SDUHSD Science Newsletter
February 2018
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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.

Table of Contents

Click on the linked Table of Content items below to advance to the related section of the newsletter.

Professional Development 2017-2018

March Professional Development Sessions

The dates for our March PD sessions are listed below. All PDs will be held at the district office in the large board room from 8:00 am - 2:30 pm. If you have not already done so, please request a substitute.

Dates for March Science PDs

Middle School-7th & 8th Grades	3-7-18
High School-Biology	3-1-18
High School-Chemistry & Physics	3-6-18

Location and Details

All sessions will be at the DO (Large Board Room) from 8:00 am - 2:30 pm. Lunch will be on your own, and please bring a bottle to refill water from the filter system located by the front door of the building. While Chromebooks are available for your use, you are encouraged to bring your own device. If you have not yet requested a sub, please do so ASAP and use the budget code "District Achievement." Please bring your composition notebooks used during our September PDs.

Agenda for Middle School Session

Welcome and Overview	8:00 - 8:15 am
Post-January Pilot Sharing & State IM Timeline	8:15 - 8:45 am
Discuss IM Approaches	8:45 - 11: 15 am
Lunch (On Your Own)	11:15 - 12:00 pm
7th and 8th Grade Content Support	12:00 - 2:30 pm

Agenda for High School Sessions

Welcome and Overview	8:00 - 8:15 am
Accommodations, Modifications, & Interventions	8:15 - 9:15 am
Defining Non-CP Discussion	9:15 - 10:45 am
Course Sequence Discussion	10:45 - 11:30 am
Lunch (On Your Own)	11:30 - 12:15 pm
NGSS Lesson and Assessment Resources	12:15 - 2:30 pm

NGSS Updates and Resources

CAST Practice Items and Updates

In early March, three new CAST training tests—one each for grade five, grade eight, and high school—will be available on the CAASPP Online Practice and Training Tests Portal to introduce students, test administrators, and parents/guardians to the new item types that may be on the CAST field test. These training tests consist of discrete items and a performance task. Step-by-step instructions on how to access the training tests for the CAST are provided in the "Quick Reference Guide: How to Start a Training Test."

The training tests also include all accessibility resources that will be available on the CAST field test (e.g., calculator, Spanish stacked translation, print-on-demand). Information about those accessibility resources is available in Matrix One. CAST reference tools are embedded universal tools that students in grade eight and high school can access during testing. These science reference tools include a periodic table of elements and reference sheets of formulas and scientific constants for grade eight and high school. These science reference tools signify that students are not expected to memorize that information and are readily available. To learn how to access the embedded accessibility supports, view the related video tutorials on the CAASPP Portal Embedded Universal Tools, Designated Supports, and Accommodations Video Tutorials Web page.

Along with the new CAST training tests, new scoring guides have been developed. In addition to the correct answer and point value, these scoring guides provide specific details about the California Next Generation Science Standards—the Performance Expectation, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts the item is designed to assess. Scoring rubrics, when necessary, are included. The scoring guides will be available in early March on the CAASPP Portal Test Administrator and Test Examiner Resources for Practice and Training Test Web page.

Ambitious Science Teaching

This web site provides a vision of ambitious science instruction for elementary, middle school and high school classrooms. Ambitious teaching deliberately aims to support students of all backgrounds to deeply understand science ideas, participate in the activities of the discipline, and solve authentic problems, and is well-aligned with the instructional shifts inherent in the NGSS> Check out their intro video: "Ambitious Teaching-An Overview," that shares what ambitious science teaching looks like in the high, middle, and elementary school classroom.

Crosscutting Concepts Notes

This document provides teachers with helpful resources for explicitly integrating the Crosscutting Concepts into their science classrooms, and was compiled by the San Diego County Office of Education Science

Coordinators Chelsea Cochrane and John Spiegel. They adapted it from V. Bang-Jensen and M. Lubkowitz, Sharing Books, Talking Science: Exploring Scientific Concepts with Children's Literature. 2017.

New Jersey Center for Teaching and Learning
The NJCTL hosts collections of lesson and assessment resources to support STEM education and NGSS. Thanks to Brinn Belyea for sharing!

Annenberg Learner
The Annenberg Learner provides science lessons for K-12. Thanks to Krista Baldwin for sharing!

Next Gen Navigator
The February issues focuses on "How Teachers Are Choosing and Adapting Instructional Materials".

NGSS Now
Six things to know about NGSS for February 2018.

Interesting Reads and Resources

The Science of Learning
Veritasium's Derek Mueller explores how deeper learning takes place through effort and struggle.

Practical Engineering
Looking to incorporate more engineering phenomena in your science course? Randall Munroe said, "You can look at practically any part of anything manmade around you and think, 'Some engineer was frustrated while designing this.' It's a little human connection." Grady Hillhouse's goal for Practical Engineering is simple: to increase exposure and interest in the field of engineering. His site hosts many excellent videos where teachers could turn off the sound and use as phenomena.

Seven Activities to Engage Systems Thinking
Seven activities to engage systems thinking are described, then discussed in a dialogue format. The seven activities involve the creation and discussion of (1) sets in contrast to systems, (2) a simple device to mix colored waters, (3) harmony in music, (4) storytelling, (5) playing in contrast to designing a game, (6) a language game, and (7) a strategy that selects in contrast to combines. Discussion relates systems thinking via these activities to education, human betterment, human systems inquiry, pedagogy, and technology.

Schools are Missing What Matters Most about Learning
This *Atlantic* article explores the idea that "curiosity is underemphasized in the classroom, but research shows that it is one of the strongest markers of academic success."

Middle School Science

2018 Science Participating Publishers & Programs
The following publishers have submitted the following instructional materials programs for consideration of adoption by the California State Board of Education for K-8.

The NGSS-ification of Too Slow to Notice
This NSTA article explores how to turn any unit into a phenomena-based, student-driven investigation.

Why Do Fishermen Need Forests?

This article describes the features of PBL and focuses on the important role that a meaningful driving question and engaging anchoring phenomenon play in promoting students' learning, eliciting a sense of wonderment, and providing coherence to the curricular unit.

CER Plate Tectonics Lessons
Thanks to Craig Williams for sharing!

CER Lessons (Variety of Topics)
Thanks to Craig Williams for sharing!

High School Science

Concord Consortium's Interactions
The Interactions curriculum introduces students to science as an endeavor, a process we engage in, rather than solely a set of discoveries by others. Through engaging in modeling and scientific explanation students explore curious aspects of the everyday world, discovering how the unseen world of atomic level interactions and energy transformations are responsible for much of what we observe around us. Blended lessons and assessments are included.

Trinket
Trinket houses simple tutorials for physics and coding. Thanks to Brinn Belyea for sharing!

Statement of Competencies in the Natural Sciences Expected of Entering Freshmen
"This document is the result of collaboration among college and university science faculty to address the changes in high school science education as a result of the revised California Science Standards adopted by the California Department of Education in September 2013. It replaces the previous competency statement produced in 1986. The document is structured around concepts that are common to all scientific disciplines to allow students to explore similar ideas from different perspectives….Many students may consider taking an Advanced Placement (AP) science course while in high school. AP courses can help students build upon skills gained in previous science courses, but taking a second course in one discipline should not replace a course in another. Students should be encouraged to take AP science courses only if they do not conflict with the completion of all of the performance expectations listed in NGSS."

Learning Opportunities

San Diego STEM Ecosystem
The San Diego STEM Ecosystem connects schools, nonprofits, and businesses together to cultivate and sustain STEM learning opportunities in and out of school across the region. In this newsletter, you'll find a variety of STEM events and opportunities throughout the county.

Stanford NGSS Assessment Project
Given its popularity with science educators, Stanford University is offering an identical, second version of its fall Performance Assessments in the NGSS Classroom: Implications for Practice course this winter (January 8 - March 30, 2018). Nine SDUHSD science teachers completed the fall course, and found it to be very valuable.

American Society for Biochemistry and Molecular Biology
The American Society for Biochemistry and Molecular Biology is holding their 2018 meeting from April 21st – 25th in San Diego. Their list of sessions and award lectures, along with the rest of their programming, cover the latest research in the field, ranging from "Host Microbe Interactions in the Primate Gut: Implications for Human Origins" to "Seeing the Invisible by NMR Spectroscopy." You can register for the entire meeting or for just one

day, and the best part is that registration is free for high school students and teachers – see the link below. Please let Alexander Becker (AlexanderBecker@workforce.org) know once you have registered and how many students you intend to bring for their data collection purposes.

Where: Location TBD
San Diego, CA

When: Saturday April 21st – Wednesday, April 25th, 2018

Register Here: http://www.asbmb.org/meeting2018/registration/

UCSD COSMOS Program is Looking for Teachers

The California State Summer School for Mathematics and Science (COSMOS) at UC San Diego is seeking motivated and innovative high school teachers to help encourage talented high school students to foster their interest in research and pursue careers in engineering, mathematics, technology and the sciences. As part of the instructional team the Teacher Fellow will:

- Serve as a pedagogical bridge between high school student learning & university faculty teaching.
- Consult with faculty, research scientists, and graduate students on course design.
- Directly participate in all classroom, laboratory and fieldtrips.
- Collaborate with other Teacher Fellows to design customized Science Communication curriculum
- Assist students in the development of their team research project presentations.
- Form relationships with university researchers and scientists.
- Learn about current field research from distinguished guest speakers.
- Access to state-of-the-art classrooms and laboratories.

Program Dates: Sunday, July 8—Saturday, August 4
Staff Orientation: Saturday, June 2, 2018 (tentatively)
Stipend: $5,000 (FULL FOUR-WEEK PARTICIPATION REQUIRED)
Grant Opportunity for equipment and/or supplies for your HS classroom
Lunch provided
Background Check Required
For More Information, Email: cosmos@ucsd.edu
Contact: Marit Bessesen
Phone: (858) 534-4317

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

Future City Engineering Competition

Future City asks middle-school students to imagine, design, and build cities of the future. After four months of designing a virtual city (using SimCity), researching, designing, and writing up their solution to a city-wide issue and building a scale model of their city, teams will present their vision to a panel of judges. After the competition is over, student participants are not only prepared to be citizens of today's complex and technical world, they are poised to become the drivers of tomorrow.

San Diego STEM Ecosystem

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Salk High School Science Day

Salk March of Dimes High School Science Day is a half-day community outreach event designed to get youngsters interested in considering an exciting career in research. The day's program includes presentations from scientists who share stories of their professional experience, laboratory tours and participation in ongoing laboratory experiments with some of the Salk Institute's world-renowned researchers. The event is scheduled for February 24, 2018, and the registration deadline is February 9, 2018.

Scripps Translational Science Institute

The voluntary summer research internship at STSI provides the opportunity for highly motivated high school, undergraduate, and professional students to work with and learn from a multi-disciplinary team of scientists, including internationally renowned investigators in the areas of genomics, computational biology, and mHealth research. The primary aim of our internship program is to train and prepare young scientists to become future leaders in the realm of translational science. The application deadline is February 15, 2018.

Young Scientist Challenge

The Discovery Education 3M Young Scientist Challenge is the nation's premier science competition for grades 5-8. This one-of-a-kind video competition has sparked a sense of wonder and discovery in hundreds of thousands of students and enhanced science, innovation and communication across the United States. One Young Scientist will win $25,000, and ten will win $1,000.

Emerge the Conference: Be a Doc in Decade

Spend a life-changing day on the beautiful UCSD campus experiencing hands-on training in a variety of life-saving simulations, meeting and being taught by world-class physicians and nurses, and acquainting yourself with the steps required to become a physician. Join other motivated high school students from around Southern California who are ready to emerge as the medical professionals of tomorrow.Thanks to Brinn Belyea for sharing!

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 .