Alignment of Oregon Science Standards

Crosswalk of 2009 Oregon Science Standards to
2014 Oregon Science Standards (Next Generation Science Standards)

OREGON DEPARTMENT OF EDUCATION

Alignment of Oregon Science Standards

2014 Science Standards (Next Generation Science Standards) and 2009 Science Standards

Introduction

These pages show how the content, practices, and cross-cutting concepts (CCC) associated with the new Oregon Science Standards (NGSS) adopted in March 2014 align to the Oregon Science Standards adopted in February 2009. It is important to remember that the new Oregon Science Standards (NGSS) will be phased in so that districts can implement changes in local curriculum, provide appropriate professional development for teachers and administrators, and provide students with opportunities to learn the content, practices, and cross-cutting concepts prior to assessment. Oregon students will continue to be assessed on the Oregon 2009 Science Content Standards via OAKS Science until a new science assessment that aligns with the newly adopted standards is developed and becomes operational in 2018-2019.

Purpose

The purpose of this document is to provide educators with a view of the alignment between the 2009 content standards currently required as part of each Oregon district's curriculum and instruction in the subject area of science, and those contained in the new 2014 Oregon Science Standards (NGSS). An examination of the content of these pages is meant to provide at least some clarification on the following issues:

- What content, practices, and cross-cutting concepts are new and have not previously been a part of Oregon's 2009 Science Standards?
- What content, practices, and cross-cutting concepts will now need to be part of the curriculum at an earlier (or later) grade level than where they are currently taught and assessed?
- In what instances are similar skills being addressed, but with a somewhat different emphasis or with different expectations regarding the degree of sophistication?

Organization of the Alignment Tables

The rows in the table show whether there is a corresponding 2009 Oregon science standard(s) for each of the new 2014 Oregon science standards (NGSS) performance expectation (PE) in the areas of content, practices, and cross-cutting concepts (CCC). Codes designate the degree of alignment: S = Strong; P = Partial; D = Different Grade; N = New (not in any 2009 ORSS). The 2009 Oregon Science Standards that are not aligned to any new 2014 Oregon Science Standard (NGSS) are included at the end of the document. The bulleted statements at the beginning of the document provide summary information about the differences between the two sets of standards.

Alignment of Oregon's 2014 Science Standards (NGSS) with 2009 Oregon Science Standards (2009 ORSS)

Degree of Alignment Codes: **S** = Strong; **P** = Partial; **D** = Different Grade; **N** = New (not in any 2009 ORSS)
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Grade: 4

- Energy, Earth Systems and Life Sciences are more developed and rigorous in the NGSS than in the 2009 ORSS.
- The study of waves is new to 4th grade in NGSS.
- Study of matter has moved to 2nd and 5th grade.
- Most standards in the 2009 ORSS 3-5 grade band remained intact, the greatest changes are the instructional approaches moving from content based to more performance based. In NGSS, students are asked to understand, use and apply scientific processes to a greater degree than in 2009 ORSS.
- In the NGSS, the content is more integrated with scientific inquiry standards, increased rigor and real-world connections.

NGSS PE	2009 ORSS	NGSS Content	NGSS Practice	NGSS CCC	Notes on Alignment
4-PS3 Energy					
4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.	4.1P.1	S		N	CCC is energy and matter.
4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	4.1P.1 4.3S.1	S	P	N	CCC is energy and matter.
4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.	3.2P.1 4.3S.1	D/P	P	N	CCC is energy and matter.
4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	4.4D.2		S	N	CCC is energy and matter.
4-PS4 Waves and Their Applications in Technologies for Information Transfer					
4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	6.2P.1	D/S		N	CCC is patterns.
4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	4.1P.1	S		N	CCC is patterns.
4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.		N		N	CCC is patterns.
4-LS1 From Molecules to Organisms: Structures and Processes					
4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	5.1L.1	D/S		N	CCC is systems and system models.

Alignment of Oregon's 2014 Science Standards (NGSS) with 2009 Oregon Science Standards (2009 ORSS)

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Grade: 4

NGSS PE	2009 ORSS	NGSS Content	NGSS Practice	NGSS CCC	Notes on Alignment
4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	4.2L.1 5.2L.1	P P		N	CCC is systems and system models.
4-ESS1 Earth's Place in the Universe					
4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.	4.1L.1 4.2E.1	P S		N N	CCC is patterns.
4-ESS2 Earth's Systems					
4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	4.2E.1	S		N	CCC are patterns and cause and effect.
4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	5.3S.2		D/S	N	CCC are patterns and cause and effect.
4-ESS3 Earth and Human Activity					
4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	4.1E.1	S		N	CCC is cause and effect.
4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	4.4D.2 4.3S.3		S P	N N	CCC is cause and effect.
3-5-ETS1 Engineering Design					
3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	4.4D.1		S	N	CCC is influence of engineering, technology, and science on society and the natural world.
3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	5.4D.1		D/P	N	CCC is influence of engineering, technology, and science on society and the natural world.
3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	4.4D.2 4.4D.3		S P	N	CCC is influence of engineering, technology, and science on society and the natural world.
2009 ORSS not aligned to any NGSS:					
4.3S.2 Summarize the results from a scientific investigation and use the results to respond to the question being tested.					