Overview of the *2014 South Carolina Academic Standards and Performance Indicators for Science*

Professional Development Session for Instructional Leaders
Summer 2014

AMENDED FOR DISTRIBUTION

Session Objectives

- Understand the similarities and differences between the 2005 and 2014 science standards
- Engage in the Science & Engineering Practices (SEPs) & conceptualize them in practice in the K-12 science classroom
- Develop resources through a collaborative network to support integration of the science standards into instructional practices

History of the 2014 South Carolina Academic Standards and Performance Indicators for Science

- By law, academic standards undergo a review and new adoption process AT LEAST every 7 years
- Fordham Institute – “South Carolina provides [2005] science standards that are clear and succinct, but that also outline most of the essential K-12 content that students need to learn.”
- 2005 Science Standards received an “A-” from the Fordham Institute

History Continued

- Jointly developed by staff at the State Department of Education (SCDE),the Education Oversight Committee (EOC), and a writing/review panel of stakeholders (classroom teachers, district leaders, STEM informal educators, university level researchers, etc.)
- *A Framework for a K-12 Science Education* (2012)
- Writing panel work based on NGSS
- Writing panel work based on Framework and 2005 standards
- Approval Process (State School Board and Education Oversight Committee)

Current Status of Science Standards

- With the exception of one High School Biology standard (H.B.5), the 2014 South Carolina Academic Standards and Performance Indicators for Science were approved for implementation by the State Board of Education (SBE) on January 8, 2014 and by the Education

- Oversight Committee (EOC) on February 10, 2014. The 2005 standard for high school biology (B-5) will remain in effect until further notice. Support document materials for the 2005 standard will remain available on the SCDE website.

Assessment Overview for 2014–15

End-of-Course Examination Program (EOCEP)

- Algebra 1/Mathematics for the Technologies 2
- English 1
- U.S. History and the Constitution
- Biology 1/Applied Biology 2

SC Palmetto Assessment of State Standards (SCPASS): Science and Social Studies

- Grade 3: students **DO NOT** take science or social studies
- Grades 4–8: students **take science <u>and</u> social** studies

Office of Assessment
Updates and Information

http://www.ed.sc.gov/agency/ac/Assessment/PowerPointsandHandouts.cfm

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Structure of the Academic Standards

A Framework for a K-12 Science Education (2012)

- 7 Crosscutting Concepts
- 8 Science and Engineering Practices (SEPs)

A Framework for K-12 Science Education (NRC, 2012)

Seven common threads or themes = Crosscutting Concepts:

1. Patterns
2. Cause & effect
3. Scale, proportion, and quantity
4. Systems
5. Energy & matter
6. Structure & function
7. Stability & change

Science & Engineering Practices

1. Ask questions and define problems
2. Develop and use models
3. Plan and conduct investigations
4. Analyze and interpret data
5. Use mathematical and computational thinking
6. Construct explanations and design solutions
7. Engage in scientific argument from evidence
8. Obtain, evaluate, and communicate information

Structure of the Standards Document

KINDERGARTEN

LIFE SCIENCE: EXPLORING ORGANISMS AND THE ENVIRONMENT

Standard K.L.2: The student will demonstrate an understanding of organisms found in the environment and how these organisms depend on the environment to meet those needs.

K.L.2A. Conceptual Understanding: The environment consists of many types of organisms including plants, animals, and fungi. Organisms depend on the land, water, and air to live and grow. Plants need water and light to make their own food. Fungi and animals cannot make their own food and get energy from other sources. Animals (including humans) use different body parts to obtain food and other resources needed to grow and survive. Organisms live in areas where their needs for air, water, nutrients, and shelter are met.

Performance Indicators: Students who demonstrate this understanding can:

K.L.2A.1 Obtain information to answer questions about different organisms found in the environment (such as plants, animals, or fungi).

K.L.2A.2 Conduct structured investigations to determine what plants need to live and grow (including water and light).

Transitioning from 2005 to 2014

- Moving from Bloom's Taxonomy & Scientific Inquiry to Science and Engineering Practices (SEPs)
- SEPs (i.e. construct explanations, develop and use models, asking questions, etc.) incorporated in the content
- Students designing devices and solutions to solve problems

Grade Level Content Shifts (Elementary)

K: Fungi (new)

1st: Light & Shadows (new)

2nd: Pushes, Pulls, Friction (shift from 3rd)

3rd: Electricity & Magnetism (shift from 4th)

4th: Sound (shift from 3rd)

Grade Level Content Shifts (Middle & High)

6th: Protista & Fungi (new)

7th: Genetic mutations, selective breeding, biotechnology, food webs/energy pyramids (shift from HS Biology)

Biology: Biotechnology expanded

2005 H.B.5--Biological Evolution and the Diversity of Life will remain in use until the EOC and SBE reach a consensus

Science and Engineering Practices (SEPs)

	Science	Engineering
S.1A.1	Ask a question	Define a Problem
S.1A.2	Develop and Use Models	Develop and Use Models
S.1A.3	Plan investigations	Plan designs and tests
S.1A.4	Analyze and Interpret Data	Analyze and Interpret Data
S.1A.5	Use Mathematics and Computational Thinking	Use Mathematics and Computational Thinking
S.1A.6	Construct Explanations Using Evidence	Design Solutions Using Evidence
S.1A.7	Engage in Argument Using Evidence	Engage in Argument Using Evidence
S.1A.8	Obtain, Share, and Evaluate Information	Obtain, Share, and Evaluate Information

Overview of Fall PD
(What will your teachers learn?)

- Effective instructional strategies to aid in the implementation of science and engineering practices
- Shifts in content by grade level
- Value of crosscutting concepts in vertical alignment
- Grade level progressions for each SEP

Coming Soon…

SEPs in Practice Classroom Observation Checklist developed collaboratively state-wide

Nuggets to Take Away

- There are similarities and differences between the 2005 and 2014 science standards
- How the SEPs look in practice in the K-12 science classroom
- Support teachers as they integrate the science standards into their instructional practice

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