NGSS NOW

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

February 2016

1 Bundling Standards

The concept of "bundling" NGSS performance expectations (PEs) has been presented in a Question of the Month in past issues of NGSS Now. This month features an example of how middle school PEs could be grouped in a bundle in order to develop an instructional unit.

MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
MS-ESS2-2 Construct an explanation

2 Science Phenomena: Rivers and glaciers change Earth's surface

Flowing water in rivers and moving ice in glaciers sometimes change color after they pass over rock and soil.

These phenomena and their results can be observed as the dark bands in the glacier shown below, or in the brown sediments deposited by the Mississippi River into the Gulf of Mexico. These changes may occur over a number of timescales, ranging from years, to months, to seconds. Each of these processes changes the shape of the Earth.

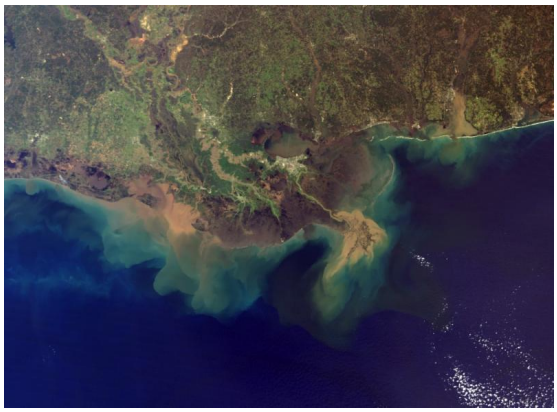
based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

As districts implement the NGSS, teachers and principals might consider these questions:

a. What type of lessons can teachers develop to help students build toward this bundle of PEs?
b. How could a classroom discussion about this month's "Science Phenomena" (see right) help engage students around this bundle of PEs?

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 120, 179 and 184).

The dark bands in the Lake George glacier in Alaska are composed of rock eroded from the mountains of the Chugach range, shown here in the background. (Photo credit: Hans-Ulrich Schlumpf)



The Mississippi River, shown in this aerial photo, deposits brown sediments into the Gulf of Mexico. (Photo credit: NASA)

One of the shifts in the NGSS is to focus instruction on engaging students with meaningful phenomena that can be explained through the application of SEPs, CCCs, and DCIs. To see some of the ways educators are thinking about engaging students with phenomena, go here and here.

3 QUESTION OF THE MONTH

Q: In the NGSS, some disciplinary core idea (DCI) elements are followed by the note "(*secondary*)." What does this term "secondary" indicate?

A: All of the DCI elements are equally important for instruction and assessment; therefore during instruction, the term "secondary" is not meant to decrease the importance of a DCI element, or to identify an optional element. Only one DCI could be used to name each performance expectation (PE). For example, PS1.A was used to name the performance expectation MS-PS1-4. When more than one DCI was used to develop a PE, the writers used the DCI that focused on the central ideas, versus examples or special cases, of the PE to develop the PE code.

Earth's magnetic field has changed its intensity and orientation numerous times during earth's 4.6 billion year history.

These changes occur over hundreds or thousands of years. In modern times however, Earth's magnetic field appears to be weakening 10 times faster than originally predicted, especially over the Western Hemisphere. Scientists are unsure of the reasons for these changes.

NGSS in Educator Blogs

My DCI Epiphany

By @tksciguy, NGSS Musings

January 24, 2016

"After 2 1/2 years of working with the NGSS, I was starting to feel a bit confident about understanding its vision--not making the vision a reality, but at least understanding the vision.

"Then, while I was enjoying the snow days this week, I downloaded and began to read the National Academies

Our First Day

By Tricia Shelton, Partnerships in Learning

January 21, 2016

"'Teacher learning is interwoven with student learning.' This is a core belief from the Kentucky Teacher Leadership Framework that is the driver behind our Making Thinking Visible partnership. With the goal of implementing the Next Generation Science Standards, we started our discussions with the question:

newest resources for NGSS implementation, Science Teachers' Learning: Enhancing Opportunities, Creating Supportive Contexts...It was in the 'quick look' at the vision that I had an epiphany."

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"When considering our past "first days" of our classes that focus on the nature of science, how does the new vision in the NGSS include how science works or the Nature of Science (NGSS Appendix H)?"

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NGSS in the News

6 Iowa's "Next Generation" science standards improve learning

By Abby Richenberger, *The Des Moines Register*
January 22, 2016

"Since I started aligning my teaching to what has become the new Iowa Science Standards, I have really seen my students' engagement increase. They are excited to come to class. My students appreciate the interactive approach, and they are learning more science and doing so in a deeper way.

"I am thrilled to make the necessary changes in my own practice to meet the challenge of the new Iowa Science Standards, and I encourage parents to

7 Take the 3D Challenge

By Rich B., *Back4MoreScience*
January 17, 2017

"I recently finished a Plate Tectonics unit with my 8th grade students. This was one of my first attempts to really dive into all 3 dimensions of NGSS: Science & Engineering Practices (SEPs), Cross-cutting Concepts (CCCs), and Disciplinary-Core Ideas (DCIs)."

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engage with their students' teachers to learn more about these important instructional shifts."

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NEXT GENERATION SCIENCE STANDARDS
For States, By States