NGSS NOW

6 things you need to know about the NGSS this month

June 2017

1 EQuIP Peer Review Panel for Science has a New Category, New Badge, and New Pathway

Last month, the EQuIP Peer Review Panel (PRP) for Science expanded its fall 2016 call for submissions with the goals of (1) expanding the categories of lessons and units that will be shared by the PRP, (2) announcing a new digital badge that will follow high-quality materials wherever they are posted online, and (3) opening the PRP review process to developers who face intellectual property constraints.

A new category entitled "Quality Works in Progress" was created. Early reviews by the PRP surfaced numerous lessons and units that addressed various criteria of the EQuIP Rubric for Science very well, but did not rate highly enough to be shared with the public. Therefore, a new category has been added that will include any lessons and units identified to have strongly addressed *at least one* of the rubric's criteria.

A new digital badge for "Examples of High Quality NGSS Design" was developed. In the future, any lessons and units identified by the PRP as "Examples of High Quality NGSS Design" will be both shared online and awarded the new digital badge. With the PRP's approval, the unique badge can be displayed on the submitter's website(s).

Achieve added a new submission pathway for developers with intellectual property constraints. Developers who were previously restricted from submitting NGSS lessons or units under one of the Creative Common licenses can now have their materials reviewed and recognized by the PRP. For any materials deemed to be "Examples of High Quality NGSS Design", developers can use the new badge if they agree to (1) share the materials publicly and make them freely available, (2) restrict the claim of high-quality NGSS design to the specific lesson or unit *as it was reviewed* by the PRP, and (3) post the PRP's feedback a*long with* the reviewed instructional materials.

Click here for important details about the current submissions process for lessons and units.

2 The PEEC Tool is Coming Soon!

Later this month, Achieve will release the latest version of the PEEC tool. "PEEC" stands for the **Primary Evaluation of Essential Criteria** for NGSS Instructional Materials Design. Along with recent revisions to the EQuIP Rubric for Science, the resource build on the public draft of PEEC to (1) help educators identify instructional materials programs designed for the NGSS and (2) help curriculum developers and publishers design their materials for the NGSS.

Although PEEC was specifically designed to evaluate materials designed for the Next Generation Science Standards, development of the tool was rooted in research from the NRC's *A Framework for K-12 Science Education* which shows what works well for all students when learning science. Therefore, any state or district that has adopted science standards *based on the Framework* can benefit from using the PEEC tool.

3 Featured Standards

This issue of NGSS Now features an example of how certain PEs* could be bundled in order to develop an instructional unit that engages students in science phenomena.

MS-PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.

Teachers Note: This month's featured phenomenon led to the discovery of Neptune. You may need to add an experiential element for students to access the phenomenon.

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For a more in-depth look at these NGSS PEs and to search for others, read this.

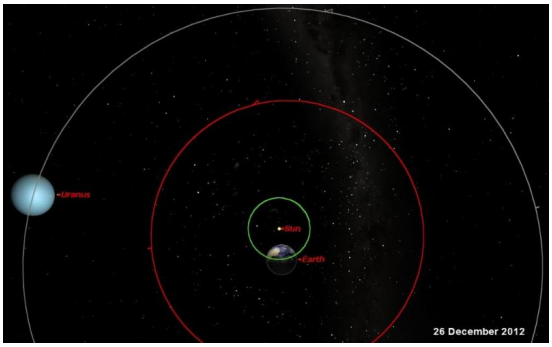
Need more context?

See where these ideas are introduced in A Framework for K-12 Science Education (pages 116, 175, and 177).

4 Science Phenomenon

This phenomenon offers teachers a potential way to connect our "Featured Standards" (see #3) to a real-world phenomenon:

In the early 19th century, a group of astronomers were using a telescope to observe Uranus' orbit around the sun. They noticed that the planet's orbit was irregular and not elliptical as they had expected. Why was this the case?



Below are some high-level lines of student inquiry that could help students facilitate their understanding of DCIs related to the featured science phenomenon:

Click here for a video of an elliptical orbit.

- [with simulation of orbit] Observing the irregular nature of the orbit, what things might interact with it to cause it to move slightly off course? Are those things pushing or pulling it?
- Does this planetary interaction take place elsewhere in the solar system? Galaxier.

- What other effects does gravity have in the solar system?
- [after determining the cause of the irregular orbit] Examine data to analyze the size of Uranus and Neptune. How might Uranus' orbit change if Neptune had more mass? Less mass?

5 Using Online Simulations to Support the NGSS in Middle School Classrooms

By Lesley Gates, Loren Nikkel, and Kambria Eastham
California Classroom Science
May 8, 2017

Middle school teachers in Kings Canyon Unified School District (KCUSD), a CA NGSS K-8 Early Implementation initiative district, have been diligently working on transitioning to the NGSS integrated model for middle school. This year, the teachers focused on building their own knowledge of the Science and Engineering Practices (SEPs). They have been gathering and sharing ideas at monthly collaborative meetings to how to make sure their students are not just learning about science but that they are actually *doing science* in their classrooms.

Example from a 6th-grade classroom:
MS-LS1-3: *Use argument supported by evidence for how the body is a system of interacting subsytems composed of groups of cells.*

Through multiple activities, students explored, researched, collaborated, and communicated information related to specific body systems and how they interacted with each other. Mr. Nikkel wanted students to understand that the different body systems are made up of organs that must all work together for the system to function properly (Crosscutting Concept: Systems and System Models). He found an online simulation from Gizmos called "Digestive System" that allowed students to investigate the order and function of the organs that are involved in the breaking down of food, absorption of nutrients, and elimination of waste. Students used the simulation to test the model digestive systems that they created. Read more.

NextGen Teachers in Delaware showcase their work at Open House

By Delaware Department of Education
Take Note: Education in the First State
May 31, 2017

As Capital School District chemistry teacher Corey Pennypacker has implemented the NGSS with his existing curriculum, he's witnessed increased interest and enthusiasm among his Dover High students.

"The kids are into it because we're using real-world applications," he said, citing as an example an assignment he gave students to determine how many chemicals should be added to a home pool to reach the correct pH balance. "We propose a scenario and they have to reason their way through it. It's definitely a different way of teaching."

Pennypacker was one of hundreds of NextGen teacher leaders, other educators and science education advocates who gathered at the Department of Education in Dover to showcase the valuable NGSS work taking place in Delaware schools.

Much of the NextGen teacher leaders' focus over the past year has been on the development of NGSS-aligned performance tasks, which they showcased in a fair-like exhibition at the event. Read more.

NEXT GENERATION SCIENCE STANDARDS
For States, By States