

NGSS NOW

9 things you need to know about the NGSS this month (and a  Science fact)

December 2015

1 Coming Soon: New NGSS EQulP Teaching Channel Videos

This month, keep an eye out for an exciting new video series highlighting the Educators Evaluating Quality in Instructional Products (EQulP) for Science! Developed through a collaboration between Achieve and the Teaching Channel, these videos capture some of the key components of what the NGSS look like in instruction, as well as the evaluation and feedback process the rubric is designed to support.

The videos cover topics that are embedded within the rubric, such as three-dimensional learning and monitoring student progress. In addition to providing a snapshot of some of the topics and deep thinking around the NGSS that the EQulP rubric supports, the videos also highlight some of the major questions and ideas that emerge from an EQulP for Science training.

Look for these videos in mid-December! While you're waiting, check out [other videos](#) Achieve and the Teaching Channel have produced, including an introduction the NGSS and some classroom examples.

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2

[Language Demands and Opportunities in Relation to Next Generation Science Standards for ELLs](#)

By Helen Quinn, Okhee Lee, and Guadalupe Valdés

"This paper highlights challenges and opportunities as English Language Learners engage with the Next Generation Science Standards. These new standards represent a major shift in science instruction, toward an explicit focus on scientific sense-making, language use, and scientific practices."

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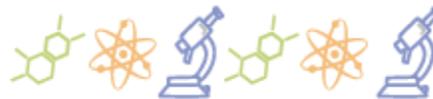
3

[How to launch STEM investigations that build on student and community interests and expertise](#)

By Philip Bell, Deb Morrison, and Angela Debarger

Looking for new ways to develop learning experiences that elicit and build upon students' prior knowledge? Check out this new resource from STEM Teaching Tools!

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4

[Standards of the Month](#)

"Bundling" has been presented in past issues of NGSS Now. In this issue of NGSS Now, we present an example of a middle school bundle of performance expectations (PEs). Instruction leading to this bundle of PEs would help students learn about the way that energy in the form of heat affects the states and physical properties of a pure substance, in addition to incorporating multiple practices and crosscutting concepts. How would you design lessons to lead toward this bundle and develop student understandings? Could you use the Science Phenomenon of the month (see below) to help engage students in building toward these concepts?

[MS-PS1-4](#). Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

[MS-PS3-3](#). Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.*

[MS-PS3-4](#). Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

For a more in-depth look at these NGSS PEs and to search for others, read more [here](#). Need more context? See where these ideas are introduced in [A Framework for K-12 Science Education](#) (pages [106](#) and [120](#)).

5 New Ways to Bundle the NGSS

The NGSS may be grouped in a variety of ways for instruction, so long as all of the concepts and practices in a grade band or grade level are addressed. This includes groupings beyond those shown in print versions of the NGSS, or the arrangements that appear when the standards are searched in the NGSS website. Often, people think the practice of grouping Performance Expectations (PEs) together for instruction, or "bundling", is limited to rearranging the PEs. However, units of instruction may draw upon any of the Science and Engineering Practice (SEP), Crosscutting Concept (CCC), or Nature of Science (NOS) elements found within a given grade level or grade band.

The elements are the statements in the NGSS that detail parts of the SEPs, CCCs, and NOS in each grade level and grade band. Appendices [E](#), [G](#), and [H](#) of the NGSS present the SEPs, CCCs, and NOS, and are based upon the progressions described in the Framework.

6 QUESTION OF THE MONTH

Q: In middle and high school, the NGSS are presented in grade bands (6-8 for middle school and 9-12 for high school), as opposed to the grade levels used for elementary. How should a middle school or high school arrange the standards in these grade bands for instruction?

A: For middle school and high school, decisions about how to divide the content by levels, or even by courses, are up to each individual state and district that decides to implement the NGSS. However, the NGSS writers provided some models for possible ways to divide the grade levels in middle and high school in [Appendix K](#), and some states have created official course pathways for their state.



**SCIENCE
FUN FACT**

Feeling frosty? Water changes form from vapor, to liquid, and to solid as heat energy is transferred

away from the water molecules. This occurs dramatically as [rime ice forms on mountaintops](#), as in the image below.



Rime ice extends several feet horizontally from a sign marking the summit of 5,774-foot Mount Adams, the second highest mountain in New England, on Tuesday, Nov. 17, 2015, in northern New Hampshire. Monday's freezing fog and strong winds formed the rime ice, creating a winter wonderland above treeline in New Hampshire's aptly named White Mountains. (AP Photo/Robert F. Bukaty)

NGSS Educator Blogs

7

[Discovering NGSS: A Facilitator's Experience](#)

By Sean Musselman, *Musselman/Science*
November 16, 2015

"I left Burlington for NSTA Philadelphia to participate in a "Discover the NGSS Train-the-Trainer" workshop designed specifically for science education coaches, administrators, and PD facilitators. The workshop provided opportunities to connect with educators like me and wrestle with the NGSS and its implications for classroom curriculum and instruction."

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8

[What I Can Do](#)

By Anna Van Dordecht, *Exploring the NGSS: Sonoma County Department of Education*
November 16, 2015

"I can't do everything I know would be beneficial for science education... But I can do some of it.

I can support those who are making NGSS, STEM, maker education and more come to life in their classrooms and schools."

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9

[NGSS in the News](#)

[Why teachers embrace Kentucky science standards](#)

By Tricia Shelton, *Courier-Journal*
November 18, 2015

"[In] the Kentucky Academic Standards for Science (Science KAS) - which are based on the Next Generation Science Standards (NGSS)...students lead the way through investigations and figuring out answers to their own questions with teacher guidance, gaining a whole picture of learning that connects to their own lives."

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