properties is a search for patterns; finding a change in pattern indicates a new substance.]

**Energy and Matter**

Matter is conserved because atoms are conserved in physical and chemical processes. Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. (a),(d)

Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system. (c)

*Connections to other DCIs in this grade-level:* **MS.LS-SFD, MS.LS-GDRO, MS.LS-MEOE, MS.ESS-WC, MS.ESS-ESP**

*Articulation to DCIs across grade-levels:* **5.SPM, HS.PS-CR, HS.PS-E, HS.LS-MEOE**

Connections to Other Standards

# MS.PS-CR Chemical Reactions

## MS.PS-CR Chemical Reactions

Students who demonstrate understanding can:

**a. Develop representations showing how atoms regroup during chemical reactions to account for the conservation of mass.** [Assessment Boundary: Representations should not involve bonding energy or valence electrons. Balancing equations are also not employed here.]

**b. Generate and revise explanations from the comparison of the physical and chemical properties of reacting substances to the properties of new substances produced through chemical reactions to show that new properties have emerged.** [Assessment Boundary: Comparison and analysis should not involve statistical techniques.]

**c. Construct explanations of energy being released or absorbed when simpler molecules are combined into complex molecules or complex molecules are broken down to simpler molecules.** [Clarification Statement: Simple molecules can include $H_2O$ and $CO_2$, and complex molecules can include $C_6H_{12}O_6$ in photosynthesis.] [Assessment Boundary: Further details of the photosynthesis process are not addressed.]

**d. Develop models to represent the movement of matter and energy in the cycling of carbon.** [Clarification Statement: Examples of the movement of matter and energy could include the cycling from carbon in the atmosphere to carbon in living things.] [Assessment Boundary: Further details of the photosynthesis process are not addressed.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

### Science and Engineering Practices

**Developing and Using Models**

Modeling in 6–8 builds on K–5 and progresses to developing, using, and revising models to explain, explore, and predict more abstract phenomena and design systems.

- Use and/or construct models to predict, explain, and/or collect data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs. (d)
- Pose models to describe mechanisms at unobservable scales. (a)

**Constructing Explanations and Designing Solutions**

Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories.

- Construct explanations for either qualitative or quantitative relationships between variables. (b)
- Apply scientific reasoning to show why the data are adequate for the explanation or conclusion. (c)

### Disciplinary Core Ideas

**PS1.B: Chemical Reactions**

- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (a),(b)
- The total number of each type of atom is conserved, and thus the mass does not change. (a),(c)
- Some chemical reactions release energy, others store energy. (c)

**PS3.D: Energy in Chemical Processes and Everyday Life**

- The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. (c),(d)
- Both the burning of fuel and cellular digestion in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (d)

### Crosscutting Concepts

**Patterns**

Macroscopic patterns are related to the nature of microscopic and atomic-level structure. Patterns in rates of change and other numerical relationships can provide information about natural and human designed systems. Patterns can be used to identify cause and effect relationships. Graphs and charts can be used to identify patterns in data. (b)

- [Clarification Statement for b: Comparing properties is a search for patterns; finding a change in pattern indicates a new substance.]

**Energy and Matter**

Matter is conserved because atoms are conserved in physical and chemical processes. Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. (a),(d)

Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system. (c)

*Connections to other DCIs in this grade-level:* **MS.LS-SFD, MS.LS-GDRO, MS.LS-MEOE, MS.ESS-WC, MS.ESS-ESP**

*Articulation to DCIs across grade-levels:* **5.SPM, HS.PS-CR, HS.PS-E, HS.LS-MEOE**

*Common Core State Standards Connections: (Note: these connections will be made more explicit and complete in future draft releases)*

*ELA –*

**RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

**W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research.

**W.6.8** Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.

**W.7.8** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

*Mathematics –*

**MP.2** Reason abstractly and quantitatively.

**MP.4** Model with mathematics.

**MP.7** Look for and make use of structure.

**MP.8** Look for and express regularity in repeated reasoning.

**6.SP** Develop understanding of statistical variability.

**6.EE** Represent and analyze quantitative relationships between dependent and independent variables.

**7.SP.3** Draw informal comparative inferences about two populations.

Connections to Other Standards

# Public Feedback

- Two rounds of public feedback will guide the writing team.
  - Draft 1: Feedback until June 1
  - Draft 2: Available November

- Feedback will be aggregated and made public.

## The Next Generation Science Standards

The first public draft of the Next Generation Science Standards is available from May 11 to June 1. We welcome and appreciate your feedback.

- How to Read the Standards
- NGSS May Draft Front Matter
- Go to the NGSS Survey / PDF
- What's different about the NGSS:
  - Conceptual Shifts in the NGSS
  - Engineering, Technology, and Applications of Science in the NGSS
  - The Nature of Science in the NGSS
- College- and Career-Readiness and the NGSS
- Diversity and Equity in the NGSS: All Standards, All Students
- Public Attitudes Toward Science Standards
- Video: Why NGSS?
- Practices and Crosscutting Progression Matrices

The NGSS have been written as student performance expectations grouped by topics, and can be viewed in the topical groupings or individually. The draft performance expectations are composed of the three dimensions from the NRC Framework. These draft performance expectations describe how students will demonstrate their understanding. Click on the links to the left to learn more about the standards, and choose one of the buttons below to explore and provide comments on the standards.

Feedback collected during the comment period will be organized and shared with the leading states and writing team members. After the feedback is considered, a feedback report will be issued that will explain how feedback was handled and why.

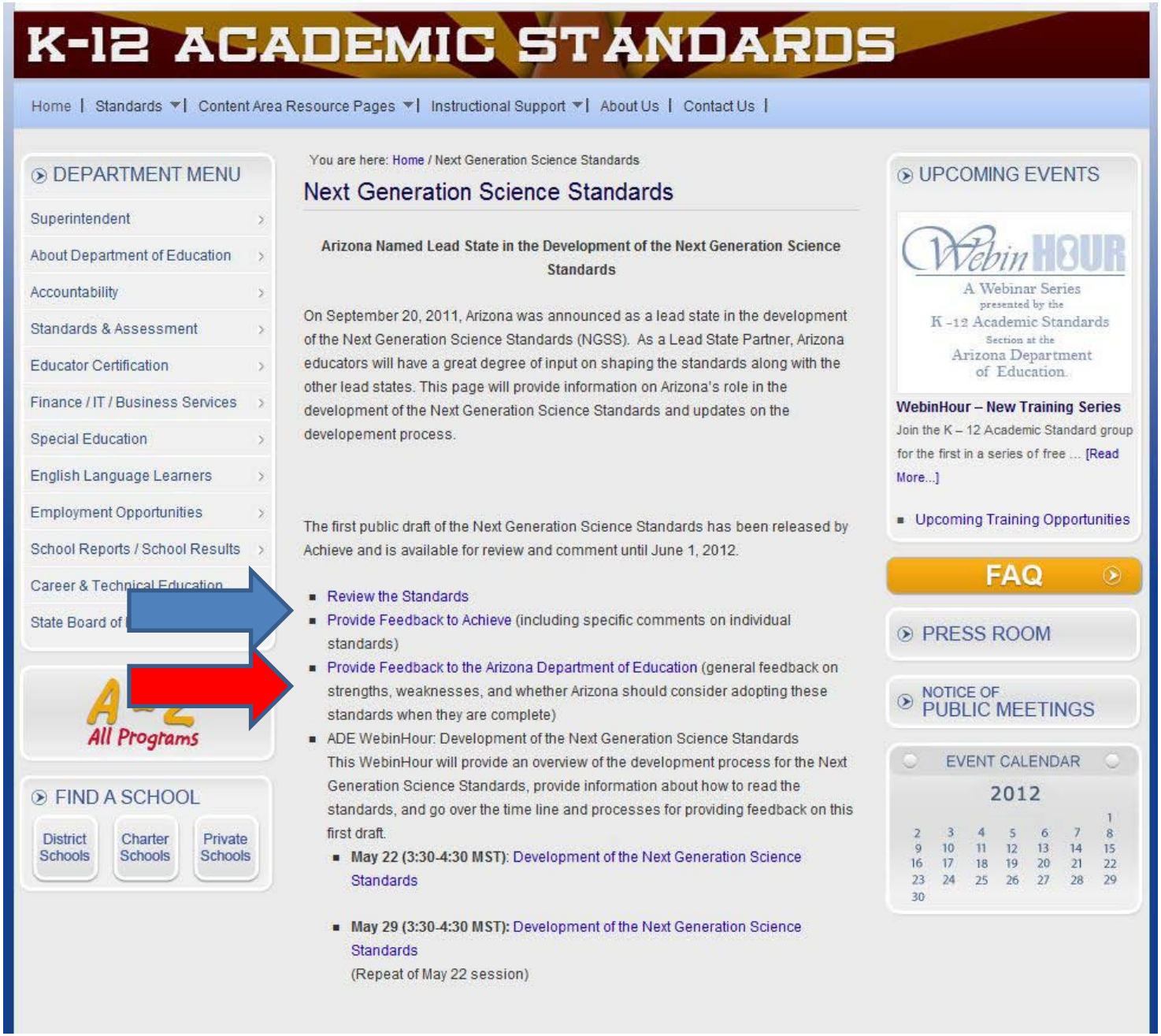
Search by topic

Search individual performance expectations

### What's New?

**The First Public Draft is Ready for Review!**

*Click here to read and provide comments on the first of two public drafts of the NGSS*




http://www.azed.gov/standards-practices/next-generation-science-standards/

# More Information:

- Visit the Achieve website for more information about the Next Generation Science Standards
  http://www.nextgenscience.org

- Download and read the Framework for K-12 Science Education
  http://www.nap.edu/catalog.php?record_id=13165

- Visit the NGSS update page on the ADE website
  http://www.azed.gov/standards-practices/next-generation-science-standards/

- Contact Lacey Wieser, Science Education Specialist
  Lacey.wieser@azed.gov

# Questions?

# Thank You!

**K-12 Academic Standards Section**
**High Academic Standards for Students Division**
**Arizona Department of Education**
602-364-2333

**Lacey Wieser**
**Science Education Program Specialist**
**602-364-2332**
**Lacey.wieser@azed.gov**