

SDUHSD Science Newsletter
September 2017
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Cindi and Jenn will be using these updates as a communication tool each month. The newsletter archive is hosted [here](#). Please e-mail jennifer.mccluan@sduhsd.net should you notice any colleagues not receiving it.

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Professional Development 2017-2018

It was great seeing everyone at our September PDs. You can find the slide decks for each day linked [here](#) on our district science website.

Our next PD dates take place in October. Details regarding the focus of our PDs can be found [here](#). Please request your sub using budget code "District Achievement" if you have not already done so. If you are unable to attend a PD session, please notify your site principal and Jenn McCluan. All PD sessions will take place at the District Office Large Board room from 8:00 am - 2:30 pm. Our January Inservice is scheduled for 1-30-18 (Jenn and Cindi will be in touch once we have secured a location).

2nd Set of Fall PDs		Spring PD	
7th & 8th Grade	10-25-17	7th & 8th Grade	3-7-18
Biology	10-24-17	Biology	3-1-18
Chemistry & Physics (+LCC Bio)	10-26-17	Chemistry & Physics	3-6-18

NGSS Updates and Resources

[Things to Know about NGSS This Month](#)

Highlights for September include: redesigned NGSS website with increased efficiency to search the standards.

[NGSS Now Newsletter](#)

NGSS now publishes a monthly newsletter highlighting quality K-12 science education.

[Next Gen Navigator-September](#)

In this new NSTA publication, the focus of the September Issues is a continued examination of NGSS Assessment.

[Integrating Science Practices into Assessment Tasks](#)

These “task format” tables included in this document are tools to help teachers and district leaders design three-dimensional assessment tasks. They are based on the language of A Framework for K-12 Science Education and the NGSS Evidence Statements, focusing on all eight science practices and two engineering practices. These task formats represent different ways that assessment tasks can be written to engage students in science practice. They do not specify precisely which disciplinary core ideas are to be integrated into tasks, a process that would be determined by an analysis of the disciplinary core ideas.

[Prompts for Integrating Crosscutting Concepts into Assessment and Instruction](#)

This set of prompts is intended to help teachers elicit student understanding of crosscutting concepts in the context of investigating phenomena or solving problems. These prompts can be used as part of a multi-component assessment tasks—or they can be used in formative assessment discussions in the classroom. These prompts should not be used in isolation, and the blanks provided are intended to be determined using the content of the scenario presented at the beginning of a multi-component task.

[Science Snacks](#)

An Exploratorium Snack is a hands-on science activity. Science Snacks are tabletop exhibits or explorations of natural phenomena that teachers or students can make using common, inexpensive, readily available materials. Science Snacks are divided into easy-to-follow sections that include instructions, advice, and helpful hints. Each one begins with a photo and/or video, a short introduction, and a list of materials. Other sections include assembly instructions, how to use the activity, and explain what’s going on, science-wise. Most Science Snacks can be built by one person; we indicate if a partner or adult help is needed, this is indicated. A section called "Going Further" offers interesting bits of additional scientific and historic information.

Interesting Reads and Resources

[Written Assessment in Three Dimensions](#)

The September issue of Science Scope features an article by Susan German on how you can use the NGSS evidence statements to create a summative assessment.

[Elemental Haiku](#)

A review of the Periodic Table composed of 119 science haiku, one for each element, plus a closing haiku for element 119 (not yet synthesized). The haiku encompass astronomy, biology, chemistry, history, physics, and a bit of whimsical flair. Click or hover over an element on the Periodic Table to read the haiku. Share these poems and add your own on Twitter with hashtag #ChemHaiku. Thanks to Sally Nguyen for sharing!

[Sand Liquefied Phenomenon](#)

Thanks to Brinn Belyea for sharing!

[Science and Football](#)

This article explores the physics of kicking a 61 yard field goal. Thanks to Brinn Belyea for sharing!

[Temperature is Not What you Think It Is](#)

This Wired article explores definitions of temperature. Thanks to Brinn Belyea for sharing!

Middle School Science

[ACS Middle School Chemistry](#)

In middleschoolchemistry.com, students help design investigations to answer questions about phenomena they observe. They use molecular model illustrations, animations, and physical models to help understand and explain their observations on the molecular level. Designing investigations and developing and using models to explore and explain phenomena help students understand the nature of the science practice, the disciplinary core ideas, and the crosscutting concepts in chemistry-related physical science.

[Teaching Thermal Energy Concepts in a Middle School Mathematics-Infused Science Curriculum](#)

The lesson highlighted in this article builds on a traditional thermal conduction laboratory experience that many middle school science teachers are familiar with and scaffolds the lesson by infusing mathematical skills that complement the science content objectives.

[Designing a Sustainable Neighborhood](#)

Bob Loy, instructional coach at Creekside Middle School in Carmel, Indiana, led the implementation of an interdisciplinary, project-based design curriculum named “Designing a Sustainable Neighborhood” with students working collaboratively to design energy-efficient homes. The project lasted a month. As junior engineers, 450 seventh-grade students explored the relationships between design criteria, such as energy efficiency and affordability. In designing their buildings, students also explored aspects, such as trade-offs, that became more concrete when students strived to balance the need to reduce cost while meeting energy requirements.

High School Science

[The Case of Dinosaur Metabolism](#)

This *Science Teacher* article describes a lesson in which biology students are challenged to support their claims with evidence-based reasoning as they research the thermoregulation of dinosaurs.

[Making Physicists: Reworking the “Problem Set”](#)

Physics teacher Adam Cross shares his thinking around Mazur’s approach to instruction and assessment. Excerpt: “When I first read Mazur’s summary of this approach, the thing that stood out to me is that we are showing students that the thinking process is what we value. Students are also able to take risks in solving these problems because they are not penalized for incorrect answers.”

[Reasoning from Models](#)

This article addresses these challenges with activities that can be connected with metacognitive tools to help students understand electric current. Metacognition in learning involves thinking about thinking—choosing the right tools for certain tasks and having the self-regulation needed to efficiently use those tools (Koch 2001). Students often need explicit instruction in using metacognitive tools (DiGisi and Yore 1992). Those used here include teacher questioning about the development of and connections between models (Hewson, Beeth, and Thorley 1998), as well as student reflections, both individual and group (Efklides 2008). These pedagogical tools are interdependent.

[Modeling Periodic Patterns](#)

This NSTA *Science Teacher* article explores a lesson that asks students to analyze chemical reactions to determine trends in ionization energy and electron affinity.

Learning Opportunities

High School Chemistry Teacher's Network

Debra Hammill, a chemistry teacher in North County, is seeking to bring high school teachers together to discuss best practices in unit planning, assessment, and instruction for chemistry in the NGSS. She will coordinate and host meetings throughout the school year. For more information, please contact Debra directly at debra.krohn@gmail.com.

Salk Research Connections for Teachers

On Saturday, October 14th, Salk Institute will host an event for science educators from 8:30 am - 2:00 pm (Lunch provided). This Free Symposium for middle and high school science teachers will focus on the goals of translational medicine and the challenges of taking basic research into actual therapies. Featuring:

Michelle Booden, PhD Senior Director, Office of Technology Development
Nasun Hah, PhD Director, Next Generation Sequencing Core Facility
Ron Evans, PhD Professor and Director, Gene Expression Laboratory

Teachers will then have the opportunity to collaborate with each other to develop NGSS focused curriculum connections for direct classroom applications. Salk Education Outreach staff will be on hand to facilitate these discussions and will provide ongoing support to teachers throughout the school year.

Salk Mobile Science Lab

This program provides a unique opportunity for your students to learn about genetics and DNA from real Salk Institute scientists. The Salk Institute is a world renowned laboratory on the cutting edge of genetics research. During the three-day mobile science lab curriculum titled "Discovering DNA", students conduct experiments designed to illustrate that traits are coded for by a set of instructions called DNA. Students not only learn about the structure and function of DNA but also the techniques that are used everyday in real labs to analyze DNA. On the first day, students look at populations of fruit flies under a microscope to learn about the uses of model organisms, the effects of genetic transmission, and mutations. On the second day, they extract actual DNA from wheat germ. Finally, students simulate techniques used to analyze DNA fragments. All the necessary equipment is brought directly to the classroom where 90-160 students practice hands-on, interactive science for three days. Click the link above for more details.

Watershed Explorers

The Program (website linked above) focuses on bringing kids throughout the entirety of the watershed, educating them on our natural and cultural resources and the need for preservation and education. I'm looking on connecting with more schools in the area that can benefit from the program. It's free with transportation (max 26) provided and in line with NGSS based on grade level. Interested teachers should contact Ana Lutz (ana@sdrvc.org) with questions.

Next-Gen Science Education Conference

The San Diego Science Educators Conference will be Saturday Nov. 4 at Miramar College. Registration web site will open Sept 1 and there are 45 free tickets available (thank you SDSEA!) on a first come basis.

Fleet Science Science Teacher Learning Opportunities

The Fleet Inquiry Institute is the teacher professional development arm of the Fleet Science Center's Education Department. For additional information about current programs please contact the Fleet Inquiry Institute at (619) 238-1233 x722 or by email.

SDCOE Science Newsletter and Professional Learning Opportunities

San Diego County Office of Education has shared upcoming learning events for K-12 students and educators in San Diego County.

Student Opportunities

Soroptimist Scholarship

The Soroptimist Live Your Dream Awards assist women who provide the primary source of financial support for their families by giving them the resources they need to improve their education, skills and employment prospects. In addition to providing the primary financial support for their families, eligible applicants must be enrolled in, or have been accepted to, a vocational/skills training program or an undergraduate degree program and must demonstrate financial need. Applications are accepted through July 2017 and November 1, 2017.

[2018 Genes in Space](#)

MiniPCR will have their 2018 Genes in Space contest submissions in mid-April. They would like to provide an all day workshop for San Diego area teachers in Jan or early Feb with the equipment that Salk has available for checkout. Please help us select dates that would work by completing the linked poll: <http://doodle.com/poll/56hh9nqtqhz7m6is> . Learn more about the Genes in Space program here: <https://www.genesinspace.org> For those interested be sure to attend the Next Sen Science Educators Conference at Miramar College on Nov 4 - I'll be doing a presentation on the Genes in Space program to get you prepped for the workshop!

[San Diego Air and Space Museum "Be the Astronaut"](#)

As you begin the school year, we invite you to explore the museum as our personal guest. Our current exhibition, Be The Astronaut, covers so many STEM standards in immersive space-simulator environment, that we know you'll want to return with your class. We're therefore inviting educators to visit us and experience the exhibition, for free, at any time during our normal working hours. To schedule your special admission, please contact Patty Bowman, Education Administrative assistant, at pbowman@sdasm.org . We're unveiling an excited, updated selection of education programs this year, both here at the museum and at your school, and we encourage you to look at them here: <http://sandiegoairandspace.org/education/education-overview> .