# AREA CONFERENCE ON SCIENCE EDUCATION

# SCIENCE AND LITERACY: CREATING CONNECTIONS!

# R E N O

OCTOBER 22-24, 2015



#NSTA15

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# **2015** NSTA Regional Conference Workshops

Reno, NV • October 22-24, 2015

# FOSS Workshop Schedule Room 2209

**8:00–9:00** Archaea and the Three Domains: Classification of Life for Middle School

**9:30–10:30** Scientific Practices: What Does Argumentation Look Like in an Elementary Classroom?

**11:00–12:00** Engage Them Early—Engineering Experiences with FOSS

**12:30–1:30** Engineering in Elementary Science: Designing with FOSS

#### 2:00–3:00 What to Look for in Science

Learning Progressions— Experience FOSS Next Generation

## 3:30-4:30

Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate

# **Delta Workshop Schedule** Room 2208

8:00–9:00 Earth Science for our Next Generation of Very Young Scientists

**11:00–12:00** Engineering Design: Will It Sink or Float?

**12:30–1:30** High Flying Connections with Science and Literacy

**3:30–4:30** Crosscutting Concepts and Argumentation Using Magnets and Electromagnetism

# Frey Workshop Schedule Room 2208

**9:30–10:30** Solving the Mystery of STEM using Forensic Science

**2:00–3:00** Solving the Mystery of STEM using Forensic Science



## **CPO Workshop Schedule** Room 2215A

**8:00–9:00** CPO Science Link Chemistry Models: Fun with Atom Building and the Periodic Table

**9:30–10:30** CPO's new Physics AP1 Link Module: Rotational Motion with the CPO Roller Coaster

**11:00–12:00** Genetics: Crazy Traits and CPO's Link Learning Module

**12:30–1:30** CPO's Link Wind Turbine Module—A STEM Approach to Engineering and Design

**2:00–3:00** Building an Electric Motor the STEM Way with CPO's Link Learning Module

**3:30–4:30** CPO's new Physics AP1 Link Module: Rotational Motion with the CPO Roller Coaster

# Visit SchoolSpecialtyScience.com to see full workshop descriptions.



# NSTA 2015 Area Conference on Science Education Science and Literacy: Creating Connections!

Reno, Nevada • October 22–24, 2015

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#### **National Science Teachers Association**

1840 Wilson Blvd. Arlington, VA 22201-3000 703-243-7100, E-mail: conferences@nsta.org www.nsta.org

#### **NSTA Affiliates**

Association for Multicultural Science Education (AMSE) Association for Science Teacher Education (ASTE) Association of Science-Technology Centers (ASTC) Council for Elementary Science International (CESI) Council of State Science Supervisors (CSSS) National Association for Research in Science Teaching (NARST) National Middle Level Science Teachers Association (NMLSTA) National Science Education Leadership Association (NSELA) Society for College Science Teachers (SCST)

# Welcome to Reno—Science and Literacy: Creating Connections!



Camille Stegman, David Crowther, & Kelly Cannon

Welcome to Reno! It all started in Washington, D.C., in July 2014. It has been a year-and-a-halflong process to bring this conference to life and we are thrilled at how it has come together. We are pleased to bring you a very important theme in science education, "Science and Literacy: Creating Connections."

We want to thank our strand leaders who worked hard to bring you some amazing presentations on "Bundling the *NGSS* and *CCSS*," "Creatively Engineering Future Resources," and "*NGSS*: Connecting Standards to Practice." We have some great all-day programs planned, including a Chemistry Day for middle level and high school, as well as a Physics Day.

In addition, we are pleased to bring our elementary teachers a special session called "Children's Literature—From Stories to Creating Science Engagement" on Friday from 3:30 to 5:30 PM. It will be an opportunity for you to ask children's authors about how their books are used in the science classroom.

We would like to thank our wonderful featured speakers— Zeb Hogan, Helen Quinn, Okhee Lee, Eric Fossum, and Peter McLaren—for joining us at this conference. Lastly, we would like to express our sincere gratitude to all the program committee members, the local arrangements committee members, NSTA staff and leadership, as well as many of the local school districts and the Regional Professional Development Programs that supported teacher attendance by paying registrations, offering inservice days, and working together for science education in Nevada.

> 2015 Reno Conference Committee Leaders David Crowther, Camille Stegman, and Kelly Cannon

# **Reno Conference Committee**

We at NSTA wish to express our heartfelt thanks to the members of the Nevada State Science Teachers Association for the many hours of time they volunteered in planning this conference.

#### **Conference Chairperson**

David T. Crowther Professor of Science Education and Director of the Raggio Research Center for STEM Education University of Nevada, Reno Reno, NV crowther@unr.edu

#### **Program Coordinator**

Camille Stegman STEM/Science Coordinator and Acting Administrator Storey County School District Virginia City, NV cstegman@storey.k12.nv.us

#### **Local Arrangements Coordinator**

Kelly Cannon K–12 Science Program Coordinator Washoe County School District Reno, NV kcannon@washoeschools.net

#### **Program Committee**

Strand Leader: Bundling the NGSS and CCSS Traci Loftin Washoe County School District Reno, NV

Strand Leader: NGSS: Connecting Standards to Practice Brian Zeiszler Elko High School Elko, NV

Strand Leader: Creatively Engineering Future Resources Bret Sibley Southern Nevada RPDP North Las Vegas, NV

#### Local Arrangements Committee

*Educational Trips Manager* Lou Loftin Nevada's Northwest RPDP Reno, NV

*Guides Manager* Megan Beckam NevadaTeach University of Nevada, Reno Reno, NV

#### **Program Representatives**

Sandy Powell Brigham Young University–Idaho Rexburg, ID

Tim Williamson California State University, Long Beach Long Beach, CA

Lynda Sanders Conference Advisory Board Liaison Marshfield High School Coos Bay, OR

#### Manager for People with Special Needs Mary Culpepper Washoe County School District Reno, NV

*Volunteers Manager* Jennifer Willden Virginia City Middle School Virginia City, NV

# **President's Welcome— Developing Creative Attitudes in Science**



Welcome to Reno and the first NSTA Area Conference on Science Education in 2015. The conference planning committee has embraced my presidential theme "Developing Creative Attitudes in Science" by creating program strands that will enable teachers to implement strategies while engaging students in learning science and encouraging them to be the

innovators of the future. The program is built around students "doing science" and not just "memorizing science facts."

Utilizing the conference theme "Science and Literacy: Creating Connections," you will find opportunities to connect science curricula with literature, mathematics, engineering, and technology using the Next Generation Science Standards. I encourage you to take full advantage of the three strands that support the conference theme.

• NGSS: *Connecting Standards to Practice*—Connect with Helen Quinn as she presents the "what and why of 3-D learning." The strand sessions will provide educators and stakeholders with guidance to help teachers shift from content-focused lessons to three-dimensional learning and assessment.

- Bundling the NGSS and CCSS—Make plans to attend Okhee Lee's presentation where she'll highlight relationships and convergences between the NGSS and CCSS for all students, including English Language Learners. The strand sessions will provide examples of bundling, which allows teachers to incorporate multiple standards at the same time for purposeful learning and real-world applications.
- Creatively Engineering Future Resources—Join Eric Fossum as he shares his story of science and technology innovation. The strand sessions will provide examples to increase participants' understanding and abilities to apply real-life engineering and problem solving, in both nonformal and formal learning environments, as related to Earth's resources.

We are in an exciting time for science education as we enable all students to become productive citizens in today's world. I encourage you to ask questions, brainstorm ideas, and suggest strategies for building a better future in science education while you "create connections" here in Reno. I look forward to being part of your conversations!

> Carolyn Hayes 2015–2016 NSTA President

# **Sponsors and Contributors to the Reno Conference**

NSTA, NSSTA, and the Reno Planning Committee are extremely grateful to the following companies and associations for their generous contributions to the NSTA Reno Area Conference on Science Education.

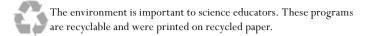
#### Sponsors

Camp Invention National Geographic Learning/Cengage Learning Nevada State Science Teachers Association Southwest Airlines Texas Instruments

#### Contributors

American Association of Physics Teachers and the Northern California–Nevada Section of AAPT

American Chemical Society





#### NSTA Reno Area Conference on Science Education

# **NSTA Conferences Go Green!**

The National Science Teachers Association is committed to meeting today's environmental challenges by adopting eco-friendly practices both in our own day-to-day operations and at our conferences, workshops, and other events. In addition, we strongly encourage our contracted conference facilities to follow green practices as well. Here are some of the ways NSTA's conference department has worked to minimize our impact on the environment:

#### **Conference Previews**

Gone are the days of bulky, newspaper-style advance programs. This year, we redesigned the conference preview to a smaller size, which included highlights for our three area conferences. As an added bonus, this new preview is more environmentally friendly, as it dramatically reduces both our print and mailing requirements.

#### **Online Conference Information and Personal Scheduler**

Most of your conference arrangements can now be accomplished online (*www.nsta.org/conferences*). Register and make your housing reservations on the web. Program details are available to you on our website using the Session Browser/Personal Scheduler. Scheduling information on our website is up to date and more complete than that available through a printed piece.

#### Final Conference Programs by E-Mail/Conference App

All conference pre-registrants are sent an electronic version (PDF) of the final conference program by e-mail approximately two weeks prior to the conference, further reducing print and shipping requirements. Also, attendees are encouraged to use the NSTA Conference app, which provides all the tools necessary for a successful conference experience.

#### **Recycled Paper and Sustainable Print Services**

Conference previews and final conference programs are now printed on recycled paper. In addition, Walsworth Inc., the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth works to reduce and recycle waste, use reduced- or low-VOC chemicals, increase the recycled content of raw materials, and use soy- or vegetable-based inks. Walsworth has also obtained certifications with the Sustainable Forest Initiative (SFI) and the Forest Stewardship Council® (FSC) (FSC-C004755) to ensure paper products are being harvested from environmentally responsible sources.

#### **Environmentally Friendly Exhibition Practices**

Our conference partner, Hargrove, Inc., offers many green product options and services in the production of our conference exhibitions, including 100% recyclable carpet and padding, recycled exhibit structures, a "reclaimer" that recycles 92% of all solvents the company uses in production of graphics, use of LP natural gas in 75–90% of show-site vehicles, and many biodegradable and recycled products such as trash bags and wastebaskets. Their green efforts are extended operationally with reductions in electricity, heating fuel, and water usage, as well as a move to 100% recyclable and biodegradable products.

#### **Reno-Sparks Convention Center's Green Practices**

The Reno-Sparks Convention Center staff is dedicated to environmental stewardship. Green practices include:

- The 17-acre white membrane roof meets Energy Star's requirements for reflectance and emissivity. The design conserves energy and provides cost savings.
- Flow meters were added to the direct digital control system in 2005. This has resulted in savings of approximately \$3,000 per month or 33,000 kW in energy during the cooling season.
- The Convention Center installed a three-way valve with an auto reset that automatically adjusts to outside air temperatures. This saves more than 9,000 therms or \$9,500 annually.
- The Convention Center uses environmentally friendly cleaning products as well as recycled paper products throughout the facility, including toilet tissue and hand towels.
- Upgrades to the older building lighting has reduced lighting consumption by 22% without any adverse effects to clients. This results in approximately 570,000 kW savings annually.
- The Convention Center site covers approximately 43 acres featuring xeriscaping, which reduces landscape water use by 50–75%.

#### "Go Green" at the Reno Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the Convention Center.
- Recycle or reuse your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on the Session Browser/Personal Scheduler.
- If you prefer to bring handouts to your session, use doublesided printing and/or recycled paper.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- Evaluate sessions attended online.

# **Registration, Travel, and Hotels**

#### **Meeting Location and Times**

The conference headquarters hotel is Atlantis Casino Resort Spa. Conference registration, exhibits, the #askNSTA booth, the NSTA Science Store, exhibitor workshops, and most sessions are located at the Reno-Sparks Convention Center. Other sessions and events are scheduled at the Atlantis. The conference begins on Thursday, October 22, at 8:00 AM, and ends on Saturday, October 24, at 1:30 PM.

#### Registration

Registration is required for participation in all conference activities and the exhibits. The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities except those for which a separate fee is stated (educational trips).

The Registration Area, located outside Hall #2 in the Registration Lobby of the Convention Center, is open during the following hours:

Wed., Oct. 21	5:00-7:00 PM
Thu., Oct. 22	7:00 AM-5:00 PM
Fri., Oct. 23	7:00 AM-5:00 PM
Sat., Oct. 24	7:30 AM-12 Noon

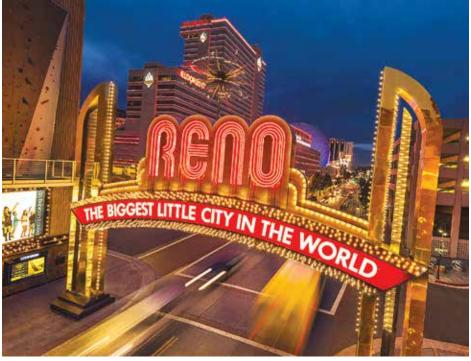
If you misplace your badge or tickets, present your personal ID at the Badge Reprint Counter in the Registration Area and you will be issued replacements. Only one replacement badge will be issued.

#### **Purchasing Ticketed Events**

The Reno Planning Committee has scheduled two educational trips, which each require a separate fee and ticket. You may purchase tickets for these events, space permitting, in the Registration Area. See page 29 for details.

#### Ground Transportation to/from Airport

Complimentary hotel shuttles pick up passengers outside the D Doors located north of Baggage Claim. When you see your



shuttle, please approach the vehicle and board. (Be advised that the shuttle may not stop in front of you.) Visit *bit.ly/lde6hAU* for individual hotel schedules. Check with your individual hotels for shuttle pick-up location and schedules for return transportation to the airport.

#### **Getting Around Town**

Reno's Regional Transportation Commission, RTC public transportation, will get you to the heart of downtown Reno. Explore great restaurants, the Nevada Museum of Art, the Harrah Collection, and the world-class National Automobile Museum...or stroll along the river. Rapid Route 1 and Route 12 are the ticket. Visit *bit.ly/1TRMilz* for maps and schedules.

#### **Conference Hotels**

See page 8 for a list of hotels and a map of the downtown area. If you have questions or concerns regarding your housing, please contact Orchid Event Solutions (during business hours), Monday through Friday, 6:00 AM-5:00 PM PST at

-Photo courtesy of the VisitRenoTahoe.com

877-352-6710 (toll-free) or e-mail *help@ orchideventsolutions.com*. After hours and on Saturday, call 801-243-4476.

#### Parking

The Convention Center offers more than 1,800 parking spaces on six surface lots. Each lot has controlled access. The Convention Center charges \$8 per vehicle to all users of its parking areas. Vehicles presenting "Accessible or Handicap" passes or license plates may park at no charge.

#### Airlines

NSTA has made arrangements with several major airlines to offer discounted fares to Reno conference attendees. Visit *www.nsta. org/renotravel* for details.

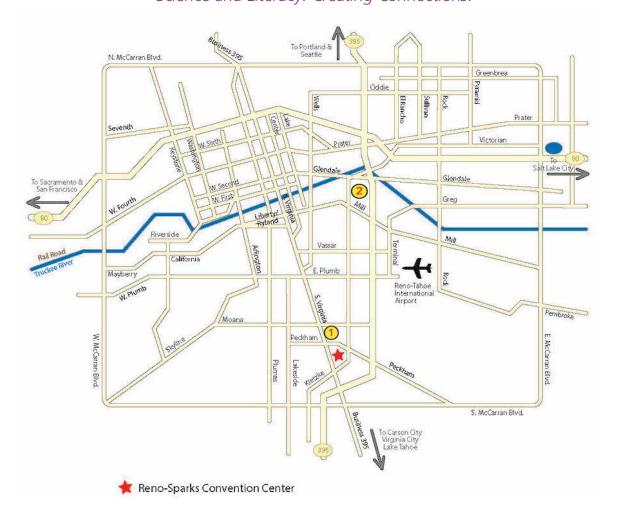
#### **Discounted Rental Cars**

The toll-free number to contact the NSTAdesignated car rental company is:

Enterprise 800-593-0505 16AH230

\* go to www.enterprise.com and use "16AH230" in the "Optional: Coupon, Customer or Corporate Number" box, click on "search" and enter PIN "NST.

## NSTA 2015 Reno Area Conference October 22–24, 2015 Science and Literacy: Creating Connections!



1. Atlantis Casino Resort Spa

*(Headquarters Hotel)* 3800 S. Virginia St.

2. Grand Sierra Resort and Casino 2500 E. 2nd St.

Shuttle transportation between the Grand Sierra Resort and Casino *(outside the main hotel entrance)* and the Reno-Sparks Convention Center will be provided courtesy of the Grand Sierra, as follows:

- Wed., Oct. 21, 4:30-8:30 PM
- Thurs. and Fri., 6:30–10:30 AM Oct. 22–23 4:30–7:30 PM
- Sat., Oct. 24 7:00 AM-2:00 PM



#### **NSTA Exhibits**

The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You'll discover something new and exciting in the world of science teaching.

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. A map display of the Exhibit Hall is on-site in Attendee Registration and in the Exhibit Hall, and maps are accessible via our Conference app (see page 10). See page 99 for a complete list of exhibitors and contact information.

**Ribbon Cutting.** An opening ceremony is scheduled on Thursday at 11:00 AM at the entrance to the NSTA exhibits.

**Exhibit Hall Hours.** Located in Hall #2, exhibits are open for viewing during the following hours:

Thu., Oct. 22 11:00 AM-5:00 PM Fri., Oct. 23 9:00 AM-3:00 PM Sat., Oct. 24 9:00 AM-12 Noon

Did you know that NSTA offers Exclusive

—Photo courtesy of Jacob Slaton

Exhibits Hall hours? During the hours listed below, there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer.

Thu., Oct. 22	11:00 AM-12:30 PM
Fri., Oct. 23	1:30-3:00 PM
Sat., Oct. 24	10:30 AM-12 Noon

Lead Retrieval. NSTA exhibitors use lead retrieval, a paperless tracking system that allows them to receive fast, accurate information about conference attendees who have visited their booths. With the lead retrieval system, an exhibitor scans your badge as you visit the booth. This allows exhibitors to send information to you while the conference is still fresh in your mind.

**Exhibitor Workshops.** Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See page 109 for a complete listing of exhibitor workshops.

# **Conference Resources**

#### **NSTA Science Store**

Visit us at the NSTA Science Store to explore an incredible array of exclusive products and gear you'll love! You'll find hundreds of books that uniquely blend accurate science content with sound teaching strategies for science educators of all grade ranges and disciplines. Not only do we have books covering a wide range of topics to help you sharpen your content knowledge and hone your teaching methods, but we also carry a complete line of NSTA gear you can't find anywhere else—such as T-shirts, mugs, and pencils. We also offer convenient free shipping when you place your order online from the store! We've lined up a number of unique opportunities for conference-goers:

- Exclusive author signings and meet-andgreet opportunities
- Our latest books—The BSCS 5E Instructional Model; Earth Science Success, 2nd Edition; Reimagining the Science Department; and Teaching for Conceptual Understanding in Science—and our new children's books from NSTA Kids, including the Next Time You See series
- "I Love Science" and NSTA gear product lines to show your love of science and pride in teaching
- Member discounts of 20% on NSTA Press® items and 10% on books from other publishers for all attendees
- Daily book and gear specials, product giveaways, and more.

#### **NSSTA and CSTA Booth**

The Nevada State Science Teachers Association (NSSTA) and the California Science Teachers Association (CSTA) booth is located near the NSTA Registration Area. The booth will have membership forms and information about science activities in Nevada, as well as our neighboring state, California. Stop by to say hello, learn how we can keep you up to date on the latest happenings in our area, and pick up some great science gear!

# **Conference Resources**

#### #askNSTA and NSTA Expert Lounges

Visit the #askNSTA booth (#420) during exhibit hall hours Thursday, Friday, and Saturday. NSTA staff and board members will be there, and you can ask us anything! Learn how to write an article for the journals, find out how to implement the *NGSS* at your school, learn about the New Science Teacher Academy, ask about the Mickelson Teacher Academies held during the summer, or get info about our teacher awards (earn cash or equipment for your classroom). Not sure what you want to know? Get insider information from our exclusive mini-sessions, held in the new NSTA Expert Lounges. These tailored, small-group sessions will focus on the new NSTA Learning Center website, the NGSS, and more. Visit bit.ly/1Fv77bE for complete NSTA lounge schedules and locations.

#### The NSTA Conference App



Navigate the conference from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful conference experience.

Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center and Exhibit Hall; social media plugins; and a note-taking tool. Scan the QR code or visit *www.nsta.org/conferenceapp* to download the app. Please make sure to create a CrowdCompass account when logging in to be able to export any notes taken within the app. *Note:* The NSTA Conference app does not sync to our online Personal Scheduler.

#### **Graduate Credit Opportunity**

Reno conference attendees can earn one (1) graduate-level credit in professional development through Framingham State University. To obtain credit, you must complete a Framingham State University Registration Form, attend a minimum of 12 hours of programs, submit a written report, and pay a fee of \$129. Complete details and the registration form are available at *bit.ly/1NkBqmn*. An NSTA transcript is also required. *Note:* Credit is by pass/fail option only

Deadline is November 30, 2015.



#### "Meet and Greet" NSTA Officers

Be sure to stop by Thursday from 11:10 AM to 12:10 PM at the entrance to Hall #2 of the Convention Center for this special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits.

#### First Aid Services

The First Aid office is located outside Hall #3 of the Convention Center. For all emergenices, dial 1 from any Convention Center house phone or call 775-827-7629; your call will be directed to security who can dispatch the EMT.

#### Message Center

A Message Center for conference attendees is available in the NSTA Registration Area. No messages, except extreme emergencies, can be broadcast over the public address system.

#### **Presenters and Presiders Check-In**

If you are presenting or presiding at a session, please check in and pick up your pin or ribbon at the Presenters/Presiders booth in the Registration Area after you have registered for the conference and received your name badge.

#### Wi-Fi in Convention Center

Free Wi-Fi service is available in the Convention Center's main lobby only. To access, connect to "Free WiFi."

#### Audiovisual Needs

NSTA will fulfill AV needs originally requested on the program proposals as long as the request is within the limits of equipment that NSTA provides. For any last-minute AV needs, presenters must arrange and pay for their own equipment. Audio Visual Production Solutions, the designated AV company on-site, is located in F5 of the Convention Center.

#### Lost and Found

All lost-and-found items will be turned in at the Exhibitor Registration counter at the Convention Center.

## **Online Session Evaluations and Tracking Professional Development**

All attendees can evaluate sessions online while simultaneously tracking their professional development certification (based on clock hours).

Help NSTA's **GREEN** efforts by visiting the conference session browser to complete Reno session evaluations online, October 21– November 10, 2015. During the conference, session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area. **And this year, we're giving away an Apple iPad mini 2 Wi-Fi tablet to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!** 

To evaluate a session, attendees should follow these steps:

- Visit the conference session browser and search for part of the session title or presenter's name using the Find Keyword search option. *Note:* Our session evaluation system is designed to work from a computer and while it may work on smartphones/ tablets, it is not really designed for them.
- Once you find the session you wish to evaluate, simply click the **Evaluate Session** button.
- Enter badge number (if you don't remember your badge number, click "help me find my badge number").
- When finished evaluating the session, click the **Submit Evaluation** button.
- Repeat this process for each session attended.

Concurrent session presenters may also complete evaluations for their own sessions in order to track professional development credit.

A Professional Development Documentation Form is included following page 32 to help attendees keep track of sessions/events attended that are NOT available for online session evaluation. This form can also be used to take notes on sessions attended that are available for online session evaluation.

Beginning November 17, 2015, an attendee can view his or her transcript at the NSTA Learning Center *(learningcenter.nsta.org)* by clicking on "My PD Record and Certificates." Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits, etc.). In addition, the NSTA Learning Center offers professional learning experiences (online and face-to-face) for your long-term growth and professionalism.

Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

# **Conference Resources**



—Photo courtesy of JenniferWilliams

#### **Conference Evaluation**

All conference attendees are invited to complete a conference evaluation form online at *svy.mk/1MTV7Au*.

#### **Business Services**

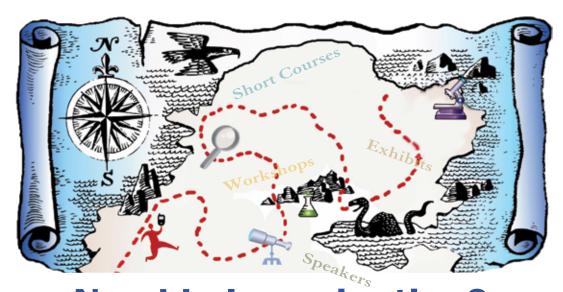
Open Monday through Friday, 7:00 AM– 6:00 PM, the Atlantis Business Center offers computer usage to hotel guests free of charge. Other services include copying, faxing, scanning, and shipping. The business center also accepts packages for guests who need to ship supplies to the property in advance of the conference.

#### **Reno-Sparks CVA Information Desk**

The Reno-Sparks Convention & Visitors Association has an Information Desk located outside Hall #2 in the Registration Lobby of the Convention Center. The desk is open as follows:

Thu., Oct. 22	10:30 AM-3:00 PM
Fri., Oct. 23	11:00 AM-3:00 PM

Information about Reno's attractions and dining opportunities are available. The staff can also assist with dining reservations.



# **Need help navigating?**

So this is your first NSTA conference and you want to make the most of the experience. Join other first-time attendees for a walk through the conference program, the conference app, and NSTA's supporting resources, presented by the NSTA Board and Council. Learn all the opportunities that the conference can offer! You'll also have a chance to meet your District Director. Door prizes!

First-Timer Attendee Session • Thursday, October 22, 8:00–9:00 AM F1/2, Reno-Sparks Convention Center





# Free Hands-On Workshops

## USING VERNIER DATA-COLLECTION TECHNOLOGY

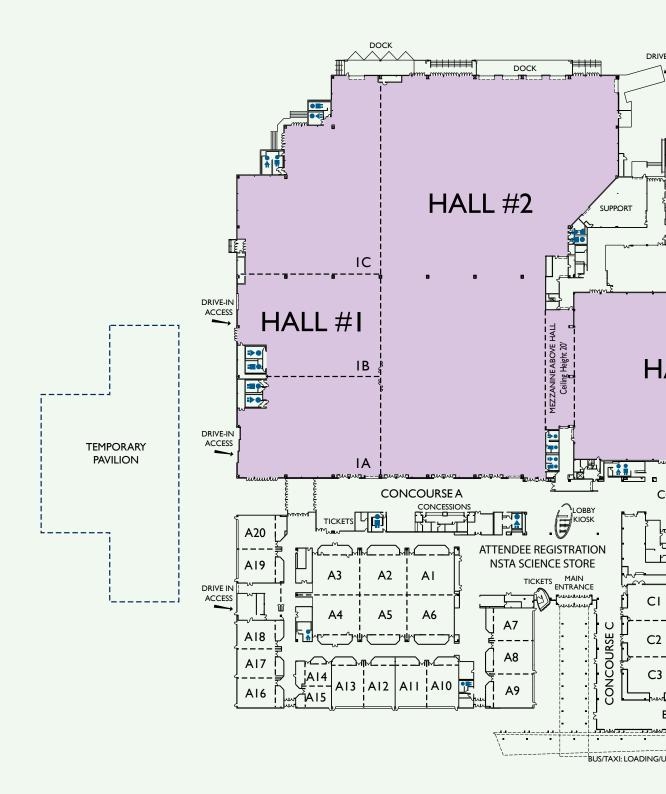
FRIDAY, OCTOBER 23	A9 (CONVENTION CENTER)
--------------------	------------------------

8:00 – 9:00 am	Integrating Chromebook <sup>™</sup> with Vernier Technology
9:30 – 10:30 am	Chemistry with Vernier
11:00 am – 12:00 pm	Biology with Vernier
12:30 – 1:30 pm	Integrating Chromebook <sup>™</sup> with Vernier Technology
2:00 – 3:00 pm	Integrating iPad <sup>®</sup> with Vernier Technology
3:30 – 4:30 pm	Physics and Physical Science with Vernier

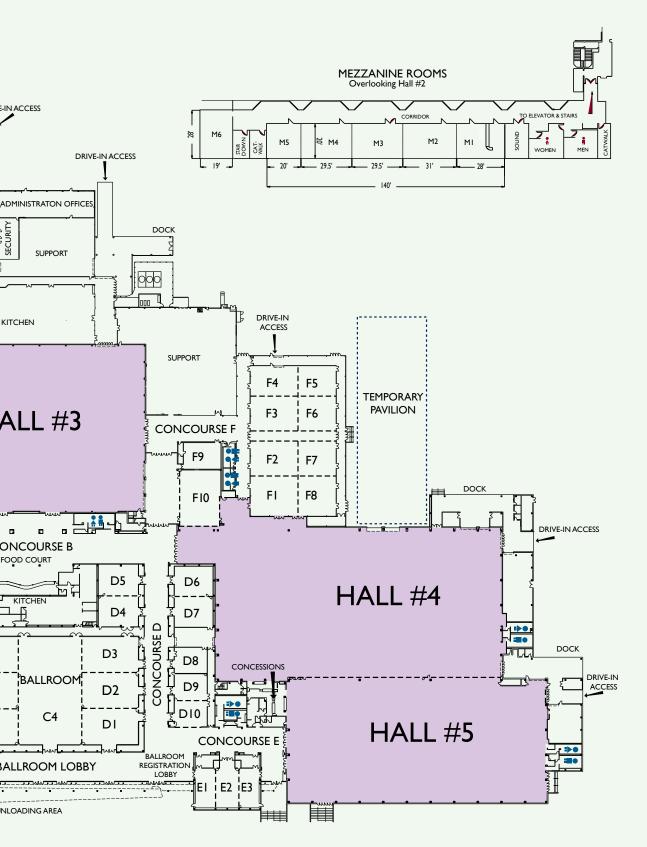




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# Atlantis Casino Resort Spa



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# **STORE HOURS**

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Thursday

Saturday

Friday

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8:00 AM-12:30 PM

National

achers



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#### NS7A Mission Statement

The mission of NSTA is to promote excellence and innovation in science teaching and learning for all.

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# **Conference Resources** • Future Conferences and STEM Forum

All cities are subject to change pending final negotiation.

## **National Conferences on Science Education**

Nashville, Tennessee March 31–April 3, 2016

Los Angeles, California March 30-April 2, 2017

Atlanta, Georgia March 15-18, 2018

St. Louis, Missouri April 11-14, 2019

Boston, Massachusetts March 26-29, 2020

Chicago, Illinois April 8-11, 2021

#### 5th Annual STEM Forum & Expo hosted by NSTA

Denver, Colorado July 27-29

#### Area Conferences on Science Education

#### 2015 Area Conferences

Philadelphia, Pennsylvania—November 12-14 Kansas City, Missouri—December 3-5

#### 2016 Area Conferences

Minneapolis, Minnesota—October 27-29 Portland, Oregon-November 10-12 Columbus, Ohio—December 1-3

#### 2017 Area Conferences

Baltimore, Maryland—October 5-7 Milwaukee, Wisconsin-November 9-11 New Orleans, Louisiana—November 30-December 2

# **Share Your Ideas!** NSTA's CONFERENCES **ON SCIENCE EDUCATION**

Have an idea for an inspiring presentation or workshop on science education? Submit a session proposal today for...

5th Annual STEM Forum &	
Expo hosted by NSTA	Proposal Deadl
Denver, COJuly 27–29	1/15/2010
2016 Area Conferences	Proposal Deadl
Minneapolis, MNOctober 27–29	1/15/2010
Portland, ORNovember 10–12 Columbus, OHDecember 1–3	

2017 National Conference

Los Angeles, CA ...... March 30-April 2

**Proposal Deadline:** 4/15/2016

lational



NSTA Charlotte Area Conference on Science Education

20

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# GRADUATE CREDIT FOR SESSIONS

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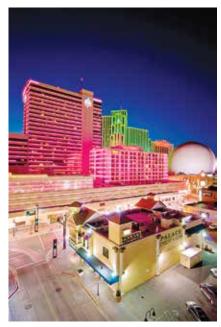
Setting the Stage: Scientific Literacy Building the Band: Involving Community Stakeholders

Harmonizing Concepts: Integrating Instruction Stringing It All Together: Three-Dimensional Learning

FOR INFORMATION AND UPDATES, VISIT, www.nsta.org/nashville



# **Conference Program** • Highlights



-Photo courtesy of the VisitRenoTahoe.com

#### **Special Session with Children's Authors**

#### Children's Literature—From Stories to Creating Science Engagement Friday, 3:30–5:30 PM

Come to this innovative session and see the connections among children's literature and science activities, experiments, and practices. During this special session, children's authors and teachers can interact in an informal manner. Learn how children's literature can assist you in making concepts more real and receive guidance in what to look for in good literature and ideas for activities for certain types of books. Walk away with ideas that can be used in the science classroom.

(See page 86 for details.)

#### Thursday, October 22

8:00-9:00 AM	First-Timer Conference Attendees' Orientation	35
	(Welcome to Your First NSTA Conference)	
9:15-10:30 AM	General Session: Zeb Hogan	37
	(sponsored by National Geographic Learning/Cengage Learning)	
11:00-11:05 AM	Ribbon Cutting Ceremony/Exhibits Opening	39
11:05 AM-5:00 PM	Exhibits ( <i>Exclusive hours: 11:00 AM</i> -12:30 PM)	41
11:10 AM-12:10 PM	Meet the Presidents and Board/Council	41
12:30-1:30 PM	Featured Presentation; Peter McLaren	42
3:30-4:30 PM	Featured Presentation: Eric Fossum	50
	(sponsored by Camp Invention)	

#### Friday, October 23

8:00 AM-4:30 PM 8:00 AM-5:00 PM 8:00 AM-6:00 PM 9:00 AM-3:00 PM 9:30-10:30 AM 12:30-1:30 PM 3:30-5:30 PM

Physics Day	28
Chemistry Day (For Grades 9–12)	27
Middle School Chemistry Day	27
Exhibits ( <i>Exclusive hours: 1:30–3:00 PM</i> )	65
Featured Presentation: Helen Quinn	65
Featured Presentation: Okhee Lee	76
Special Session on Children's Literature	86

#### Saturday, October 24

9:00 AM-12 Noon Exhibits (Exclusive hours: 10:30 AM-12 Noon)	93
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# Win a round-trip Southwest travel scholarship to the NSTA Nashville conference.

# Thanks to the generosity of Southwest Airlines

we're giving away two Southwest Airlines travel scholarships for teacher participants to attend the NSTA Nashville National Conference on Science Education, March 31–April 3, 2016!

During the conference, the drawings will be held at

- 4:00 PM, Thursday, Oct. 22
- 2:00 PM, Friday, Oct. 23 You must be present to win.

Stop by the NSTA Membership booth in the Exhibit Hall for all the details!

Southwest NTA Science

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The Reno Conference Committee has planned the conference around these three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program.

#### NGSS NGSS: Connecting Standards to Practice

The three dimensions of the *NGSS* are science and engineering practices, disciplinary core ideas, and crosscutting concepts. These dimensions should be integrated into curricula, instruction, and assessment to support meaningful learning in science and engineering. With the new structure comes the need for honing teaching methodologies that use three-dimensional learning and involve literacy. This strand is intended to provide educators and stakeholders with guidance to help teachers shift from content-focused lessons to three-dimensional learning and assessment.

#### Bundling the NGSS and CCSS

Now that states have adopted and implemented the *Common Core State Standards*, there is a need to connect the *Next Generation Science Standards* to the *CCSS*. Science learning includes the content areas of mathematics, English language arts, and English language development. Bundling instruction allows teachers to incorporate multiple standards at the same time for purposeful learning and real-world applications. This strand increases participants' understanding and ability to simultaneously teach science, the *CCSS*, and beyond.

#### Creatively Engineering Future Resources

Defining, optimizing, and developing solutions to problems help students of all ages address the challenges that confront modern society. By considering sustainability, alternatives, and conservation, Earth's natural resources can be utilized in a positive way for future generations. By creatively designing solutions to real-world concerns, learners gain an understanding and appreciation for available limited and limitless resources. This strand will increase participants' understanding and abilities to apply real-life engineering and problem solving, in both nonformal and formal learning environments, as it relates to Earth's resources.

## **NGSS:** Connecting Standards to Practice

#### 9:30-10:30 AM

Featured Presentation: The What and Why of 3-D Science Learning (Speaker: Helen Quinn)

11:00 AM–12 Noon Create Your Own NASA Portal to the *NGSS* with NASA Wavelength

12:30–1:30 PM

Turning Traditional Labs into Ones That Reflect NGSS

**3:30–4:30 PM** Biomagnification in Ocean Food Webs: You Are What You Eat **5:00–6:00 PM** NASA Astrobiology: The Search for Life Beyond Earth

Saturday, October 24 8:00–9:00 AM Shifting Instruction with the *NGSS* 

**9:30–10:30 AM** Critical Thinking in Earth Science: Using the Model-Evidence Link Diagram



#### 8:00-9:00 AM

Implementing and Assessing NGSS Science Practices with MY NASA DATA

#### 12:30-1:30 PM

The Use of Storyboarding in Genetics: An NGSS Assessment Tool

#### 3:30-4:30 PM

Scaffolding Student Success: Standards, Practices, and Assessment Through Collegial Collaborations

#### Friday, October 23

8:00–9:00 AM Great Balls of...Fire?

## Bundling the NGSS and CCSS

#### Thursday, October 22

#### 12:30-1:30 PM

Keep Calm and Teach Science...and Math ... and ELA: An Integrated Approach

#### 2:00-3:00 PM

Identifying the Hidden Opportunities: Embedding CCSS ELA in Your Current Science Lessons

#### 3:30-4:30 PM

Science Has Many Stories to Tell: NASA Literacy Resources for Your Students

#### 5:00-6:00 PM

Innovative Strategies That Work in Growing Language in Grades K-5: Lessons Learned from Research

#### Friday, October 23

#### 11:00 AM-12 Noon

Chapter Books at the Crossroads of the NGSS and CCSS

#### 12:30-1:30 PM

Featured Presentation: Connections of NGSS to CCSS for All Students, Including English Language Learners (Speaker: Okhee Lee)

#### 3:30-4:30 PM

D.N.A. (Developing Nonfiction Arguments): Purposeful Literacy Instruction in the Science Classroom

#### Saturday, October 24

#### 9:30-10:30 AM

Bridging the Content Gap with Notable Nonfiction

#### 12:30-1:30 PM

Shh! What's That Sound? It's Scientific Discourse!

## **Creatively Engineering Future Resources**

#### Thursday, October 22

8:00-9:00 AM Making a Better City

#### 12:30-1:30 PM

Using Project Based Learning to Teach Climate Change

# 2:00-3:00 PM

Project ReCharge: Educating About Energy and Reducing Your Carbon Footprint

#### 3:30-4:30 PM

Featured Presentation: Saturn to Smartphone Cameras: A Story of Science and Technology Innovation (Speaker: Eric Fossum, sponsored by Camp Invention)

#### 5:00-6:00 PM Cycles, Sinks, and Solutions: A Complete STEM Mini-Unit on Global Climate Change

#### Friday, October 23

8:00-9:00 AM Let's Keep It Cool-Design/Build a Cooler

9:30-10:30 AM Climate Literacy  $\rightarrow$  Climate Solutions

11:00 AM-12 Noon Engineering Design

12:30-1:30 PM Healthy Land, Healthy Us! Informal/Formal **Education Partnership** 

3:30-4:30 PM Put the "E" in STEM!

5:00-6:00 PM Biomass: Taking It to Your Classroom

#### Saturday, October 24

8:00-9:00 AM AMS DataStreme Project: Fueling Environmental Literacy for a Brighter Future

9:30-10:30 AM **Recycled Goods as Inspiration in Learning:** The Secret Life of Everyday Things

12:30-1:30 PM Shake, Rattle, and Roll! Designing an Earthquake-Proof Structure

#### **NSTA Press Sessions**

NSTA Press® books offer new classroom ideas and standards-based strategies, from Earth science to nanoscience and from preK to college. Join NSTA Press authors for these sessions linked to the topics of their books.

#### Thursday, October 22

8:00–9:00 AM	Introducing the <i>NGSS</i> to Teachers and Administrators
12:30-1:30 PM	Teaching Science Through Integrating Children's Literature and Outdoor Investigations
2:00-3:00 PM	Teaching for Conceptual Understanding in Science
	Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry, K–5
3:30-4:30 PM	Uncovering Student Ideas in Science with Digital Devices



#### Friday, October 23 8:00-9:00 AM Next Time You See... 9:30-10:30 AM Gardening with Books and Butterflies 11:00 AM-12 Noon Scientific Argumentation Classroom Activities 12:30-1:30 PM What Are They Really Thinking? Connecting Concepts and Practices Through Formative Assessment 3:30-4:30 PM Outdoor Science: A Practical Guide 5:00-6:00 PM Scientific Argumentation in Biology: 30 Classroom Activities

#### Saturday, October 24

12:30-1:30 PM	Argument-Driven Inquiry in Biology
	and Chemistry: Lab Investigations for
	Grades 9–12

# **Meetings and Social Functions**

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#### Thurday, October 22

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Open to A

#### Friday, October 23

Multicultural/Equity Roundtable
Grand Ballroom 1/2, Atlantis5:00-6:30 PM

#### Saturday, October 24

NSELA Board of Directors Meeting
By Invitation Only
Grand Ballroom 1, Atlantis 8:00 AM-5:00 PM
NSSTA Business Meeting
Open to Any Current NSSTA Member
Emerald C, Atlantis 11:00 AM–12 Noon

# **Conference Program** • Special Programs



## **Chemistry Day at NSTA**

Sponsored by the American Chemical Society

Energy as a Framework to Teach Chemistry at Multiple Levels For Grades 9–12

Friday, October 23, 8:00 AM–5:30 PM C3, Convention Center

Energy is a crosscutting concept in all of the science disciplines. It can be used within chemistry as a framework to help students understand the properties and behavior of substances at multiple levels. The three sessions of this workshop are designed to analyze, discuss, and reflect on diverse instructional strategies that actively engage students in thinking about energy transfer issues in chemistry at the macroscopic, symbolic, particulate, and atomic levels. We will also illustrate how to diagnose and formatively assess student understanding.

While these sessions can each stand alone, participants who join us for the day will experience how teachers can use different science practices (design, modeling, and argumentation) to help students develop and apply an energy lens to describe, explain, and predict chemical properties and phenomena. Chemistry Day has been developed by the American Chemical Society High School Chemistry Professional Development Leadership Group.

8:00–10:00 AM	Energy in Chemistry—A Macroscopic View
11:00 AM-1:00 PM	Energy in Chemistry—A Particulate View
3:30-5:30 PM	Energy in Chemistry—An Atomic View

## Middle School Chemistry Day

Sponsored by the American Chemical Society

#### Middle School Chemistry— Big Ideas About the Very Small

Friday, October 23, 8:00 AM–6:00 PM C2, Convention Center

Come to one, two, or as many sessions as you like during this full day of activities and information for teaching and learning middle school chemistry. Staff from the American Chemical Society will introduce participants to the new free online resource *middleschoolchemistry.com*. Each of the six sessions will include handson activities and explanations from the website that participants can easily incorporate into their teaching to support their current textbook and curriculum. Handouts of the session activities will be available for all participants.

8:00–9:00 AM	Matter—Solids, Liquids, and Gases
9:30–10:30 AM	Changes of State—Evaporation and Condensation
11:00 AM-12 Noon	Density—A Molecular View
12:30-1:30 PM	The Periodic Table, Energy Levels, and Bonding
3:30-4:30 PM	Polarity of the Water Molecule and Its Consequences
5:00-6:00 PM	Chemical Change—Breaking and Making Bonds



## Physics Day at NSTA

Sponsored by the American Association of Physics Teachers (AAPT) and the Northern California-Nevada Section of AAPT

Friday, October 23, 8:00 AM-4:30 PM D1, Convention Center

The American Association of Physics Teachers offers a full day of physics content at the Reno conference. Physics Day consists of interactive hands-on workshops and sessions covering important physics topics for today's world. Each of these workshops or sessions is organized by experienced science educators and designed

to deal with hard-to-express concepts that can be immediately applied in your classroom. Physics Day in Reno is being organized by the Northern California-Nevada Section of the American Association of Physics Teachers.

8:00–9:00 AM	<i>The Physics Show</i> Excites Young People About Science	11:30 AM-1:00 PM	Introduction to Modeling Instruction, Part 2
9:30–11:00 AM	Introduction to Modeling Instruction, Part 1	3:30-4:30 PM	Revealing the Unseen



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Tickets for educational trips may be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your educational trip leader at the main (front) entrance of the Convention Center, along South Virginia Street, 15 minutes prior to departure time.



#### Inside the Institute: Where Global Environmental Research Happens Daily \$22

#T-1 Th	urs., Oct. 22	8:40 AM-12 Noon
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Join us as we explore the Desert Research Institute (DRI) where environmental research on a global scale happens every day. DRI excels in basic and applied research and the application of technologies to improve people's lives throughout Nevada and the world. Our faculty and students apply scientific understanding to the effective management of natural resources and then translate that knowledge to the educational community, government entities, and the community at large. Participants on this tour will engage with DRI scientists and learn about the research they are conducting, visit dynamic DRI labs, and interact with DRI GreenPower's innovative hands-on science curriculum.

*Note:* All participants must be U.S. citizens; however, there is no need to provide proof of citizenship. Please wear comfortable shoes as we will be conducting a walking tour through DRI.

#### Lake Tahoe in Depth at the UC Davis Tahoe Science Center \$60

#F-1 Fri., Oct. 23 7:30	AM-2:45 PM
-------------------------	------------

Tour the UC Davis Tahoe Science Center (*bit.ly*/*lvndQK8*) and discover what makes Lake Tahoe so unique. Learn about the natural history of the lake, discover environmental issues, investigate local science, and explore how research is being used to restore and protect Lake Tahoe. Guided tour includes a virtual ride aboard the UC Davis research vessel; a visit to a virtual laboratory; 3-D films, including the award-winning 3-D movie *Lake Tahoe in Depth* (15 minutes); and hands-on science activities focused on the unique and fragile ecosystem of Lake Tahoe. A buffet lunch at the Sierra Nevada College dining area is included.

Note: This trip will run rain or shine.

Upper left photo courtesy of UC Davis Tahoe Environmental Research Center. F-1 attendees will have the opportunity to participate in hands-on activities focused on Lake Tahoe's unique ecosystem.

Bottom left photo courtesy of Desert Research Institute. T-1 participants will engage with DRI scientists and learn about the research they are conducting.

3:30–5:30 PM	The 3Rs: Research, Resources, and Relationships	E3, Conv. Center
Association for Multi	cultural Science Education (AMSE)	
President: Robert Ferguson		
Thursday, October 22		
12:30–1:30 PM	Making Sense of Science Learning Through Community Science Workshops	D1, Conv. Center
Saturday, October 24		
9:30–10:30 AM	A Teacher's Power—Tangible Examples of Equity in	D8, Conv. Center

# Association for Science Teacher Education (ASTE)

Classroom Contexts

President: Lisa Martin-Hansen

Alliance of Affiliates

#### Thursday, October 22

1:00-2:00 PM	Far-West and Northwest ASTE Business Meeting	Emerald C, Atlantis
3:30-4:00 PM	Adventure Learning—Solutions for Resource Management	F3, Conv. Center
4:00-4:30 PM	Science and Literacy—Fostering Classroom Talk in Elementary Science	F3, Conv. Center
5:00-6:00 PM	Poster Session Featuring Innovations and Research from Multiple Science Educators	F3, Conv. Center

#### **Council for Elementary Science International (CESI)**

President: James McDonald

Thursday, October 22		
3:30-4:30 PM	Elementary Science Share-a-Thon	F1/2, Conv. Center
Friday, October 23		
11:00 AM-12 Noon	Engaging Students in Argumentation and Better Explanations	D9/10, Conv. Center

#### **Council of State Science Supervisors (CSSS)**

President: Matt Krehbiel

#### Thursday, October 22

8:00-8:30 AM	Presidential Awards for Excellence in Mathematics	A4, Conv. Center
	and Science Teaching	

#### National Association for Research in Science Teaching (NARST)

President: Mary Atwater

#### Friday, October 23

9:30-10:30 AM

Me? A Scientist—A Next Generation of After-School Students Internalizing Their Identities as Scientists E1, Conv. Center

**National Science Education Leadership Association (NSELA)** 

President: Elizabeth Mulkerrin

#### Friday, October 23

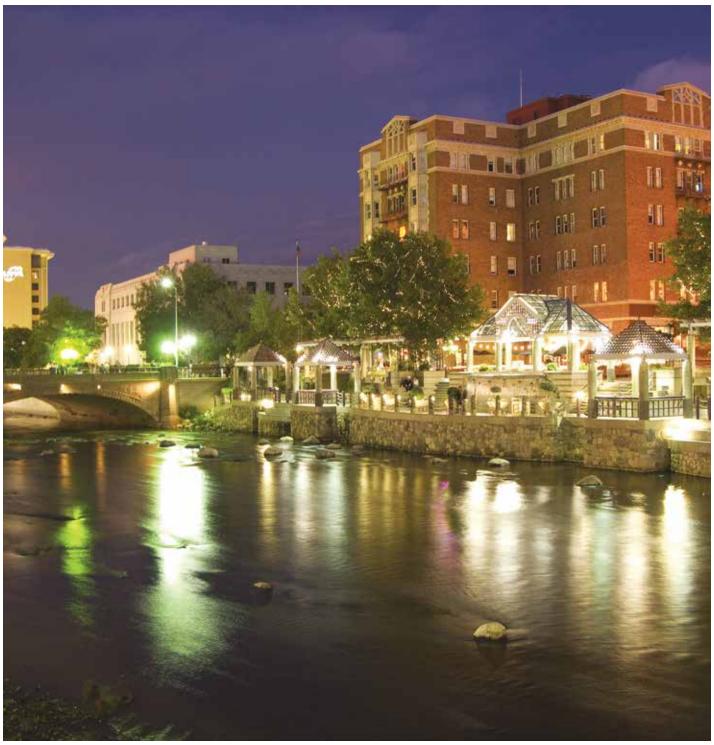
8:00 AM-5:00 PM	NSELA Board of Directors Meeting	Grand Ballroom 1, Atlantis
Saturday, October 24		
12:30-1:30 PM	Tools for Science Leaders, Part 2	E1, Conv. Center
11:00 AM-12 Noon	Tools for Science Leaders, Part 1	E1, Conv. Center

# **Flinn Workshops**

- Advanced Inquiry Labs for AP Biology Thursday, October 22, 9:30 am – 10:30 am Reno-Sparks Convention Center – Room A1
- Flinn Scientific Resources Prepare Students for AP Chemistry Success Thursday, October 22, 2:00 pm – 3:00 pm Reno-Sparks Convention Center – Room A1
- POGIL<sup>™</sup> Activities for AP Chemistry Friday, October 23, 8:00 am – 9:00 am Reno-Sparks Convention Center – Room A1



"Flinn is Fantastic! Your workshops are the BEST!" - Amy Mealing, Davidson Fine Arts Magnet School, Augusta, GA



---Photo courtesy of VisitRenoTahoe.com The Riverwalk celebrates Reno's arts, culture, and history 365 days a year with shopping, restaurants, entertainment—and a whitewater park!

# This form is for planning purposes only. Do NOT submit to NSTA. NSTA 2015 Reno Area Conference Professional Development Documentation Form

All attendees can evaluate concurrent teacher and exhibitor sessions online while simultaneously tracking professional development certification (based on clock hours). Use this form to keep track of all sessions/events attended during the Reno conference. Sessions/events such as field trips, meetings, and exhibit hall visits may not be available for online evaluation. However, these events still qualify for professional development.

**Beginning November 17, 2015, Reno transcripts can be accessed at the NSTA Learning Center (learning center.nsta.org)** by logging on with your Reno Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Reno transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

First Name:	Last Name:	Badge ID#
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Evaluate sessions via the Reno session browser (www.nsta.org/renobrowser) using the instructions on page 11. And don't forget, the more sessions you attend and evaluate, the more chances you have to win an Apple iPad mini 2 Wi-Fi tablet!

<ul> <li>Sample Questions:</li> <li>I. I selected this session: <ul> <li>a. for immediate classroom use.</li> <li>b. based on the reputation of the speaker.</li> <li>c. to improve my personal pedagogical knowledge/skill.</li> <li>d. to improve my science content knowledge.</li> </ul> </li> </ul>	<ol> <li>The session met my needs.</li> <li>The information presented was clear and well organized.</li> <li>Safe practices were employed.</li> <li>The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press® sessions).</li> <li>The session should be repeated at another NSTA conference.</li> </ol>
Sample Responses:	
I=Strongly Agree 2=Agree 3=Neutral 4=Disagre	e 5=Strongly Disagree

#### Thursday, October 22 8:00 AM-6:00 PM

Start Time	End Time	Activity/Event Title

We're giving an Apple iPad mini 2 Wi-Fi tablet to one lucky attendee who evaluates sessions that he or she attends. The more sessions you attend and evaluate, the more chances you have to win!

## Friday, October 23 7:30 AM-6:30 PM

Start Time	End Time	Activity/Event Title
Saturday, Octobe	er 24 7:30 Al	M–5:00 PM
Start Time	End Time	Activity/Event Title

#### 8:00–8:30 AM Presentation

#### CSSS Session: Presidential Awards for Excellence in **Mathematics and Science Teaching**

(Grades K-12)

A4, Convention Center

Science Focus: GEN

Linda Jordan, Council of State Science Supervisors, Nashville, Tenn.

Join me as I share application information for the Presidential Awards for Excellence in Mathematics and Science Education program as well as answer questions concerning nominations and eligibility.

#### 8:00–9:00 AM Presentations

NSTA Press® Session: Introducing the NGSS to **Teachers and Administrators** 

(General)

A2, Convention Center

Science Focus: GEN, NGSS

Kevin Niemi (kiniemi@wisc.edu), University of Wisconsin-Madison

Debra Kneser (kneser@charter.net), Marian University-Wisconsin, Fond du Lac

Join us as we share activities and resources that can be used for introducing teachers, teacher leaders, and administrators to the NGSS.

#### **NGSS** Implementing and Assessing NGSS Science Practices with MY NASA DATA

(Grades K-12) A5, Convention Center Science Focus: ESS, SEP

Gary Popiolkowski (garypoprr33@gmail.com), Chartiers-Houston Junior/Senior High School, Houston, Pa.

Come learn how to engage students as they visualize and manipulate real-world satellite data using MY NASA DATA as a means of implementing and assessing NGSS science practices.

#### Leveling the Playing Field: After-School STEM **Coaching Model**

D1, Convention Center

Science Focus: INFCANCELEI Sandie Crime INF Sandie Grinnell (grinnels@hsd.k12.or.us), Hillsboro (Ore.) School District

Hear how one Oregon school district dramatically increased student access to K-12 STEM after-school programs and activities.

The ideas and opinions expressed in the conference sessions, and in any handout materials provided, are those of the presenter. They are not those of the National Science Teachers Association nor can any endorsement by NSTA be claimed.

#### Science Area

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 114, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

- LS Life Science =
- PS = **Physical Science**
- ESS **Earth and Space Science** =
- ETS = Engineering, Technology, and the **Application of Science**
- GEN = **General Science Education**
- INF = **Informal Science Education**

#### Glossary

STEM stands for Science, Technology, Engineering, and Mathematics.

#### Strands

The Reno Conference Committee has planned the conference around the following three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 24.



Bundling the NGSS and CCSS





**Creatively Engineering Future Resources** 

The following icon will be used throughout this program.



NSTA Reno Area Conference on Science Education

Science Comes Alive in Stories, Video, and E-Books: Integrating STEM, Literacy, Creativity, and Media (Grades P-2) D4, Convention Center

Science Focus: LS1.B, LS2, CCC1, CCC6

**Susie Vanderlip** (@MonarchSpeaker; storyofchester@aol. com), Monarch Butterfly Citizen Scientist, Orange, Calif. Hear about the Butterfly Life Cycle science for K-2 using storybooks, photography, and video from a monarch butterfly citizen scientist. Your young students can experience life science in their own backyards.

#### Academic Vocabulary in Science: Multiple Opportunities for Students to Learn and Practice the Most

D7, Convention Center

Science Focus: GEN CANCELED Darl Kierre Darl Kiernan (@WCSDStrivRdrsHS; @DarlKiernan; dkiernan@washoeschools.net) and Lauren Torvinen (@ WCSDStrivRdrsHS; @ltorvinen; ltorvinen@washoeschools. net), Nevada's Northwest Regional Professional Development Program, Reno

Expand your toolbox of vocabulary options. Learn ways to provide your students with the active science vocabulary practice they need in order to meet the demands of the NGSS.

#### College Ready? Lessons Learned from Math and Physics

(Grades 7-12) D8, Convention Center Science Focus: PS

**David Young** (@davidallenyoung; *dayoung7@gmail.com*), Retired Educator, Fayetteville, Ark.

Explore how mathematics and physics are being taught and how this treatment prepares students for college. Join me as I discuss and demonstrate what we discovered about the common connections between these two subjects.

#### Engineer Your World: Integrating Engineering Design, Computational Thinking, and 21st-Century Skills

(Grades 9-12)

Science Focus: ETS, CCC, SEP

E2, Convention Center

Cheryl Farmer, cheryl.farmer@mail.utexas.edu), The University of Texas at Austin

With support from the NSF, UTeachEngineering has developed the next generation of high school engineering design and problem solving. Engineer Your World engages students in authentic engineering practices, computational thinking, and 21st-century skills as they explore engineering fields and professions to discover what engineering is, what engineers do, and the impact that engineers have on our world.

#### 8:00–9:00 AM Hands-On Workshops

#### Making a Better City

Science Focus: ETS1

(Grades 6-8)

(Grades 9–College)

A3, Convention Center

Stephanie Sassetti (ssassetti @oda.edu), The Out-of-Door Academy, Middle & Upper School, Sarasota, Fla.

Find out how grade 8 students went through the engineering design process to find a problem with a specific building or to create a building in Sarasota. The students were given a budget of \$300,000 to create an eco-friendly building based on sustainability.

#### Think-Connect-Act : A 3-D Learning Model for Teaching the Academic Vocabulary Students Need to Succeed

(Grades 3-12) C2, Convention Center Science Focus: GEN, NGSS

Joanne Billingsley (*jbillingsley@satx.rr.com*), Billingsley Education, San Antonio, Tex.

Use imagery, music, and communication to enhance science literacy by creating visual, 3-D vocabulary lessons. Discover proven strategies for building a language-rich interactive science classroom.

#### Genes, the Environment, and Me: Glucose Balance and Type 2 Diabetes

D2, Convention Center

Science Focus: LS1.A, LS3.B Joan Griswold (jcgriz@uw.edu), University of Washington, Seattle

Type 2 diabetes provides a context for learning concepts like homeostasis and gene/environment interactions. Explore physiological, behavioral, and social factors that affect glucose balance and diabetes risk.

#### Inquiry in Action: Identify Liquids by Their Physical Properties

(Grades 3-8) D5, Convention Center Science Focus:, PS1, CCC1, SEP1, SEP2, SEP3, SEP6

Patricia Galvan (p\_galvan@acs.org), American Chemical Society, Washington, D.C.

Conduct simple tests on four identical-looking household liquids to tell them apart. Videos model observations on the molecular level. Instructions and videos are free at www. inquiryinaction.org.

#### Generating a Spark for Learning with STEM

(Grades K–6) D6, Convention Center

Science Focus: GEN, NGSS

**Stephanie Anastasopoulos** (@stephanieferris) and **Gina Thackrey** (@SkylineSTREAM; *ginathackrey@sbsd.k12. ca.us)*, Solana Beach (Calif.) School District

Spark your K–6 *NGSS* lessons with STEM challenges! These simple and inexpensive activities will leave you excited and ready for classroom implementation on Monday morning.

#### The Windmill and Turbine

(Grades 6–8) D9/10, Convention Center Science Focus: PS

Kazi Shahidullah (kazishahidullah@unr.edu), University of Nevada, Reno

Propel new learning in your classroom as you explore how wind can generate power. With a pinwheel activity, maximize blade efficiency using the engineering design process, as well as compare windmill and turbine blade design as a part of an assessment.

#### Welcome to Your First NSTA Conference

F1/2, Convention Center

Science Focus: GEN

(General)

#### NSTA Board and Council

This session is for conference first-timers and those who haven't come for a while. You'll explore the program, the conference app, and NSTA's supporting resources. The program is long and the opportunities amazing! Join us for tips on navigating. You'll also have a chance to meet your District Director, plus there will be door prizes!



#### WORKSHOPS in A13 ~ BOOTH at #315

Thursday	11:00 AM - NOON	Constructing and Crossing Cell Membranes	f	
Thursday	12:30 PM - 1:30 PM	Of All The Nerve!	Ø	
Thursday	2:00 PM - 3:00 PM	Genes, Schemes and Molecular Machines	in	
Friday	8:00 AM - 9:00 AM	Lights, Camera, Enzymes in Action!	回洗湖回	
Friday	11:00 AM - NOON	Let's Get Helical		
Friday	12:30 PM - 1:30 PM	Double (Helix) Trouble: Maintaining Fidelity in DNA Replication	Workshop descriptions	
Center for BioMolecular Modeling www.3dmoleculardesigns.com				

#### 8:00–9:00 AM Exhibitor Workshops

#### CPO's Science Link<sup>™</sup> Chemistry Models: Fun with Atom Building and the Periodic Table

(Grades 6–12) Science Focus: PS A6, Convention Center

S

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

CPO's new Link Chemistry Models module is a STEMand *NGSS*-based approach that lets students experience innovative activities to learn atomic structure and the periodic table. We'll use an experience-based learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, energy levels, and periodicity.

#### Gas Exchange

(Grades 6–8) Science Focus: LS1 Sponsor: LAB-AIDS®, Inc. A7, Convention Center

**Donna Markey,** Vista Visions Academy, Vista, Calif. Students have many misconceptions about respiration. In this activity from the SEPUP middle level life science program, use an acid-base indicator to determine the relative amount of  $CO_2$  gas in a sample of your exhaled breath and consider differences in individual response, explore qualitative *vs.* quantitative measures, and examine the structure of the lungs and their role in the process of respiration.

#### STEM: Investigating Touch-Screen Devices

A8, Convention Center

#### Science Focus: ETS, PS Sponsor: Carolina Biological Supply Co.

(Grades K-8)

G II T II D II D

#### Carolina Teaching Partner

Have you wondered how a touch-screen device works? Join the Smithsonian and Carolina to investigate static electricity and capacitive touch screens. Design a prototype stylus, then test and evaluate your design with other participants. Walk away with material and a STEM experience to share in your classroom next week!

#### Earth Science for Our Next Generation of Very Young Scientists

(Grades K–2)

A10, Convention Center

A11, Convention Center

Science Focus: ESS

Sponsor: Delta Education/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

Teaching science to early elementary students can be challenging. Delta Education can help make it easier by using Delta Science Modules and their corresponding content readers. In this workshop, we will cover weather, sky, sunshine, and shadows and the connections to the *NGSS* performance expectations.

#### Archaea and the Three Domains: Classification of Life for Middle School

(Grades 6–8) Science Focus: LS

Sponsor: Delta Education/School Specialty Science–FOSS Virginia Reid and Jessica Penchos, The Lawrence Hall of Science, University of California, Berkeley

Are you most like *E. coli* bacteria, Yellowstone extremophile Archaea, or bread mold? Join us and explore cell structures and current classification. Take home a set of student materials, overview instructional strategies for reading and science practices, and preview online activities and *NGSS* connections in the revised FOSS Diversity of Life Course.



—Photo courtesy of Zeb Hogan Zeb Hogan holding a 117 cm taimen in the Eg-Uur River in northern Mongolia.

#### 9:15–10:30 AM General Session

Monster Fish: What the World's Largest Freshwater Fish Teach Us About Discovery, Sustainability, and Becoming Better Stewards of the Natural World

(General) Science Focus: LS C4, Convention Center

Speaker sponsored by National Geographic Learning/Cengage Learning



Zeb Hogan (@ZebHogan), Aquatic Ecologist/Photographer, National GeographicFellow/EmergingExplorer, and Research Assistant Professor of Biology, University of Nevada, Reno

Presider and Introduction: Carolyn Hayes, NSTA President, and Retired Educator, Greenwood, Ind.

Platform Guests: Zeb Hogan, Carolyn Hayes, Juliana Texley, NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.; Mary Gromko, NSTA President-Elect, Colorado Springs, Colo; Camille Stegman, NSTA Director, District XVI, Program Coordinator, NSTA Reno Area Conference, and Storey County Schools, Virginia City, Nev.; David Crowther, President, Nevada State Science Teachers Association (NSSTA), Chairperson, NSTA Reno Area Conference, and University of Nevada, Reno; Kelly Cannon, Local Arrangements Coordinator, NSTA Reno Area Conference, and Washoe County School District, Reno, Nev.; David Evans, NSTA Executive Director, Arlington, Va.

Come learn how Zeb got interested in science and fish—the important role that science teachers and public institutions like zoos and aquariums played in his growing curiosity about the natural world. He'll explain his relationship with National Geographic; provide background about the work he's done to find, study, and protect the world's largest freshwater fish; show a few videos from the show; and introduce the show (Monster Fish on Nat Geo WILD) as an educational tool that's made it possible to reach millions of people, especially children. Zeb will share a few examples of ways that he has been able to engage with students and teachers through the course of the project, the importance of both formal and nonformal education, and the significance of real-world experiences and how educators facilitate those experiences. He'll finish with information on the Monster Fish museum exhibition as well as the Monster Fish kids book and educator's guide.

#### 9:30–10:30 AM Exhibitor Workshops

## Advanced Inquiry Labs for AP Biology from Flinn Scientific

(Grades 9–12)

A1, Convention Center

Science Focus: LS

Sponsor: Flinn Scientific, Inc.

Meg Griffith, Flinn Scientific, Inc., Batavia, Ill.

Four big ideas, more great labs! The revised AP Biology curriculum integrates scientific inquiry and reasoning through student-directed laboratory investigations. Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided inquiry labs. Improve students' ability to generate meaningful questions, design experiments, and analyze scientific evidence. Handouts for all activities include alignment with the new AP Biology curriculum.

## CPO's New Physics AP1 Link<sup>™</sup> Module: Rotational Motion with the CPO Roller Coaster

(Grades 6–12) A6, Convention Center Science Focus: PS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Use CPO Science's Roller Coaster and DataCollector to analyze how mass, radius, and shape affect the linear speed of objects on a ramp. Learn how to evaluate qualitative and quantitative investigations in rotational motion and discover when each type of investigation is best for your students in an AP1 physics classroom.

#### Modeling Convection Currents and Plate Motion

(Grades 6–8) A7, Convention Center Science Focus: ESS2

Sponsor: LAB-AIDS®, Inc.

Donna Markey, Vista Visions Academy, Vista, Calif.

Investigate and model convection currents using unique LAB-AIDS/SEPUP materials to develop an operational understanding of water temperature and its movement. This hands-on experience with convection in water coupled with the knowledge of Earth's interior is combined to explain the motion of Earth's tectonic plates and how that motion causes major geological events.

## Bring Visual Science into K–5 Classrooms—It's a Game Changer!

(Grades K–5) A8, Convention Center Science Focus: GEN Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Spark student interest by combining visual, auditory, and hands-on learning techniques. Harvey Bagshaw discusses and models how he teaches science with videos and activities to support blended learning. Learn how to integrate compelling visuals and video and receive a one-year subscription to Carolina's Tigtag online video-based learning program!

#### **Teaching STEM Using Agarose Gel Electrophoresis**

(Grades 6–College) A9, Convention Center Science Focus: LS

Sponsor: Edvotek Inc.

## **Danielle Snowflack, Tom Cynkar,** and **Maria Dayton,** Edvotek Inc., Washington, D.C.

Explore four hot topics in biotechnology using gel electrophoresis: DNA Fingerprinting, Paternity Testing, Medical Diagnostics, and GM Organisms. Brightly colored dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving valuable classroom time! Results are analyzed using a semi-logarithmic plot, which fosters criticalthinking skills and STEM-learning techniques. Receive a free gift for attending.

#### Solving the Mystery of STEM Using Forensic Science

A10, Convention Center

(Grades 6–12)

Science Focus: LS

Sponsor: Frey Scientific/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

Conduct a number of STEM-focused forensic activities that link scientific investigations with analysis and investigative skills to solve multifaceted "cases" involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets. See how the program software allows integration of virtual labs, investigative activities, the preparation of web-based content, and individualized assessment.

#### Science Practices: What Does Argumentation Look Like in an Elementary Classroom?

(Grades K–5) All, Convention Center Science Focus: GEN, NGSS

Sponsor: Delta Education/School Specialty Science–FOSS **Brian Campbell,** The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Next Generation program developers to learn about science practices within the context of active investigations. We'll analyze and interpret data, construct explanations, and engage in argumentation from evidence as tools to deepen student learning within a FOSS lesson. Find out about transitioning to FOSS Next Generation.

#### Navigating the Shifts: Making the Transition to the Next Generation Science Standards with Leaders from The Lawrence Hall of Science

(Grades K–8) Science Focus: GEN, NGSS Sponsor: Amplify

(Grades P-11)

**Rebecca Abbott** and **Traci Wierman**, The Lawrence Hall of Science, University of California, Berkeley

How can district leadership support systematic transition to the *NGSS*? Examine critical pedagogical and content shifts, including the convergence with *Common Core State Standards*, in English language arts and mathematics. Experience an *NGSS* curriculum exemplar from Amplify Science to envision the next generation classrooms you support.

#### Demystifying the NGSS with STEMscopes

A18, Convention Center

A13, Convention Center

Science Focus: GEN, NGSS

Sponsor: Accelerate Learning–STEMscopes

**Terry Talley** (*ttalley@acceleratelearning.com*), Accelerate Learning–STEMscopes, Houston, Tex.

There's no doubt the *NGSS* are more rigorous and complex than previous standards. But with an understanding of how the *NGSS* are aligned, implemented, and assessed, teachers can be successful in changing aspects of their instructional practices. STEMscopes lessons guide students to achievement based on the standards and effective instructional strategies.

#### 11:00–11:05 AM Ribbon Cutting Ceremony/ Exhibits Opening

#### NSTA Exhibits Entrance (Hall #2), Convention Center

Presider: Carolyn Hayes, NSTA President, and Retired Educator, Greenwood, Ind.

Welcoming Remarks: David Crowther, President, Nevada State Science Teachers Association (NSSTA); Chairperson, NSTA Reno Area Conference, and University of Nevada, Reno

Special Guests: Juliana Texley, NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.; Mary Gromko, NSTA President-Elect, Colorado Springs, Colo.; Camille Stegman, NSTA Director, District XVI; Program Coordinator, NSTA Reno Area Conference; and Storey County Schools, Virginia City, Nev.; Kelly Cannon, Local Arrangements Coordinator, NSTA Reno Area Conference, and Washoe County School District, Reno, Nev.; David Evans, NSTA Executive Director, Arlington, Va.; Jason Sheldrake, Assistant Executive Director, Sales, NSTA, Arlington, Va.



# Help us with your feedback...and get

# We're giving you one more reason to evaluate conference sessions.

When you log on to *www.nsta.org/renobrowser* and fill out an evaluation by clicking on the "evaluate session" button below the session you attended, you get entered

into a drawing for a chance to win an Apple iPad mini 2 Wi-Fi tablet *courtesy* of the NSTA Conference Department.

Your feedback helps us in creating the best conference experience. for you and other attendees.

#### • WE'RE GIVING AWAY An APPLE iPAD MINI 2 Wi-Fi TABLET



#### CONFERENCE APP



• Scan QR code below to access our NSTA Conference App.





#### 11:00 AM-12 Noon Exhibitor Workshops

#### Genetics: Crazy Traits and CPO's Link<sup>™</sup> Learning Module

(Grades 6–12)

A6, Convention Center

Science Focus: LS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

CPO's new Crazy Traits Link learning module uses STEMand *NGSS*-based strategies in a real-time tablet-based learning environment to learn genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create crazy creatures with a unique kit, and study probability, adaptation, dominance, and recession.

#### **Calling All Carbons**

(Grades 9-12)

A7, Convention Center

Science Focus: ESS2 Sponsor: LAB-AIDS®, Inc.

Oralia Gil, LAB-AIDS, Inc., Ronkonkoma, N.Y.

The element of carbon is critical to life on Earth. All living organisms contain different and essential carbon-based molecules. Several Earth processes work together to cycle carbon from one carbon reservoir to another and to keep the amount in each reservoir stable. Join us to learn about and model different carbon transfer processes.

#### Introduction to Wisconsin Fast Plants®

A8, Convention Center

Science Focus: LS

(Grades K-12)

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants are ideal classroom tools for all learning levels. Learn the basics for successful planting, flower dissections, and pollination. Integrate plant development, life cycle, environmental effects, genetics, and evolution into your class with these amazing plants. Door prizes!

#### The Case of the Missing Records

(Grades 9–College) Science Focus: LS Sponsor: Edvotek Inc.

**Danielle Snowflack, Tom Cynkar,** and **Maria Dayton,** Edvotek Inc., Washington, D.C.

Explore genetic diversity using forensic science! In this activity, your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Receive a free gift for attending.

#### Engineering Design—Will It Sink or Float?

(Grades K–2) Science Focus: ETS1 A10, Convention Center

A9, Convention Center

Sponsor: Delta Education/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

Delta Education can help you to send your students on a mission to answer this question. During the workshop, you will learn about buoyancy and whether the shape of an object can determine if it will sink or float. We will show how it connects to the *NGSS* performance expectations K-2-ETS1 Engineering Design.

## Engage Them Early: Engineering Experiences with FOSS

(Grades K–5) Science Focus: PS

A11, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS Laurence Malone, Linda De Lucchi, and Diana Velez, The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Program developers as we illustrate a coherent sequence of experiences that develop core physical science concepts while engaging young minds in challenging science and engineering practices and developing academic language. We'll use examples from kindergarten and second-grade FOSS modules. Find out about transitioning to FOSS Next Generation.

#### **Constructing and Crossing Cell Membranes**

(*Grades* 5–*College*) A13, *Convention Center* Science Focus: ESS2.A, ESS2.C, ESS2.D, ESS3.A, ESS3.D, LS1.A, LS2.A, LS2.B, LS2.C, PS1.A, PS1.B, PS2, CCC, SEP1, SEP2, SEP5

Sponsor: 3D Molecular Designs

Diane Munzenmaier (munzenmaier @msoe.edu) and Margaret Franzen (franzen @msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Hook high school biology and chemistry students with models that demonstrate the chemical and physical properties of water and the membranes that separate cells from the surrounding environment. Use hands-on teaching tools to explore diffusion, osmosis, and the transmembrane proteins that facilitate the transport of ions across the cell membrane.

#### STEM and the Young Learner

(Grades P-4) A14/15, Convention Center Science Focus: GEN, SEP3, SEP4

Sponsor: SAE International A World In Motion Program **Julie MacIntyre** (macintyre@sae.org), SAE International, Warrendale, Pa.

Think science and engineering are only for older students? This workshop will show you how easy it is to incorporate STEM into daily lesson plans in the primary classroom through literature.

#### Student Collaboration in the Science Classroom

(Grades 6–9) A16, Convention Center Science Focus: GEN, SEP7, SEP8

Sponsor: eCYBERMISSION

Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, Va.

Get ideas on how to improve group work in your classroom and how working in teams can make your students better scientists and engineers. Also, hear about the free online STEM competition eCYBERMISSION and how you and your students can participate.

#### Engineering Design Process in the STEM Classroom

(Grades P–12) A18, Convention Center Science Focus: ETS1, PS1, CCC4, SEP2, SEP3, SEP4, SEP7 Sponsor: Accelerate Learning–STEMscopes

**Terry Talley** (*ttalley@acceleratelearning.com*), Accelerate Learning–STEMscopes, Houston, Tex.

The "E" in STEM is about using the engineering design process (EDP) to solve problems. Use the EDP to innovate a solution to design and build a barge. Join us for this interactive, engaging, and hands-on workshop involving consensus and collaboration.

#### 11:00 AM-12:15 PM Exhibitor Workshop

#### Contagion! Track the Progress of Dangerous Viruses That Are Spreading Throughout the Country

(Grades 9–College) A12, Convention Center Science Focus: LS

Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Disease can spread like wildfire through populations. In this hands-on workshop, you will become an epidemiologist and track diseases like Ebola, bird flu, SARS, and HIV to name a few. See if you can track down patient zero.

#### 11:05 AM-5:00 PM Exhibits

*Hall #2, Convention Center* Did you know that NSTA offers Exclusive Exhibits Hall hours today from 11:00 AM to 12:30 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors

#### 11:10 AM-12:10 PM Special Session

will offer materials for sale throughout the conference.

#### Meet the Presidents and Board/Council

(General) NSTA Exhibits (Hall #2) Entrance, Conv. Center Science Focus: GEN

Be sure to stop by for this special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!



#### 12:30–1:30 PM Featured Presentation

Bundling the NGSS Performance Expectations (General) C1, Convention Center

Science Focus: GEN, NGSS





Presider: David Evans, NSTA Executive Director, Arlington, Va.

"Bundling" is a term used to describe the process of grouping related *NGSS* 

performance expectations to build sequences of instruction to maximize learning for students. Join Peter McLaren as he shares the what, why, and how behind the bundling process to promote cohesive instruction to support students' investigations of phenomena and solving problems.

Peter J. McLaren is currently the director of State and District Support for Science at Achieve, Inc. Before joining Achieve, he was the science and technology specialist for the Rhode Island Department of Education (RIDE) where he supported districts in matters pertaining to standards and policy issues on K–12 science curriculum, instruction, and assessment as well as technology education. From 2010 to 2013, Peter served as president of the Council of State Science Supervisors (CSSS). In addition, he was a member of the National Academy of Science Committee for Developing Assessments of Science Proficiency in K–12 Education and the National Academy of Engineering Committee on Guiding Implementation of K–12 Engineering Education. He has also served as a member of the national writing committee for the Next Generation Science Standards.

Before joining RIDE in 2005, Peter was a science teacher for 13 years at both the high school and middle school levels. His recognitions include the Milken Family Foundation National Educator Award (2001) and the Rhode Island Science Teacher of the Year (1995) by the MIT-sponsored Network of Educators of Science and Technology. He holds a master's degree in science education from the University of Rhode Island.

#### 12:30–1:30 PM Presentations

#### Using Project Based Learning to Teach Climate Change

(Grades 7–College) A3, Convention Center Science Focus: ESS2.C, ESS2.D, ESS3.D, CCC1, CCC2, CCC4, CCC7, SEP1, SEP2, SEP4, SEP5, SEP6, SEP8

**Jessica Guccione** (@jessguccione; *jessguccione@gmail.com*), Shoreline Middle School, Santa Cruz, Calif.

Learn how to implement a Project Based Learning unit on climate change that can get your students analyzing the link between science and society.

#### The Classroom "WITHOUT" Walls

(Grades 6–College) D2, Convention Center Science Focus: ESS2.A, ESS2.C, ESS2.D, ESS3, ETS1.B, LS1.A, LS1.C, LS2.C, LS4.C, PS1.A, INF, CCC2, CCC4, CCC5, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7

**Darrell Walker** (@dwalker\_l; *d.l.walker.1975@gmail.com*), Bertie Middle School, Windsor, N.C.

Hear about the importance of getting all student learners out of an indoor classroom and exposing them to the outdoors to raise environmental education awareness.

#### Moving from STEM to STEAM

D4, Convention Center

Science Focus: GEN

(Grades K-8)

**Denise Harshbarger** (@harshbargerd; *harshbargerd*@ *nefec.org*), NEFEC-The North East Florida Educational Consortium, Palatka

**Rodney Harshbarger** (*@*harshbargerd; *rodharshbarger@ gmail.com*), Old Kings Elementary School, Flagler Beach, Fla. Engage in an interactive and collaborative discussion about moving from STEM to STEAM by incorporating the arts into STEM instruction.

#### Spark Students' Curiosity with Chemistry!

(Grades K–12) D8, Convention Center Science Focus: PS

**Karen Kaleuati,** American Chemical Society, Washington, D.C.

The American Chemical Society offers many free resources from kindergarten to beyond postdoc. Learn about numerous resources available in print and online for grades K–12, including animations, books and lesson plans, grants, and so much more.

#### **Evolution for Middle School Life Science Students**

(Grades 5–10) F9, Convention Center Science Focus: LS

**Catherine Cummins** (*ccummi2@lsu.edu*), Louisiana State University, Baton Rouge

Join me for highlights of an interactive storytelling activity about Darwin called "From Birth to the Beagle." Full online access will be given to participants for classroom use.

#### 12:30–1:30 PM Hands-On Workshops

NSTA Press® Session: Teaching Science Through Integrating Children's Literature and Outdoor Investigations

A2, Convention Center

**Christine Royce** (@caroyce; *caroyce*@*aol.com*), Shippensburg University/PSTA, Shippensburg, Pa.

**Steve Rich** (@bflyguy; *bflywriter*@*comcast.net*), West GYSTC, Carrollton, Ga.

Engage in lessons that combine investigations in outdoor science topics with paired children's literature that can enhance the topic and integrate other discipline areas.



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## EXCITE ENGAGE EXPLORE SOUTHERNSCIENCESUPPLY.COM

(Grades K-5)

Science Focus: GEN



#### Keep Calm and Teach Science...and Math...and ELA: An Integrated Approach

(Grades K–5) A4, Convention Center Science Focus: GEN

**Roger Cramer** (@tahoecramer1; *rcramer@dcsd.k12.nv.us*), **Susan Moore** (@SmooreSusan; *smoore@dcsd.k12.nv.us*), and **Carly Strauss** (@carlykstrauss; *cstrauss@dcsd.k12.nv.us*), Douglas County School District Professional Development Center, Minden, Nev.

Feeling overwhelmed with all the new standards? Science is the vehicle to bundle your standards. Engage in an integrated elementary science lesson from a noncommercial kit and discover the development process behind these kits.

#### NGSS The Use of Storyboarding in Genetics: An NGSS Assessment Tool

(Grades 6–College)	A5, Convention Center
Science Focus: LS	

Michele Korb (michele.korb@csueastbay.edu), California State University, East Bay, Hayward

Join me for this presentation that models storyboarding in genetics with interactive examples of performance assessment for observing patterns, determining scale, and establishing relationships between structure and function.

#### Brain Boot Camp

(Grades 7–12)

C2, Convention Center

Science Focus: GEN

Laurie Hayes (*lhayes@cart.org*) and Rylie Hilscher, The Center for Advanced Research and Technology, Clovis, Calif. Brain Boot Camp...Empowering student learning. Give your students an opportunity to learn about their brain's strengths and weakness. Join us in this fun and action-filled workshop.

#### "STEM"ing the Zombie Tide

(Grades 7–12)

Science Focus: GEN

C3, Convention Center

Jeffrey Lukens (jeffreylukens0613@gmail.com), Sioux Falls (S.Dak.) School District

Use the popularity of zombies to make STEM become "un-dead" in your science classroom! Make sure to bring your brains to this hands-on workshop.

#### AMSE Session: Making Sense of Science Learning Through Community Science Workshops

(Grades K–12) D1, Convention Center Science Focus: GEN, INF, SEP

Jerry Valadez (*jdvscience@yahoo.com*), NSTA Director, Multicultura/Equity, and Central Valley Science Project, Sanger, Calif.

**Ana López** (anaglopez4@gmail.com), Central Valley Science Project, Sanger, Calif.

Learn how to design a classroom that fosters learning, creativity, innovation, and experimentation while effectively implementing the *NGSS* science and engineering practices through "making."

NGSS: A Model for the Engineering Design Process (Grades 4–8) D5, Convention Center Science Focus: ETS1

Karen Ostlund (@karen\_ostlund; klostlund@utexas.edu), 2012–2013 NSTA President, and The University of Texas at Austin

Experience a model for the engineering design process developed to articulate the three dimensions of the *NGSS*.

#### Using Collaborative Problem Solving and Team Building to Meet the Standards

(Grades K–6) D6, Convention Center Science Focus: GEN, SEP1, SEP8

Jamie Garaventa (jamie@sierranevadajourneys.org), Sierra Nevada Journeys, Reno

How can building a community in your classroom lead to critical thinking, problem solving, collaboration, and communication? Join this exciting workshop to find out!

#### "Animate 'em Particles"—From Hands On to Animation, CCSS, and NGSS Through C-STEM

(Grades 6–8) D9/10, Convention Center Science Focus: PS, SEP1, SEP2, SEP3, SEP4, SEP5, SEP7, SEP8

**Maria Aguilar** (*mva72033@gmail.com*), California Middle School, Sacramento, Calif.

Transform visual representations of the particles of matter by integrating computing in the science classroom. Explore how you can use computer modeling in an inquiry-based activity on the arrangement of particles in solids, liquids, and gases.

#### Hands-On Activities About the Nature and Uses of Water

(Grades 5–9) Science Focus: ESS F3, Convention Center

**David Stronck** (*david.stronck@csueastbay.edu*), California State University, East Bay, Hayward

Delve into hands-on activities demonstrating the physical properties of water. Discussion centers on progressing from direct observations to conceptual development.

#### Bringing Space Science Down to Earth

(Grades 6-12)F10, Convention CenterScience Focus: ESS1, CCC1, CCC3, SEP2, SEP6Taylor Fusinatto (fusinattot@district65.net), Dr. BessieRhodes School of Global Studies, Skokie, Ill.Come learn how to apply NGSS to astronomy by using hands-

on/minds-on strategies to facilitate student understanding of space, magnetism, NASA missions, and the nature of science.

#### 12:30–1:30 PM Exhibitor Workshops

## CPO's Link<sup>™</sup> Wind Turbine Learning Module: A STEM Approach to Engineering and Design

(Grades 6–12)

(Grades 9-12)

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

CPO's new Link Wind Turbine learning module lets students learn in a tablet-based learning environment and engineer a wind turbine. Students build, test, and revise their designs. Link uses STEM activities and an *NGSS* approach to give students an understanding of how to apply the engineering cycle in science class.

#### Prospecting for Mineral Ore

A7, Convention Center

A6, Convention Center

Science Focus: ESS3 Sponsor: LAB-AIDS®, Inc.

Oralia Gil, LAB-AIDS, Inc., Ronkonkoma, N.Y.

How do geologists look for mineral ore? In this activity from EDC Earth Science, we will search for a layer of rock that contains a valuable mineral called molybdenum by testing sediments collected in strategic spots along river systems gathering data to decide where the deposit is located.



## Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR

*(Grades 9–College)* Science Focus: LS Sponsor: Edvotek Inc. A9, Convention Center

A10, Convention Center

Danielle Snowflack, Tom Cynkar, and Maria Dayton, Edvotek Inc., Washington, D.C.

Explore the relationship between genotype and phenotype using Phenylthiocarbamide (PTC). Some think PTC tastes bitter, while others find it tasteless. The ability to taste PTC has been linked to variations in a taste receptor gene. In this workshop, you will learn to use PCR to distinguish between PTC alleles. Receive a free gift for attending.

#### High-Flying Connections with Science and Literacy

(Grades 3–5) Science Focus: ETS1

Sponsor: Delta Education/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

Discover how your students can experience the enjoyment of learning science using the Flight and Rocketry Delta Science Module and its connection to the *NGSS* performance expectation 3-5-ETS1 Engineering Design. See how our content readers are excellent literacy resources that can help to extend the learning experience.

## Engineering in Elementary Science: Designing with FOSS

(Grades K–5) Science Focus: ETS A11, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS **Brian Campbell,** The Lawrence Hall of Science, University of California, Berkeley

FOSS modules provide students with opportunities to engage in engineering experiences to develop solutions to problems using science knowledge and systems thinking. We'll describe and display the opportunities to design with science for grades 3–5 with new FOSS modules. Find out about transitioning to FOSS Next Generation.

#### Of All the Nerve!

(Grades 9–College)

A13, Convention Center

Science Focus: LS, CCC, SEP Sponsor: MSOE Center for BioMolecular Modeling

**Diane Munzenmaier** (munzenmaier@msoe.edu) and **Margaret Franzen** (franzen@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Join us in constructing a neuronal synapse model—complete with sodium-potassium pump and calcium, sodium, and potassium channels! Explore the role of these ions in action potential generation and neurotransmitter release. Visualize how drugs target and interact with these channels using models produced with 3D printing technology. Handouts!

#### Making Critical Thinking More Than Just a Cliché Using Three-Dimensional Learning

(Grades 6–8)

A16, Convention Center

Science Focus: GEN, NGSS Sponsor: Activate Learning

Marilyn Schmidt, Activate Learning, Aurora, Colo.

Come engage in a sequence of investigations where middle school students experience phenomena, construct explanations, and argue from evidence. Teach students to think like scientists as they apply a claim, evidence, and reasoning framework to make sense of investigations.

#### 1:00-2:00 PM Meeting

#### Far-West and Northwest ASTE Business Meeting

Emerald C, Atlantis

For those who are members or who are interested in the Far-West or Northwest Association for Science Teacher Education groups, please attend this business meeting. We will hold elections of officers and conduct a discussion regarding upcoming conferences and events.

#### 2:00–2:30 PM Presentation

(Grades 9-College)

Science Focus: LS

Technology-Assisted Formative Assessment: Using 3-D Computer Simulations to Teach Cell Transport Concepts

D2, Convention Center

A5, Convention Center

C1, Convention Center

**Melissa Jurkiewicz** (*mjurkiewicz@unr.edu*), University of Nevada, Reno

Learn about 3-D computer modules on cell transport as well as a technology to aid in formative assessment.

#### 2:00–3:00 PM Presentations

NSTA Press® Session: Teaching for Conceptual Understanding in Science

(Grades K-12)

Science Focus: GEN, CCC, SEP

**Page Keeley** (@CTSKeeley; *pagekeeley*@gmail.com), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

What does it really mean to teach for conceptual change and what are the implications for your classroom or your work with teachers? Explore how this new thought-provoking opus can be used to transform teaching practices and beliefs about science teaching and learning.

#### Magical Illusions for Science: It's Showtime!

(Grades 3–College) Science Focus: GEN

Alan McCormack (amccorma@mail.sdsu.edu), 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.

Storylines, discrepant events, and illusions develop concepts in both physical and biological sciences; pique students' interest and imagination; and build creative and logical thinking skills.

#### Grant Writing for the Science Classroom

(General) D3, Convention Center Science Focus: GEN

James Calaway (jcalaway@fidnet.com), Lawton (Okla.) Public Schools

You need money to implement the *NGSS* in your classroom. Let me show you how to write grants and find money for your kids.

#### Tying It All Together: Building Elementary Science Literacy with Math and Language Arts

(Grades P–5) D4, Convention Center Science Focus: ETS1, CCC1, CCC2, SEP

**Jewlana Smith-Hunter** (*ithinklearn@gmail.com*), iThinkiLearn Educational Consulting, LLC, Norcross, Ga. During this session, elementary educators will learn to integrate math, science, and language arts into their daily instructional practices and leave with tons of resources.

#### How to Implement STEM and the NGSS into Your Classroom Through the Use of NSTA Competitions

(Grades K–12) D7, Convention Center Science Focus: ETS

Matthew Hartman (mhartman@nsta.org), eCYBERMISSION Content Manager, NSTA, Arlington, Va.

Sue Whitsett (swhitsett@nsta.org), eCYBERMISSION Program Manager, NSTA, Arlington, Va.

Ruth Ruud (ruudruth61@gmail.com), Cleveland State University, Cleveland, Ohio

Come hear how various competitions can help bring STEM and the *NGSS* into the classroom, and give students and teachers a chance to earn prizes. Free food and a gift bag will be distributed to each participant.

#### **CAEP Elementary Standards: A First Look**

(College)

D8, Convention Center

Science Focus: GEN

**Bill Badders** (@baddersb; *baddersb@roadrunner.com*), 2013–2014 NSTA President, Cleveland Heights, Ohio The Council for the Accreditation of Educator Preparation (CAEP) is, for the first time, developing standards for elementary teacher preparation. The first draft of those standards is now available. This session will introduce those standards and provide time for review and feedback.

#### Extending the NGSS Beyond the Classroom and Measuring Impact: Practices for Informal Education

(Grades K–12) E2, Convention Center Science Focus: ESS1, ETS2, INF, CCC, SEP1, SEP2, SEP4, SEP5, SEP6, SEP8

**Dan Ruby** (*danruby@unr.edu*), University of Nevada, Reno Informal education is a vital component to STEM education. How do we best connect it to formal curriculum and how can we assess the impact?

#### 2:00-3:00 PM Hands-On Workshops

NSTA Press® Session: Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry, K–5

A2, Convention Center

Science Focus: GEN, SEP8

(Grades K-5)

**Emily Morgan** (@EmilyMorganNTYS; *emily@pictureperfectscience.com*) and **Karen Ansberry** (*karen@pictureperfectscience.com*), Picture-Perfect Science, West Chester, Ohio Join the authors of the *Picture-Perfect Science* series as they share lessons that integrate the *NGSS* and *CCSS ELA* through the use of engaging picture books.

#### Project ReCharge: Educating About Energy and Reducing Your Carbon Footprint

(Grades 7–12) A3, Convention Center Science Focus: ESS3.C, ESS3.D

**David Crowther** (*crowther*@*unr.edu*), NSSTA President; Chairperson, NSTA Reno Area Conference; and University of Nevada, Reno

**Jacque Ewing-Taylor** (*jacque@unr.edu*), Raggio Research Center for STEM Education, Reno, Nev.

Leigh Metcalfe (Imetcalfe@washoeschools.net), Edward C. Reed High School, Reno, Nev.

**Catherine Pozarski-Connolly** (cpozarski@gmail.com), University of Nevada, Reno

Plug into new learning in your classroom. Explore an activity from an NSF-funded project that educated students about energy consumption and then used Project Based Learning to save schools money on their energy bills!

#### Identifying the Hidden Opportunities: Embedding *CCSS ELA* in Your Current Science Lessons

(Grades K–12) A4, Convention Center Science Focus: PS

Lauren Shea (*lshea@uci.edu*) and Therese Shanahan (*tshanaha@uci.edu*), University of California, Irvine Engage in an inquiry science lesson on light that integrates relevant listening, speaking, reading, writing, and language opportunities with links to the *CCSS ELA* and ELD.

## Hands-On Standards: Having Your Curriculum Meet the NGSS, CCSS, and More

(Grades 9–12) C2, Convention Center Science Focus: ETS, SEP3, SEP4, SEP5, SEP7

**Cheryl Farmer** (*cheryl.farmer*@*mail.utexas.edu*), The University of Texas at Austin

Engage in activities from a project-based engineering curriculum, explore meeting multiple sets of standards, and discuss opportunities to make such connections within your own curricula.

#### Bringing the Positive Back to Science Education

C3, Convention Center

D5, Convention Center

(Grades 4–12) Science Focus: GEN, SEP

**Beverly Lousignont** (@BLousignont; *babornhoft@interact. ccsd.net*), Clark County School District, Las Vegas, Nev. Participate in this interactive session geared to motivate you to be an enthusiastic science teacher by implementing science and engineering practices in your science classroom.

## "Seeing" the Invisible: Making the EMS Spectrum Concrete

(Grades 7–10) D1, Convention Center Science Focus: PS3

**Christine Royce** (@caroyce; *caroyce*@*aol.com*), Shippensburg University/PSTA, Shippensburg, Pa.

How do we "see" something that exists but is not visible? Walk away with concrete ways to explore the EMS.

#### Students' Cloud Observations Online: Hands-On Science for Your Students

(Grades K–8)

Science Focus: ESS

Gary Popiolkowski (garypoprr33@gmail.com), Chartiers-Houston Junior/Senior High School, Houston, Pa.

Engage students in making cloud and weather observations for NASA. While reporting, your students will be immersed in the *NGSS*!



#### **Changing Primary Teachers' Perceptions of Science**

D6, Convention Center

Science Focus: ESS, CCC7, SEP2

(Grades K-2)

**Camille Stegman,** NSTA Director, District XVI; Program Coordinator, NSTA Reno Area Conference; and Storrey County Schools, Virginia City, Nev.

Teaching the *Next Generation Science Standards* at the primary level is easy with a little help from your friends and colleagues. This hands-on workshop will not only introduce several activities that K-2 teachers can use in the classroom, but also look at how to find the time and confidence to teach those lessons.

#### Text Sets for Middle School STEM Curricula

(Grades 6–8) D9/10, Convention Center Science Focus: GEN, NGSS

William Folk (folkw@missouri.edu), University of Missouri–Columbia,

**Torrey Palmer** (*torrey.palmer*@*tntp.org*), TNTP, Reno, Nev. Acquire tools for building and refining instructional content in your middle school science classrooms that support students' STEM understanding and literacy abilities.

#### Population Activities for AP Environmental Science

(Grades 9–College)	F3, Convention Center
Science Focus: GEN	

**David Stronck** (*david.stronck@csueastbay.edu*), California State University, East Bay, Hayward

Discover fun, thought-provoking ways to teach about carrying capacity, human population dynamics, and environmental impacts in this hands-on session. Receive a CD-ROM of resources.

## I Measured the Age of the Universe and You Can, Too

(Grades 9–College)	F10, Convention Center
Science Focus: ESS	

Jeffery Adkins (@astronmyteachr; astronomyteacher@mac. com), Deer Valley High School, Antioch, Calif.

Join me for an activity that takes a hands-on approach to determining the age of the universe. Photographs of galaxies are analyzed to determine how far away they are, and as a group we determine the age of the universe. Free NASA materials!

#### 2:00–3:00 PM Exhibitor Workshops

#### Flinn Scientific Resources Prepare Students for AP **Chemistry Success**

(Grades 9-12)

A1, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Marvel, Flinn Scientific, Inc., Batavia, Ill.

Join Flinn Scientific for resources and strategies to help students succeed on the AP Chemistry exam. Prepare students for the first day of class with FlinnPREP<sup>TM</sup>, a new online review of foundational chemistry concepts. Learn how easy it is to teach the integrated learning objectives and applied science skills using Flinn's AP Chemistry Kits, including Flinn's free-response questions before the exam. Handouts!

#### Building an Electric Motor the STEM Way with **CPO's Link<sup>TM</sup> Learning Module**

(Grades 6-12) A6, Convention Center Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

CPO's new Link Electric Motor learning module is a STEM- and NGSS-based learning approach to electromagnets, permanent magnets, commutators, and induction in a real-time tablet-based learning environment using hands-on equipment. The engineering cycle, observation, measurement, and experimentation are used to design and build electric motors with student-based activities.

#### **Reclaiming the Metal**

(Grades 6-8) Science Focus: PS1 A7, Convention Center

Sponsor: LAB-AIDS®, Inc.

Donna Markey, Vista Visions Academy, Vista, Calif. In this activity from the SEPUP middle level physical science program, participants role-play a scenario involving pretreatment of copper containing liquid wastes from computer circuit board manufacture. We will examine trade-offs of metal replacement and chemical precipitation, techniques actually used in industrial applications, and in so doing, come to understand the science behind complex environmental issues.

#### Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher

(Grades 9-12) A8, Convention Center

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Science Focus: PS

Looking for lab activities that work every time, not just periodically? Explore easy, engaging, and safe chemistry activities that are sure to produce a reaction from your students. Whether you're new to chemistry or feeling out of your element, you'll learn new ways to create excitement. Free materials and giveaways!

#### Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 9-College) Science Focus: LS Sponsor: Edvotek Inc.

A9, Convention Center

Danielle Snowflack, Tom Cynkar, and Maria Dayton, Edvotek Inc., Washington, D.C.

More than 380 million people worldwide are afflicted by diabetes, a disease that causes high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early treatment, diabetes causes severe medical complications. In this exploration, you will diagnose diabetes using simulated urinalysis and ELISA tests. Receive a free gift for attending!

#### Solving the Mystery of STEM Using Forensic Science

(Grades 6-12) A10, Convention Center

Science Focus: LS

Sponsor: Frey Scientific/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

Conduct a number of STEM-focused forensic activities that link scientific investigations with analysis and investigative skills to solve multifaceted "cases" involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets. See how the program software allows integration of virtual labs, investigative activities, the preparation of web-based content, and individualized assessment.

#### What to Look for in Science Learning Progressions: Experience FOSS Next Generation

(Grades K–5) A11, Convention Center Science Focus: PS

Sponsor: Delta Education/School Specialty Science–FOSS **Kathy Long** and **Brian Campbell**, The Lawrence Hall of Science, University of California, Berkeley

Are you looking for coherent curricular direction in your elementary science program? Join FOSS curriculum developers to investigate learning progressions in grades K–5 using physical science modules from the new FOSS Next Generation program. Find out about transitioning to the newly released FOSS program modules.

#### Genes, Schemes, and Molecular Machines

(Grades 6–College) A13, Convention Center Science Focus: ETS2.A, LS1.A, LS1.C, LS1.D, PS1.A, PS1.B, PS2, PS3.B, CCC1, CCC2, CCC3, CCC6, CCC7, SEP1, SEP2, SEP5

Sponsor: 3D Molecular Designs

Diane Munzenmaier (munzenmaier@msoe.edu) and Margaret Franzen (franzen@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Through modeling, an authentic practice of science, students learn by both using and constructing models. Use several different hands-on teaching tools, including one that demonstrates how basic principles of chemistry drive the folding of proteins into their compact globular shapes—each capable of performing a different specific function.

#### 3:00-4:00 PM Networking Opportunity

 Nevada State Science Teachers Association Social

 (By Invitation Only)
 Treasures A-D, Atlantis

#### 3:30-4:00 PM Presentation

ASTE Session: Adventure Learning—Solutions for Resource Management

(Grades 9–College) F3, Convention Center Science Focus: GEN, CCC, SEP

**Rosemary Smith** (*smitrose@isu.edu*), Idaho State University, Pocatello

Sarah Olsen, McCall Outdoor Science School, McCall, Idaho

Join us for a presentation/activity demonstration of an Adventure Learning model for teacher workshops that engages teachers in interdisciplinary and place-based environmental resource management problems and solutions.

#### 3:30–4:30 PM Featured Presentation

Saturn to Smartphone Cameras: A Story of Science and Technology Innovation

*(General)* Science Focus: ETS C1, Convention Center

. 115

Speaker sponsored by Camp Invention



**Eric Fossum,** Professor, Thayer School of Engineering at Dartmouth, Hanover, N.H.

Presider: Bret Sibley, Creatively Engineering Future Resources Strand Leader, NSTA Reno Area Conference, and Southern Nevada RPDP, North Las Vegas

In this talk, Eric Fossum will discuss the story of his invention of the CMOS image sensor and how that technology went from a NASA laboratory, through an entrepreneurial startup company, and into your smartphone. The critical role of science education in public schools and through supplemental programs will be highlighted.

Eric Fossum is a professor at the Thayer School of Engineering at Dartmouth. His work on miniaturizing NASA interplanetary spacecraft cameras at Caltech's Jet Propulsion Laboratory in the early 1990s led to his invention of the CMOS image sensor "camera-on-achip" that has touched many here on Earth, from every smartphone to automobiles and medicine, and from security and safety to art, social media, and political change. Used in billions of cameras each year, Eric's technology has launched a worldwide explosion in digital imaging and visual communications.

Following the invention of the CMOS image sensor, Eric cofounded and led Photobit Corporation to further develop and commercialize the technology. He subsequently led a second startup, Siimpel, to develop MEMS devices for autofocus in cell phone cameras. Eric consulted at Samsung Electronics before joining Dartmouth in 2010, where he teaches and continues research on image sensors, and is Director of the Thayer School's PhD Innovation Program.

A Connecticut native, Eric attended Trinity College and Yale University, and then taught at Columbia University. He left New York City to move to the west coast and work in the U.S. Space Program at JPL in Pasadena, California, in 1990.

#### 3:30–4:30 PM Presentations

NSTA Press® Session: Uncovering Student Ideas in Science with Digital Devices

(Grades 3–12) Science Focus: GEN, NGSS

**Page Keeley** (@CTSKeeley; *pagekeeley@gmail.com*), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

A2, Convention Center

**Ray Barber** (@raylbarber; *rbarber*@*chicousd.org*), Pleasant Valley High School, Chico, Calif.

Learn how laptops, tablets, phones, and digital cameras can be used with NSTA's *Uncovering Student Ideas in Science* formative assessment probes and formative assessment classroom techniques (FACTS). NGSS Scaffolding Student Success: Standards, Practices, and Assessment Through Collegial Collaborations

(Grades 7–10) A5, Convention Center Science Focus: PS

MaryMargaret Welch (mmwelch323@gmail.com), Seattle (Wash.) Public Schools

**Kim Dinh** (*kimmdinh@yahoo.com*), Chief Sealth International High School, Seattle, Wash.

We will share our model for a collaborative process that built a website for our physical science curriculum (one semester of chemistry and one of physics) that supports standards, practices, and assessments.

#### GO BEYOND THE BOOK AND INTO THE FIELD.

Forestry Suppliers has been a leader in environmental education for more than 65 years. The natural world is our profession, and guiding future generations to environmental awareness is our passion.

That's why we created *Science Scene,* a science education blog and Facebook community, where you can go to find new ideas, share in conversation, and even pick up some free resources.

*Science Scene* also reports on new products and technology for your classroom to help generate that spark and keep students involved and inspired. Visit us today!

Visit us at NSTA Reno, Booth 716, and register to win a WormWatcher Environmental Educator Kit!





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FORESTRY 🕁 SUPPLIERS

#### **Big Science on a Shoestring Budget**

(Grades P–K) Science Focus: GEN D4, Convention Center

**Vivian Belmont** (@dreambigscience; *dreambigscience@gmail.com*), Dream Big Science and Art, Los Angeles, Calif. Discover how to implement an outdoor and indoor science program on a shoestring budget! Ignite imagination with groundbreaking ideas on science education on a grand scale.

#### **Exploring the Science and Engineering Practices**

(General) D7, Convention Center Science Focus: GEN, SEP

Ted Willard (@Ted\_NSTA; twillard@nsta.org), Program Director, Next Generation Science Standards, NSTA, Arlington, Va.

Come explore science and engineering practices (such as constructing explanations and developing models) that are central to the vision of education described in the *Framework* and the *NGSS*.

#### The NSTA Learning Center: A Tool to Develop Preservice Teachers

(College)

D8, Convention Center

Science Focus: GEN Al Byers (@alsbyers; abyers@nsta.org), Associate Execu-

tive Director of Government Partnerships and e-Learning, NSTA, Arlington, Va.

Flavio Mendez (*flavio\_m@nsta.org*), Senior Director, Learning Center/SciLinks, NSTA, Arlington, Va.

Come learn about a new online system to assist professors in creating customized e-textbooks using the Learning Center's interactive and e-print resources for their preservice teachers.

## Young Adult Literature as a Value-Added Dimension to the Science Classroom

(Grades 4–12)

Science Focus: GEN, NGSS

E2, Convention Center

Paula Greathouse, Stephanie Wendt, and Amy Leigh Rogers, Tennessee Tech University, Cookeville

Transform your science classroom through the introduction of young adult literature and address the *NGSS* and *CCSS ELA* in tandem.

#### 3:30–4:30 PM Hands-On Workshops

#### Using the Science Writing Heuristic as a Method for Implementing Three-Dimensional Learning

(Grades 6–12) A3, Convention Center Science Focus: GEN, NGSS

Jennifer Panczyszyn and Heather Witt, K.O. Knudson Middle School, Las Vegas, Nev.

Incorporate three-dimensional learning using the Science Writing Heuristic (SWH), a research-based method of teaching science through inquiry. SWH lessons allow students to develop their initial thoughts, build on them through lab experiences, and challenge them through expert readings. Participate in an SWH lesson, view examples of student work, and begin to develop your own SWH for use in your classroom.

Science Has Many Stories to Tell: NASA Literacy Resources for Your Students

(Grades 7–12) A4, Convention Center Science Focus: GEN, SEP1, SEP7, SEP8

Sara Mitchell (sara.mitchell@nasa.gov) and Sarah Eyermann (sarah.e.eyermann@nasa.gov), Syneren Technologies and NASA Goddard Space Flight Center, Greenbelt, Md. Introduce students to scientific discoveries and tell the story

of how science is done with readings and hands-on activities.

## Practice-Practice-Practices! Aligning Teaching to the Core STEM Practices

(Grades K–12) C2, Convention Center Science Focus: GEN, SEP

Louis Nadelson (louis.nadelson@usu.edu), Utah State University, Logan

**Anne Seifert** (anne.seifert@inl.gov), Idaho National Laboratory, Idaho Falls

Engage in a series of activities that increase teacher knowledge of how to effectively align teaching to core STEM practices.

#### English Language Development Opportunities for ELLs Through Meaningful Integration of NGSS and CCSS

(Grades 4–College) Science Focus: GEN, SEP D1, Convention Center

Jerry Valadez (jdvscience@yahoo.com), NSTA Director, Multicultura/Equity, and Central Valley Science Project, Sanger, Calif.

**Ana López** (anaglopez4@gmail.com), Central Valley Science Project, Sanger, Calif.

Find out how to effectively support English language learners to develop science identities using *NGSS* science and engineering practices.

#### The 6th Mass Extinction: Student Inquiry-Based Lessons on the Decline of Earth's Biodiversity

(Grades 9–12) D2, Convention Center Science Focus: LS4, CCC, SEP

Amber Willis (asb9616@lausd.net), Downtown Magnets High School, Los Angeles, Calif.

Get guided through two units that teach the evolution and ecology *NGSS* and *CCSS* requirements. Explore mass extinctions of the past and compare with the current decline in biodiversity.

#### Feeding Our Feathered Friends

(Grades K-8)

D5, Convention Center

Science Focus: GEN Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu*), The

Cornell Lab of Ornithology, Ithaca, N.Y.

Anne Lowry (alowrynews1@yahoo.com), Aleph Academy, Reno, Nev.

Come get your free window bird feeder and discover how to use it to attract birds and student interest!

#### Get to the CORE of Science Texts

(Grades K–5) D6, Convention Center Science Focus: GEN, NGSS

**Maria Cieslak** (mariacieslak@yahoo.com), Clark County School District, Las Vegas, Nev.

Francine Gollmer (sgollmer@aol.com), Gene Ward Elementary School, Las Vegas, Nev.

Discover interactive tasks by using the Backwards Assessment Model to move limited English language speakers to advanced levels in oral and written discourse by decomposing graphic organizers. Learn how to build specification sheets, assessment blueprints, and scaffold timelines for formative and summative assessments.



#### **Build Your Students' Skill in Using Science and Engineering Practices with Modeling Instruction** (Grades 6–8) D9/10, Convention Center

Science Focus: ETS, SEP

**Colleen Megowan-Romanowicz** (@colleenmegowan; *megowan@asu.edu)*, American Modeling Teachers Association, Sacramento, Calif.

Get a quick introduction to modeling instruction for middle school—a teaching method that frames instruction around the conceptual models that form the content core of science.

#### **CESI Session: Elementary Science Share-a-Thon**

(Grades K–8) F1/2, Convention Center Science Focus: GEN

**Jim McDonald** (@jimscienceguy; *jim.mcdonald@cmich. edu)*, CESI President, and Central Michigan University, Mount Pleasant

Linda VanCitters (*lindavancitters*@gmail.com) and University of Nevada Practicum Students, University of Nevada, Reno Come see a variety of elementary science ideas that can be integrated with other subjects presented by CESI members. Walk away with handouts to implement in your classroom.

#### JetStream: An Online School for Weather

(Grades 3–10) F10 Science Focus: ESS

F10, Convention Center

**Dennis Cain** (dennis.cain@noaa.gov), NOAA National Weather Service, Fort Worth, Tex.

Receive an overview of JetStream, a free online resource from the National Weather Service for educators desiring information and help in teaching weather.

#### 3:30–4:30 PM Exhibitor Workshops

#### CPO's New Physics AP1 Link<sup>™</sup> Module: Rotational Motion with the CPO Roller Coaster

(Grades 6–12) Science Focus: PS

A6, Convention Center

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Use CPO Science's Roller Coaster and DataCollector to analyze how mass, radius, and shape affect the linear speed of objects on a ramp. Learn how to evaluate qualitative and quantitative investigations in rotational motion and discover when each type of investigation is best for your students in an AP1 physics classroom.

#### Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs

(Grades 6–12) A8, Convention Center Science Focus: LS

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Are you ready for a forensic dissection activity that is on the cutting edge? Engage students and revitalize your instruction of mammalian structure and function with a real classroom autopsy! Participants dissect a Carolina's Perfect Solution pig by modeling the protocols of a forensic pathologist. Free materials and door prizes!

#### The Drunken Worms: Exploring Gene Function with C. elegans

A9, Convention Center

(Grades 9–College) Science Focus: LS Sponsor: Educted

Sponsor: Edvotek Inc.

**Danielle Snowflack, Tom Cynkar,** and **Maria Dayton,** Edvotek Inc., Washington, D.C.

Model organisms allow us to study fundamental questions in biology that are difficult to study in humans. In this workshop, you will learn how to culture the nematode *C. elegans* in your classroom. Next, we'll explore how mutations affect alcohol metabolism using a simple locomotion assay. Data is collected and analyzed using statistics. Receive a free gift for attending!

#### Crosscutting Concepts and Argumentation Using Magnets and Electromagnetism

(Grades 3–5)

A10, Convention Center

Science Focus: PS2.B

Sponsor: Delta Education/School Specialty Science

Lou Loftin, Nevada's Northwest Regional Professional Development Program, Reno

Argumentation is an important component of the science reform movement. Learn how to help students conduct investigations using claims and defend them with evidence and to construct explanations doing activities using magnets and electromagnetism. The activities in this workshop relate to the *NGSS* performance expectation 3-PS2-3, Motion and Stability: Forces and Interactions.

#### Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate

(Grades 6–8) All, Convention Center Science Focus: ESS

Sponsor: Delta Education/School Specialty Science–FOSS Virginia Reid and Jessica Penchos, The Lawrence Hall of Science, University of California, Berkeley

What is the current scientific evidence for climate change? Engage in hands-on activities and multimedia from the newly revised FOSS Weather and Water Course for Middle School to explore causes and implications of climate change and identify connections to *NGSS* science and engineering practices. New program features will be shown.

#### Human Anatomy Lab: Building from the Inside Out

(Grades 8–College) A16, Convention Center Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

**Chuck Roney,** Retired High School Teacher, Haddonfield, N.J.

Get introduced to a new method of learning anatomy and physiology. We will discuss how to teach skeletal, muscular, and other body systems in a powerful, kinesthetic way using clay. This approach is a perfect fit to help integrate *NGSS* and STEM practices into your classroom. Come build your muscles in clay!

#### 3:30–5:00 PM Exhibitor Workshop

## Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3)

A12, Convention Center

(Grades 9–College) Science Focus: LS

Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

How comfortable do your students feel about engaging in inquiry? Join us to learn new ways to advance inquiry in the classroom—from guided to open inquiry—by establishing a strategy that integrates essential and real-world scientific practices that can encourage students to direct the scientific investigation. From generating scientifically reasonable questions to developing the procedure for interpreting the data, the glowing bacteria from pGLO<sup>TM</sup> will lead the way.

#### 4:00–4:30 PM Presentation

#### ASTE Session: Science and Literacy—Fostering Classroom Talk in Elementary Science

(Grades P–5) F3, Convention Center

Science Focus: GEN, SEP7, SEP8

Matthew Benus (mbenus@indiana.edu), Indiana University Northwest, Gary

Classroom talk patterns were studied during science instruction by watching proficient elementary classrooms using argument-based inquiry approaches to identify and share best practices.



-Photo courtesy of Jacob Slaton

#### 5:00–6:00 PM Presentations

#### Innovative Strategies That Work in Growing Language in Grades K-5: Lessons Learned from Research (Grades K-5)

A4, Convention Center

Science Focus: GEN, NGSS

Judy Reinhartz (jreinhartz@utep.edu), Professor Emeritus, The University of Texas at El Paso

This presentation showcases hands-on innovative languagerich strategies built around the NGSS using the 5E instructional model. Implemented in monolingual, bilingual, and dual-language classrooms, these strategies resulted in statistically significant gains on science and reading state-mandated tests. Participants will view student videos and engage in a series of these strategies.

#### Engaging and Nurturing the Curiosity of Young Children with Everyday Science That Surrounds Them

(Grades P-3) D4, Convention Center Science Focus: GEN, NGSS

Donna Knoell (dknoell@sbcglobal.net), Educational Consultant, Overland Park, Kans.

Find out how to use everyday examples of science that comprise a young child's world to create rich and engaging instruction and motivate students. Come learn how to get your students to observe, question, investigate, think, and talk about science.

#### NOAA in Your Backyard: Free Professional Development and Local Educator Resources Are Closer Than You Think!

(Grades K-12) Science Focus: ESS D7, Convention Center

June Teisan (@jlteisan; june.teisan@noaa.gov), Einstein Fellow, NOAA, Washington, D.C.

The National Oceanic and Atmospheric Administration (NOAA) has hundreds of facilities and professional communicators across the nation. Discover how to get connected to guest speakers, field trips, and local and national professional development opportunities.

#### Rigor vs. Rhetoric: Developing Scientific Skepticism in Our Students

(Grades 9–12)	D8, Convention Center

Science Focus: GEN, SEP4, SEP7

**Carol Engelmann** (cengelmann(*a*)unomaha.edu), University of Nebraska Omaha

Mark Klawiter (mfklawit@mtu.edu), Michigan Technological University, Houghton

Jenelle Hopkins (*jhopkins*@*interact.ccsd.net*), Shadow Ridge High School, Las Vegas, Nev.

Learn some strategies for increasing students' skills in analyzing the debates surrounding scientific issues and recognizing bad science presented as fact on TV and infomercials.

#### Problem-Based Learning: A Partnership Using NGSS and CCSS

(Grades 3–College) Science Focus: GEN, NGSS E2, Convention Center

**Barney Peterson** (@BarneyPeterson; bpeterson@everettsd. org), Monroe Elementary School, Everett, Wash.

Gary Popiolkowski (garypoprr33@gmail.com), Chartiers-Houston Junior/Senior High School, Houston, Pa.

Learn how to use Problem-Based Learning to promote authentic research and problem-solving opportunities for all students. We'll share ideas, techniques, online resources, and our experiences.

#### **ASTE Session: Poster Session Featuring Innovations** and Research from Multiple Science Educators

(General) F3, Convention Center Science Focus: GEN

Lisa Martin-Hansen (@lmhrocks; l.martinhansen@csulb.

edu) ASTE President, and California State University, Long Beach

Elaine Bernal (@elainevbernal; elaine.bernal@gmail.com), California State University, Long Beach

Therese Shanahan (tshanaha@uci.edu) and Lauren Shea (lshea@uci.edu), University of California, Irvine

Come join us and speak to the presenters about their innovations and research in science education.

## Time Will Tell: Time-Lapse Photography/Digital Storytelling to Observe Change

(Grades 3–12) Science Focus: GEN F9, Convention Center

Roger Pence (rogpence@yahoo.com), Benicia High School, Benicia, Calif.

Observation of slow-moving events in time can be described using time-lapse photography and narrated via techniques used in digital storytelling. We will explore methods, equipment, and applications. Take home resources and samples.





#### 5:00–6:00 PM Hands-On Workshops

#### All Learners and the Next Generation Science Standards

(Grades 1–8)

A2, Convention Center

Science Focus: GEN, NGSS

**David Crowther** (*crowther*(*@unr.edu*), NSSTA President; Chairperson, NSTA Reno Area Conference; and University of Nevada, Reno

**Kazi Shahidullah** (*kazishahidullah@unr.edu*), University of Nevada, Reno

This session will share research and teaching strategies to help all students, especially ELL, succeed with the new language demands of the *NGSS* and *CCSS*.

#### Cycles, Sinks, and Solutions: A Complete STEM Mini-Unit on Global Climate Change

(Grades 5–9) A3, Convention Center Science Focus: ESS

Christine Geerer (@geererc; christine.geerer@gpschools. org), Parcells Middle School, Grosse Pointe Farms, Mich. Laura Mikesell (laura.mikesell@gpschools.org), Grosse Pointe

(Mich.) Public School System

Measure schoolyard trees to calculate carbon sinks, create Excel graphs to analyze ice data, and engineer wind turbines in this STEM-enhanced climate change unit.

#### Developing Argumentation Practices in Science Through Writing: A Story of Transformation

(*Grades 3–12*) C2, *Convention Center* Science Focus: ESS1.C, LS4.A, CCC1, SEP4, SEP6, SEP7, SEP8

Gail Bushey (gmbushey@gmail.com), Carson Middle School, Carson City, Nev.

**Christine Whitcome** (*cwhitcome@carson.k12.nv.us*), Eagle Valley Middle School, Carson City, Nev.

This session highlights one Nevada district's transformation in student learning and teacher practice using students' written arguments to assess deepening scientific understanding.

## The Science and Engineering Practices of Analyzing and Interpreting Data: A Conceptual Examination

C3, Convention Center

(General)

Science Focus: GEN, SEP4

**John Graves** (@cjmogan; graves@montana.edu), Montana State University, Bozeman

Let's explore the *NGSS* practice of Analyzing and Interpreting Data through inquiry activities, focusing on teacher conceptual change of the practice.

## Breaking Down the Stages of Cellular Respiration and Fermentation

(Grades 9–College) Science Focus: LS1.C D2, Convention Center

s: LS1.C

**Deborah Cardenas** (@profdcardenas; *dcardenas*(@collin. *edu*), Collin College, Plano, Tex.

Engage in activities you can use to help your students better understand the stages of cellular respiration and fermentation.

#### Using PBL to Integrate Our School Garden and Properties to Solve a Pest Problem

(Grades K–6) D6, Convention Center Science Focus: ETS1, ETS2.B, LS1.B, LS2.A, LS2.C, PS1.A, PS1.B, CCC2, CCC6, SEP

**Sara Holm** (@saraholmteacher; *sara.holm@gmail.com*) and **Alicia Klaich** (*aklaich@gmail.com*), Smithridge STEM Academy, Reno, Nev.

Cultivate to new learning in your classroom. Discover how a grade 5 team used their school garden to incorporate the *NGSS* and *CCSS* to engineer safe and effective mixtures and solutions to solve a pest problem.

#### Ocean Plastic Pollution: Examining Issues and Solutions in a Middle School Classroom

(Grades 6–8) D9/10, Convention Center Science Focus: ESS3.C, PS1.A, CCC6, SEP1

**Mary Whaley** (*mwhaley@mbayaq.org*), Monterey Bay Aquarium, Monterey, Calif.

Enrich your middle school classroom with *NGSS*-supported activities focusing on issues and solutions surrounding plastic pollution. Activities will highlight the physical and chemical properties of plastics, including density.

# JOIN US

## **5TH ANNUAL**



## Forum & Expo -

## HOSTED BY NSTA

Denver, CO July 27–29, 2016

This dynamic event brings together educators and organizations who are actively implementing STEM programs in their schools or districts.

Come prepared to learn tactics that work, build your professional learning network, connect with effective outreach programs and partnerships, discover new resources, and build a strong curriculum.

> For information and to register, visit www.nsta.org/stemforum







The Great Reno Balloon Race is the largest free hot-air ballooning event in the world.

#### 8:00–9:00 AM Presentations

#### AAPT Session: *The Physics Show* Excites Young People About Science

(General)

D1, Convention Center

Science Focus: PS, INF

David Marasco (marascodavid@foothill.edu) and Frank Cascarano (cascaranofrank@foothill.edu), Foothill College, Los Altos, Calif.

*The Foothill College Physics Show* uses fun demonstrations to link the principles of physics to everyday activities. The show targets schoolchildren, with an annual attendance of roughly 20,000.

## Fun Forensic Apps: Inexpensive, Interesting Ways to Integrate Math, Science, and Technology

(Grades 7–College) D3, Convention Center Science Focus: GEN, NGSS

Anthony Bertino (*abertino@nycap.rr.com*) and Patricia Nolan Bertino (*nolanp@nycap.rr.com*), Retired Educators, Scotia, N.Y. Solve real-life problems integrating math, science, and technology using free or inexpensive apps, including time of death, anthropology, facial recognition, ballistics, crime scene documentation, and more.

#### Teaching with the Language(s) of Science in Mind

(Grades K–8) D4, Convention Center Science Focus: GEN, NGSS

Grinell Smith (grinell.smith@sjsu.edu) and Colette Rabin (colette.rabin@sjsu.edu), San Jose State University, San Jose, Calif.

Video case studies are used to help teachers recognize and address challenges commonly faced by English language learners in K–8 classrooms.

#### Creating and Implementing a Learning Progression for Literacy in Grade 6–8 Science

(Grades 6–8) D7, Convention Center Science Focus: GEN, SEP

**Deborah Farkas** (*farkasd@sfusd.edu*), San Francisco (Calif.) Unified School District

Lisa Ernst (@lae121; *ernstl@sfusd.edu*) Alice Fong Yu Alternative School, San Francisco, Calif.

Hear how San Francisco Unified School District science teachers created and have implemented the SFUSD Scope and Sequence for Literacy in grades 6–8 science.



#### Solids: The Neglected "State" of Chemistry

(Grades 9–12) D8, Convention Center Science Focus: PS1.A, PS1.B, CCC1, CCC2, CCC6, SEP2, SEP3, SEP6, SEP8

**Debbie Goodwin** (nywin@hotmail.com), Retired High School Science Teacher, Chillicothe, Mo.

Andrew Nydam (andrewnydam@hotmail.com), Educational Consultant, Olympia, Wash.

Use solids to make chemistry more relevant for students. Hands-on STEM activities using solid materials (metals/ polymers/ceramics) make concepts easier to teach and learn. We'll share *NGSS* correlations as well as a CD of information.

#### Science and Writing: A Research-Based Approach That Enhances Learning in Both Domains

(Grades P–6) E2, Convention Center Science Focus: GEN, SEP8

**Betsy Rupp Fulwiler** (*bruppfulwiler@comcast.net*), Betsy Rupp Fulwiler Consulting, Seattle, Wash.

Learn research-based strategies for using scaffolding to increase diverse students' achievement in science and writing, as described in the *NGSS* and *CCSS ELA*.

#### Connecting Three-Dimensional Learning to Student-Designed Investigations: A Template to Help You Survive Experimentation!

(Grades 6–12) Science Focus: GEN F9, Convention Center

**Lynn Lauterbach** *(lynnlauterbach@gmail.com)*, Rice University Center for Technology in Teaching and Learning, Houston, Tex.

Simple supplies of sticky notes and a graphic organizer template can help guide your students to investigate topics THEY design. Reinforce the practices of science experimentation. Handouts and free online support!

#### 8:00–9:00 AM Hands-On Workshops

#### NSTA Press® Session: Next Time You See...

(Grades K–5) A2, Convention Center Science Focus: GEN, SEP8

**Emily Morgan** (@EmilyMorganNTYS; *emily@pictureperfect-science.com*), Picture-Perfect Science, West Chester, Ohio Learn how the *Next Time You See* picture book series can help you integrate science and literacy in your classroom...and inspire a sense of wonder in your students.

#### Let's Keep It Cool—Design/Build a Cooler

(Grades K–6) A3, Convention Center Science Focus: PS, CCC5, SEP4, SEP6, SEP8

Judith McDonald (judithmcdonald@bac.edu), Belmont Abbey College, Belmont, N.C.

Learn how to implement engineering concepts in the K–6 classroom by creating a design/build engineering project.

#### **NGSS** Great Balls of...Fire?

(Grades 6–8) Science Focus: PS3.B, CCC5, SEP7 A5, Convention Center

C2, Convention Center

Andrea Carver (alcarver@interact.ccsd.net), Paul Culley Elementary School, Las Vegas, Nev.

Lori Henrickson (@MsLorisStory; lehenrickson@interact. ccsd.net), Del Webb Middle School, Henderson, Nev.

Smashing their way toward MS-PS3-5, participants will use a 5E-formatted lesson and a variety of balls to learn about energy transfers through hands-on investigation.

## ACS Middle Level Session: Matter—Solids, Liquids, and Gases

(Grades 6–8)

Science Focus: PS1.A

**James Kessler** (*jhkessler@acs.org*) American Chemical Society, Washington, D.C.

Explore solids, liquids, and gases through hands-on activities and molecular model animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at *www.middleschoolchemistry.com*.

#### STEM Behind Medicine: Curing Type 1 Diabetes

(Grades 9–College) D2, Convention Center Science Focus: LS

Jeffrey Lukens (jeffreylukens0613@gmail.com), Sioux Falls (S.Dak.) School District

What once was "pie in the sky" is becoming more real by the day. Top researchers are making strides in the treatment and cure of Type 1 diabetes. We'll look at the heroics of today's research scientists.

#### Journey into the School Yard: A Context for Cross-Curricular Learning

(Grades K–6)

D5, Convention Center

Science Focus: GEN, NGSS

Jamie Garaventa (jamie@sierranevadajourneys.org), Sierra Nevada Journeys, Reno

Let's explore the school yard as a context for multidisciplinary learning. This session will offer standards-based activities and techniques for outdoor learning at school.

#### Write Like an Ecologist!

(Grades 3–6) D6, Convention Center Science Focus: GEN, SEP4, SEP7

Joey Lehnhard (@joeyelle; jlehnhard@mbayaq.org), Monterey Bay Aquarium, Monterey, Calif.

Explore the biodiversity of California's rocky shores and use data and observations to motivate students to write authentically about science. Learn data analysis tips and win door prizes!

#### NESTA Shares: Innovative Ways to Teach About Weather Observation and Weather Hazards

(Grades 6–College) F1/2, Convention Center Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

Jenelle Hopkins (jhopkins@interact.ccsd.net), Shadow Ridge High School, Las Vegas, Nev.

**Richard Jones** (@mtzennmaster; *rmjones7@hawaii.edu*), University of Hawaii–West Oahu, Kaploei

Joseph Monaco, Retired Earth Science Teacher, Highland, Calif.

NESTA members will share a variety of strategies to enhance your studies of weather and weather hazards to help implement the *NGSS* and network your school.

#### 20 in 20: The Next Chapter

(Grades 7–12) Science Focus: LS F4, Convention Center

Whitney Hagins (whitney.hagins@massbio.org), Massachusetts Biotechnology Education Foundation, Chelmsford

Make your biology course more inquiry based and student centered! Here are new, exciting 20-minute activities to engage students in hands-on learning.

#### 8:00–9:00 AM Exhibitor Workshops

#### **POGIL Activities for AP Chemistry**

(Grades 9–12) Science Eocus

A1, Convention Center

Science Focus: PS Sponsor: Flinn Scientific, Inc.

**Mike Marvel,** Flinn Scientific, Inc., Batavia, Ill.

Process-Oriented Guided Inquiry Learning (POGIL) activities guide students to construct new understandings while simultaneously developing their skills in critical thinking, problem solving, and collaboration. The new *POGIL Activities for AP Chemistry* manual has 30 College Board—aligned activities that include mass spectroscopy, photoelectrons, spectroscopy, buffers, and electrochemistry plus a "Teacher Resources" section. Join us for strategies incorporating POGIL activities into your AP chemistry course.

#### Active Physics and Active Chemistry: Leading Project-Based High School Physics and Chemistry Programs Capturing the Essence of the NGSS and STEM

(Grades 9–12) Science Focus: PS A6, Convention Center

A7, Convention Center

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and UMass Boston, Dorchester

Learn from author Arthur Eisenkraft how you can implement STEM and *NGSS* in your chemistry, physics, or physical science classroom with Active Chemistry and Active Physics. Learn how physicists, chemists, chemical engineers, and science educators collaborated to design innovative projectdriven curricula that are now demonstrating significant success in engaging all students and increasing student performance. New resources include robust Active Chemistry and Active Physics 24/7 online communities for teachers.

#### pH Scale and Math Modeling

(Grades 9–12) Science Focus: PS1

Sponsor: LAB-AIDS®, Inc.

**Emilie Hill,** John Marshall High School, Los Angeles, Calif. What does pH actually measure? In this investigation, you will measure pH indirectly using indicators and absorption using the Lab-Master<sup>®</sup>. Using their data, participants generate a graph of absorbance *vs.* pH. This graph can be used to determine the pH of solutions within the measured pH range. Join us for this activity from *A Natural Approach to Chemistry*.

## Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens

(Grades 6–12)

Science Focus: LS

A8, Convention Center

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, dogfish, and frog. Participants use dissection to identify characteristics of these popular vertebrates. This is an excellent comparative activity featuring our very best Carolina's Perfect Solution specimens. Free dissection supplies and great door prizes.

#### Integrating Chromebook with Vernier Technology

(Grades 3–12) A9, Convention Center Science Focus: GEN, SEP Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data helps students learn critical science concepts that increase test scores and promote science inquiry. This hands-on workshop will address data collection with Chromebook and Vernier technology, including LabQuest Mini. Experiments, such as Boyle's Law, Grip Strength Comparison, and Ball Toss, will be conducted.

#### Use Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics!

(Grades 9–College) A10, Convention Center Science Focus: LS, PS Sponsor: PASCO scientific

**Michael Blasberg,** PASCO scientific, Roseville, Calif. Use PASCO's new Wireless Spectrometer and free Spectrometry software to perform introductory spectroscopy experiments for chemistry, biology, and physics on computers and iPads. In this hands-on workshop, you'll analyze emission spectra, absorbance/transmittance spectra, solution concentration data, and reaction kinetics data.

#### Lights, Camera...Enzymes in Action!

(Grades 6–College) A13, Convention Center Science Focus: ETS1, LS1.A, PS1, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: MSOE Center for BioMolecular Modeling

Diane Munzenmaier (munzenmaier@msoe.edu) and Tim Herman (herman@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Using 3-D physical representations, students discover that proteins are linear sequences of amino acids that spontaneously fold into complex shapes following basic principles of chemistry. This hands-on workshop explores a variety of models of enzymes to introduce the concepts of substrate, active site, specificity, and competitive/noncompetitive inhibition.

#### SAE Middle School Educational Offerings

A14/15, Convention Center

Science Focus: GEN, SEP

(Grades 6-9)

Sponsor: SAE International A World In Motion Program **Kenneth Francis** (*kfrancis@sae.org*), SAE International, Warrendale, Pa.

Come see project-based STEM educational offerings from SAE, from the award-winning A World in Motion Program– Fuel Cell, Glider, and Motorized Toy Challenges to F1 in Schools Technology Challenge, the world's largest STEM competition.

## Are Humans Still Evolving? Genetic Evidence of Human Evolution

A17, Convention Center

Science Focus: LS3, LS4 Sponsor: HHMI BioInteractive

(Grades 6-College)

Cheryl Hollinger, Consultant, Portland, Ore.

A common misconception about evolution is that human populations are not influenced by natural selection. Learn about three examples of human evolution by natural selection—lactose tolerance, sickle-cell anemia, and starch digestion. Receive free classroom-ready resources from HHMI that are suitable for middle school, high school, and undergraduate audiences.



-Photo courtesy of Jacob Slaton

#### 8:00-9:30 AM Exhibitor Workshop

#### How to Use Pop Culture Science in Your Classes

(Grades 9–College) A12, Convention Center Science Focus: GEN

Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Use popular science to engage high school and college students and increase science literacy in your classroom. See how popular movies and TV shows connect to real-world discoveries and issues. Then learn how to incorporate pop culture, literary practices, and a fun hands-on lab to increase student involvement and understanding.

#### 8:00–10:00 AM Hands-On Workshop

ACS Session One: Energy in Chemistry—A Macroscopic View

(Grades 9–12) C3, Convention Center Science Focus: PS3, SEP6

**Marta Gmurczyk** (*m\_gmurczyk@acs.org*), American Chemical Society, Washington, D.C.

Chad Bridle (chadbridle@gmail.com), Grandville High School, Grandville, Mich.

**Vicente Talanquer** (*vicente@u.arizona.edu*), The University of Arizona, Tucson

Julie Ann Andrew (julie.andrew@colorado.edu), University of Colorado Boulder

**Rebecca Stober** (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts (MESA), Denver, Colo.

Engage in design activities that can help students meaningfully understand energy transfer between systems with different temperatures by designing devices with specific properties and testing their properties. These activities have been developed to deepen students' conceptual understanding about energy, heat, and temperature in macroscopic systems.

#### 9:00 AM-3:00 PM Exhibits

Hall #2, Convention Center

Did you know that NSTA offers Exclusive Exhibits Hall hours today from 1:30 to 3:00 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

#### 9:30–10:30 AM Featured Presentation

#### NGSS The What and Why of 3-D Science Learning

C1, Convention Center

Science Focus: GEN, CCC, SEP



(General)

Helen Quinn (helen.quinn@stanford. edu), Professor Emerita, SLAC National Accelerator Lab, Portola Valley, Calif.

Presider: David Crowther, NSSTA President; Chairperson, NSTA Reno Area Conference; and University of Nevada, Reno

Helen Quinn will discuss the vision of

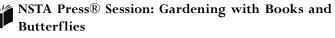
three-dimensional science learning developed in the *Framework for K*–12 *Science Education* that underlies *NGSS* and other recently adopted state science standards. She will present a view of how teachers can use and integrate the crosscutting concepts as questioning tools that students can use to tackle problems, and how these tools complement and enhance student engagement in the science practices as a vehicle for learning core science concepts.

Helen Quinn is professor emerita of Particle Physics and Astrophysics at SLAC National Accelerator Laboratory. Helen is an internationally recognized theoretical physicist who holds the Dirac Medal (from the International Center for Theoretical Physics, Italy), the Klein Medal (from The Swedish National Academy of Sciences and Stockholm University), and the Sakurai Prize (from the American Physical Society).

Helen has been active in science education for some years. She served as chair of the U.S. National Academy of Science Board on Science Education (BOSE) from 2009 to 2014. Helen served as a member of the BOSE study that developed the report "Taking Science to School" and chaired the committee for the Framework for K–12 Science Education, which is the basis of the Next Generation Science Standards (NGSS) that have now been adopted by multiple states in the U.S.. She also served on the committee that developed the report "Developing Assessments for the Next Generation Science Standards."

Helen received her PhD in physics at Stanford University in 1967 and has taught physics at both Harvard and Stanford universities.

#### 9:30–10:30 AM Presentations



(Grades K–5)

A2, Convention Center

A3, Convention Center

Science Focus: GEN

**Steve Rich** (@bflyguy; *bflywriter*@comcast.net), West GYSTC, Carrollton, Ga.

Discover the author's strategies for integrating multiple subjects indoors and out with the NSTA Kids books *My School Yard Garden* and *Mrs. Carter's Butterfly Garden*.

#### Climate Literacy → Climate Solutions

(Grades 6–12)

Science Focus: ESS **June Teisan** (@jlteisan; *june.teisan@noaa.gov*), Einstein

Fellow, NOAA, Washington, D.C. Want to teach climate literacy but don't know where to start?

The National Oceanic and Atmospheric Administration (NOAA) offers a spectrum of online lesson plans, videos, data sets, webinars, and more that can inform and inspire students to engineer solutions to climate concerns.

### A Look at Engineering in the Real World: A System of Systems

(Grades 4–12)	D4, Convention Center
Science Focus: ETS	

**Barney Peterson** (@BarneyPeterson; *bpeterson*@everettsd. *org*), Monroe Elementary School, Everett, Wash.

Join me as I share how students' curiosity about their new school helped them learn from designers, engineers, and construction experts how problems are solved and needs are met.

#### Plant 2 Trees: A Real-World Adventure in Project Based Learning

(*Grades* 6–8) D7, *Convention Center* Science Focus: LS1.A, LS1.B, LS1.C, LS2.A, LS2.B, LS3.B, LS4.C, CCC6, SEP1, SEP3, SEP7, SEP8

Marshall Sachs (msachs@orinda.k12.ca.us) and Susan Boudreau (sboudreau@orinda.k12.ca.us), Orinda Intermediate School, Orinda, Calif.

Engage your students in designing outdoor investigations and indoor research in order to write grants to plant two trees.

#### Do You Need a New Science Lab?

(Grades 6–12) Science Focus: GEN D8, Convention Center

Ruth Ruud (*ruth.ruud@yahoo.com*), Cleveland State University, Cleveland, Ohio

Come learn how to win a Shell Science Lab Makeover for your school (valued at \$20,000). You will have an opportunity to actually begin to complete the application and have your questions answered. The Shell Science Lab Challenge invites middle school and high school science teachers (grades 6–12) in the U.S. and Canada (with special attention to urban and underrepresented groups) to illustrate replicable approaches to science lab instruction using limited school and laboratory resources.

#### NARST Session: Me? A Scientist—A Next Generation of After-School Students Internalizing Their Identities as Scientists

(Grades K–8) E1, Convention Center Science Focus: INF, SEP

Lauren Shea (lshea@uci.edu) and Therese Shanahan (tshanaha@uci.edu), University of California, Irvine

Review results from an after-school science program that emphasized gaining an identity as a scientist. Practice implications will be discussed.

#### STEM Festivals Bridge Schools and Community

(General) E2, Convention Center Science Focus: INF, SEP

**Deanna LeBlanc** (@DeannaLeb; *dleblanc@lyon.k12.nv.us*), Lyon County School District, Yerington, Nev.

**Tammy Roseberry** (@Tammytamteaches; *troseberry@lyon. k12.nv.us*), Cottonwood Elementary School, Fernley, Nev.

**Brandolyn Thran** (@FernleySTEM; *bt*@*perspectivescientific. com*), Perspective Scientific Consulting, Fernley, Nev.

STEM Festivals can build bridges between our schools and businesses by linking STEM education to the local workforce. Come learn more!

#### Enhancing Student Learning in Science Using Literacy Strategies

(Grades 7–12) F9, Convention Center Science Focus: GEN, SEP1, SEP7, SEP8

**Bev DeVore-Wedding** (@bdevore; bdevorewedding@gmail. com), NSTA Director, High School Science Teaching, and University of Nebraska–Lincoln

Promoting reading and writing while learning science? Use proven literacy strategies to enhance your students' science knowledge and science literacy for the 21st century.

#### NSTA Reno Area Conference on Science Education

#### 9:30–10:30 AM Hands-On Workshops

#### ACS Middle Level Session: Changes of State—Evaporation and Condensation

(Grades 6–8)

C2, Convention Center

Science Focus: PS1.A

**James Kessler** (*jhkessler@acs.org*), American Chemical Society, Washington, D.C.

Explore evaporation and condensation through hands-on activities and molecular model animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at *www.middleschoolchemistry.com*.

#### How to Host the Perfect Family Science Night

(Grades K–8) D5, Convention Center Science Focus: ETS1, INF, SEP1, SEP3, SEP6

Jennifer Robinson (jennifer@sierranevadajourneys.org) and Sean Hill (sean@sierranevadajourneys.org), Sierra Nevada Journeys, Reno

This engaging hands-on workshop will guide you through the process of running a school family science night and provide you with tools and resources for success.

#### Open the Floodgates to Real-World Learning!

(Grades 4–5)

Science Focus: GEN, NGSS

D6, Convention Center

**Karen Staffen** (*kstaffen@storey.k12.nv.us*), Hugh Gallagher Elementary School, Virginia City, Nev.

Engage in a tabletop floodplain activity while exploring the integration of multiple *NGSS* and *CCSS* standards. The integrated unit is available.

#### Catapults, Literacy, and Newton's Laws

(Grades 6–8) D9/10, Convention Center Science Focus: PS, CCC

**Susan Kautzer** (*skautzer*@*dupo.stclair.k12.il.us*), Dupo Junior/ Senior High School, Dupo, Ill.

Launch your students' imaginations by having them build a desktop catapult. Take home student materials, including worksheets, a lab rubric, data table templates, and student-related literature. *Note:* Hands-on activities available to the first 40 participants.

#### NESTA Shares: Innovative Ways to Teach About Climate and Climate Change

(Grades 6–College)	F1/2, Convention Center
Science Focus: ESS	

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

Jenelle Hopkins (jhopkins@interact.ccsd.net), Shadow Ridge High School, Las Vegas, Nev.

**Richard Jones** (@mtzennmaster; *rmjones7@hawaii.edu*), University of Hawaii–West Oahu, Kaploei

**Joseph Monaco** (monacoj@aol.com), Retired Earth Science Teacher, Highland, Calif.

NESTA members will share strategies to enhance your studies of climate, climate change, and human impact to help implement the *NGSS* and state curricular standards.

#### iPad—Realize Its Full Potential in Your Classroom!

(Grades 7–College) F4, Convention Center Science Focus: PS4

**Greg Dodd** (*gbdodd@gmail.com*), Retired Educator, Pennsboro, W.Va.

Move your physical science students from the 2-D concrete viewpoint to visualizing what is occurring in the 3-D abstract world. Find out how to redesign your science classroom to make it truly digital and meet the *NGSS* HS-PS4. Handouts!

## Teach and Enhance CCSS Mathematics Practices Using NASA's Kepler Mission Data

(Grades 8–12) F10, Convention Center Science Focus: ESS

Edna DeVore (edevore@seti.org) and Gary Nakagiri(gnakagiri@gmail.com), SETI Institute, Mountain View, Calif.

Learn how to use Kepler Mission data to enhance students' mathematical practices of modeling and reasoning abstractly and quantitatively. Relevant NASA classroom resource materials provided.

#### 9:30–10:30 AM Exhibitor Workshops

3–2–1 Blast Off!

(Grades 3–8)

A1, Convention Center

Science Focus: PS2, PS3

Sponsor: Educational Innovations, Inc. Tami O'Connor, Educational Innovations, Inc., Bethel,

Conn.

What student doesn't like a burst of energy? Join us for things that go bump in the day! Make your own rockets; explore elastic, potential, and kinetic energy; and more! This workshop is perfect for elementary or middle school teachers teaching energy or Newton's laws. Lesson ideas, giveaways, and door prizes!

#### Engineering in the NGSS: Grades 9-12

A6, Convention Center

Science Focus: ETS, SEP Sponsor: It's About Time

(Grades 9-12)

Gary Curts, STEM Implementation Specialist and Retired High School Teacher, Dublin, Ohio

Led by *NGSS* lead author Cary Sneider, this workshop will illustrate how an innovative project-based high school curriculum—Engineering the Future: Science, Technology, and the Design Process—can help students develop their abilities to argue from evidence and learn core ideas about energy through engaging hands-on activities and can help you create your *NGSS*/STEM classroom.

#### **Chemical Formula and Amino Acids**

(Grades 9–12)

Science Focus: PS1

A7, Convention Center

Sponsor: LAB-AIDS®, Inc.

**Emilie Hill,** John Marshall High School, Los Angeles, Calif. What is the difference between subscripts and coefficients? What does "balancing" a chemical equation mean? Many students have trouble with these concepts. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for intuitive lessons for all students to master the formula, gaining a deeper understanding of chemistry.

#### Engineering Design for Grades K–2

(Grades K–2) A8, Convention Center Science Focus: ETS1 Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

Students in K–2 can ask questions, make observations, and gather information to define a simple problem and solve it

with a new or improved object or tool. We'll cover *NGSS* K– 2-ETS1-1 and K–2-ETS1-2, Engineering Design and provide lesson examples and strategies for engineering design in K–2 classrooms in this hands-on workshop.

#### **Chemistry with Vernier**

(Grades 8–College) A9, Convention Center Science Focus: PS, SEP Sponsor: Vernier Software & Technology **David Carter** (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will use various digital tools—including some of our wireless options—to conduct experiments from our popular chemistry lab books. Use LabQuest Mini with a computer or LabQuest 2 as a standalone device. Learn about data collection options for iPad, Chromebook, and BYOD environments.

## Adapting Traditional Biology Labs to Sensor Technology

A10, Convention Center

A13, Convention Center

Sponsor: PASCO scientific

(Grades 9-College)

Science Focus: LS

**Michael Blasberg,** PASCO scientific, Roseville, Calif. Conduct hands-on inquiry investigations on enzyme activity and cellular respiration using PASCO sensors and SPARKvue software. See how sensors can transform tedious qualitative labs into short data-driven learning experiences for standards-based labs for grades 9–12 general, AP, and IB courses.

#### Meet the NGSS Using Amplify Science, the Newest Grades 6–8 Curriculum from UC Berkeley's Lawrence Hall of Science and Amplify for Grades 6–8

(Grades 6–8) Science Focus: GEN, NGSS

Sponsor: Amplify

**Rebecca Abbott** (*learningdesigngroup@berkeley.edu*) and **Traci Wierman**, The Lawrence Hall of Science, University of California, Berkeley

Experience our field-tested, technology-enhanced, 100% *NGSS*-designed K-8 curriculum. Built around argumentation, digital simulations, modeling tools, hands-on investigations, and explicit disciplinary literacy instruction, Amplify Science engages students with deep dives into understanding the natural and designed worlds. This workshop, focusing on middle school units, provides a sneak peek at this new curriculum.

### MiniOne<sup>™</sup> Electrophoresis: Revolutionizing Biotechnology in Real Time

(Grades 7–College) A14/15, Convention Center Science Focus: LS

Sponsor: The MiniOne<sup>TM</sup> Electrophoresis

**Richard Chan** (*sales@theminione.com*), The MiniOne Electrophoresis, San Diego, Calif.

Perform an electrophoresis experiment in 30 minutes with the MiniOne! Watch DNA migrate and receive instant feedback to supplement lecture and facilitate learning. The MiniOne offers more hands-on experience for students and less prep time for you. Please bring your smartphone and be ready to take a picture of your results.

### Integrating Literacy and Science—The Wow Factor

A16, Convention Center

Science Focus: GEN, NGSS

(Grades P-5)

Sponsor: Activate Learning

Lynn Weber and Marilyn Schmidt, Activate Learning, Aurora, Colo.

Come engage in a hands-on investigation where your students explore, read, write, talk, and think critically about science. Address reading, writing, and math through science investigations. Create data tables and argue from evidence as you give your students a reason to write beyond just "fill in the blank."

## Visit EDVOTEK at Booth # 614 and Attend a Free Hands-On Workshop!

# Reno Workshop Schedule

Featuring Our Newly Redesigned Lab Equipment!

### Thursday, Oct. 22, 2015 • Reno-Sparks Convention Center, A9

9:30-10:30 AM	Teaching STEM Using Agarose Gel Electrophoresis
11:00-12:00 PM	Case of the Missing Records
12:30-1:30 PM	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR
2:00-3:00 PM	Detecting the Silent Killer: Clinical Detection of Diabetes
3:30-4:30 PM	Drunken Worms: Exploring Gene Function with C.elegans
Receive a FRE	E oift for attending!



Booth #614

### EDVOTEK® Can Bring Biotechnology to Your Classroom!

We will help you transform your classroom into a state-of-the-art research lab! Kits & Equipment for Electrophoresis, DNA Fingerprinting, PCR, Forensic Science, Transformation, Immunology, AP Biology/Environmental Science, and more!

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### Free Resources from HHMI for the NGSS Disciplinary Core Idea on Evolution

A17, Convention Center

(Grades 9-12) Science Focus: LS4

Sponsor: HHMI BioInteractive

Bethany Dixon, Western Sierra Collegiate Academy, Rocklin, Calif.

Discover how HHMI's film The Origin of Species: The Making of a Theory can help your students evaluate claims based on evidence. Follow the iconic voyages of Darwin and Wallace and engage students in the story behind the science. Receive free materials that emphasize data collection and nature of science.

### Using Problem-Based Learning to Up Your NGSS Game

(Grades K-12) Science Focus: GEN, NGSS A19, Convention Center

Sponsor: Pearson

Michael Padilla, 2005-2006 NSTA President, and Professor Emeritus, Clemson University, Clemson, S.C.

One of the biggest shifts with the NGSS is the movement to incorporate more scenario-based and Problem-Based Learning. To help prepare for school and beyond, students need to be doing science and seeing how it fits into their daily lives. Join Pearson author Mike Padilla as he brings PBL into the science classroom to help prepare students for future science and technology careers.

### 9:30–11:00 AM Hands-On Workshop

### AAPT Session: Introduction to Modeling Instruction, Part 1

D1, Convention Center (Grades 7–College) Science Focus: PS, SEP2, SEP4, SEP3

**Lee Trampleasure** (@leetramp; *leetramp.lists*(@gmail.com), Sacred Heart Cathedral Preparatory, San Francisco, Calif. Modeling instruction meshes well with the NGSS practices. Participants will get their hands on some data and explore how students develop and use models.



### 11:00 AM–12 Noon Presentations

Teaching Macromolecules Through the Lens of Nutrition

(Grades 7-12)

D2, Convention Center

Science Focus: LS Erin Be (ebe@bentleyschool.net) and Kristina Pappas

(kristinampappas@gmail.com), Bentley School, Upper School, Lafayette, Calif.

Teaching macromolecules can be a tedious process. Our unit plan addresses the content through the lens of nutrition while using inquiry and hands-on learning.

### The NGSS@NSTA Hub

(General)

D7, Convention Center

Science Focus: GEN, NGSS

Ted Willard (@Ted\_NSTA; twillard@nsta.org), Program Director, Next Generation Science Standards (NGSS@NSTA), NSTA, Arlington, Va.

This session will feature a tour of the NGSS@NSTA Hub, a digital destination to support teaching and learning of the Next Generation Science Standards. Hear about the work of 55 NGSS@NSTA curators—a group of educators from all across the U.S. working to identify resources that support the standards.

### Publish Your Teaching Ideas in an NSTA Journal

D8, Convention Center

Science Focus: GEN

(General)

**Ken Roberts** (ken\_r@nsta.org), Assistant Executive Director of Journals, NSTA, Arlington, Va.

Learn how to successfully prepare and submit an article for publication in an NSTA journal. Meet with the editors to discuss and fine-tune your article ideas.

### **NSELA Session: Tools for Science Leaders, Part 1**

(Grades P-12) E1, Convention Center Science Focus: GEN

Elizabeth Mulkerrin (#NSELA; elizabethm@omahazoo. com), NSELA President, and Omaha's Henry Doorly Zoo and Aquarium, Omaha, Neb.

Presider: Kenn Heydrick, The University of Texas at Tyler Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

### Utilizing Virtual Simulations to Enhance Lab Experiences in All Types of Classrooms

(Grades 6-12) E2, Convention Center Science Focus: GEN, SEP

Lesli Anne Wertin (lwertin@interact.ccsd.net) and Brian Lenze (blenze@interact.ccsd.net), Nevada Learning Academy, Las Vegas

Whether a traditional brick-and-mortar or an online/ blended classroom, virtual simulations provide a dynamic learning experience. Come learn more!

### So We're Retired...What Can We Do Now?

(General)

E3, Convention Center

Science Focus: GEN

### Presenter to be announced

The NSTA Retired Advisory Board invites you to a vibrant and useful information sharing session. Join us to explore avenues to pursue in science education.

### **NESTA and CIESIN Share: Exploring a Compendium** of Online Resources for Teaching Earth Science

(Grades 6-College) F1/2, Convention Center Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

**Jenelle Hopkins** (*jhopkins*(*a*)*interact.ccsd.net*), Shadow Ridge High School, Las Vegas, Nev.

**Richard Jones** (@mtzennmaster; *rmjones7*@hawaii.edu), University of Hawaii-West Oahu, Kaploei

Joseph Monaco, Retired Earth Science Teacher, Highland, Calif.

NESTA members will share exemplary educational websites, including the Center for International Earth Science Information Network, to help implement NGSS and state curricular standards programs.

### Michigan Teacher Excellence Program's (MiTEP) Implementation of Lesson Study: Preparing the Next Generation of Science Teachers to Be Teacher Leaders for Implementing the NGSS

(Grades 7–College) F4, Convention Center Science Focus: GEN, NGSS

**Carol Engelmann** (cengelmann@unomaha.edu), University of Nebraska Omaha

Mark Klawiter (mfklawit@mtu.edu) and Kedmon Hungwe (khungwe@mtu.edu), Michigan Technological University, Houghton

Learn how MiTEP's teachers used the PD structure of Lesson Study to modify science lessons focused on the core ideas in the NGSS.

### 11:00 AM–12 Noon Hands-On Workshops

NSTA Press<sup>®</sup> Session: Scientific Argumentation **Classroom Activities** A2, Convention Center

(Grades 5-College)

Science Focus: GEN, NGSS Sharon Schleigh (sharonpschleigh @gmail.com), East Carolina

University, Greenville, N.C.

Victor Sampson (@drvictorsampson; victor.sampson@ utexas.edu), The University of Texas at Austin

Engage in an activity that encourages scientific argumentation in the classroom, and review different models and examples of activities from various disciplines.

### 🟚 Engineering Design

**G**rades 9–11) A3, Convention Center Science Focus: ETS, CCC2, CCC7, SEP1, SEP6, SEP7 Jacklyn Bonneau (bonneau@wpi.edu), Massachusetts Acad-

emy of Math and Science at WPI, Worcester

The decision matrix will drive selecting a solution around conservation. Using the matrix is a tool in the design process but can be adapted elsewhere.

### Chapter Books at the Crossroads of the NGSS and CCSS

(Grades 6-9) A4, Convention Center Science Focus: GEN

Christine Royce (@caroyce; caroyce@aol.com), Shippensburg University/PSTA, Shippensburg, Pa.

Examine different chapter book units that can help to integrate the components of the NGSS and elements of the CCSS.



—Photo courtesy of Jacob Slaton

# NGSS Create Your Own NASA Portal to the NGSS with NASA Wavelength

(Grades P–12) A5, Convention Center Science Focus: ESS1

**Cassie Soeffing** (*cassie\_soeffing@strategies.org*), **Theresa Schwerin** (@nasawavelength; *theresa\_schwerin@strategies. org*), and **Liz Burck** (*liz.burck@gmail.com*), Institute for Global Environmental Strategies, Arlington, Va.

Ruth Paglierani (ruthp@ssl.berkeley.edu), University of California, Berkeley

Bring your laptop or tablet and create your own "bundles" of *NGSS*-focused NASA science lessons using NASA's Wavelength website.

# ACS Middle Level Session: Density—A Molecular View

(Grades 6–8) C2, Convention Center Science Focus: PS1.A

**James Kessler** (*jhkessler@acs.org*), American Chemical Society, Washington, D.C.

Explore the density of different materials through hands-on activities and molecular models from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at *www.middleschoolchemistry.com*.

### Linking Science and Literacy for Improved Student Outcomes

(Grades K–6)

D5, Convention Center

Science Focus: GEN

**Bill Badders** (@baddersb; *baddersb@roadrunner.com*), 2013–2014 NSTA President, Cleveland Heights, Ohio Come explore strategies for linking science and literacy that support students' abilities to read, write, and discuss in the context of science and inquiry-based learning using fiction and nonfiction texts. Engage in hands-on examples of how science supports literacy and literacy supports science.

### **CESI Session: Engaging Students in Argumentation** and Better Explanations

(Grades K–8) Science Focus: GEN, SEP D9/10, Convention Center

**Jim McDonald** (@jimscienceguy; *jim.mcdonald@cmich. edu)*, CESI President, and Central Michigan University, Mount Pleasant

Join me for this hands-on workshop on how to connect the *NGSS* to the *CCSS* by including purposeful strategies to find out students' reasoning. Handouts!

### Selecting and Using the Best in Trade Books

(General) F3, Convention Center Science Focus: GEN

**Suzanne Flynn** (*suzannemflynn@earthlink.net*), Lesley University and Cambridge College, Cambridge, Mass.

Linda Schoen-Giddings (Ins326@aol.com), LSG Educational Consultants, Santa Fe, N.Mex.

Come learn about the two systems by which NSTA identifies good and great science books for learning. Get a chance to judge the books and explore ways to use them. Find out how NSTA provides reviews of science materials, NSTA Recommends, and the Children's Book Council Outstanding Trade Book competition. Door prizes—books, of course!

### Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events

(Grades 9–College) F10, Convention Center Science Focus: ESS, ETS2, CCC1, CCC2, CCC4, CCC5, CCC7, SEP2, SEP4, SEP7, SEP8

**Donna Young** (*donna@aavso.org*), NASA Astrophysics Division, Bullhead City, Ariz.

Connect the three dimensions of the *NGSS* with *CCSS* using absolute and relative dating, ice core data, volcanic eruptions, solar flares, nitrate anomalies, and supernova events.

### 11:00 AM-12 Noon Exhibitor Workshops

### Observing and Inferring in the Science Classroom: New Tips and Tools from Dinah Zike's Notebooking Central

(General)

A1, Convention Center

Science Focus: GEN Sponsor: Dinah-Might Adventures

Deborah Vannatter, University of Evansville, Ind.

Leave with new Notebooking Central templates for classroom (and real life) observations and inference to help students learn to see and think like scientists. Build a mininotebook of ideas and applications ready to use on Monday. Join us for brain-engaging, research-based interactive activities for observation and inference.

# PBIS Roundtables: Discussions to Support Successful Implementation

(Grades 6–8) A6, Convention Center Science Focus: GEN, NGSS Sponsor: It's About Time

Amanda Wilson, It's About Time, Mount Kisco, N.Y.

**Oguz Guvenc,** Sonoran Science Academy Davis-Monthan 6–12, Tucson, Ariz.

Join the *Project-Based Inquiry Science*<sup>TM</sup> (PBIS) community to learn best practices from teachers, school-based administrators, program developers, and support staff. Find tools to support implementation, face-to-face teacher support, and online tools that provide a blended approach to professional learning for successful implementation of PBIS in your class-room and school.

### What Is a Species?

(Grades 9–12) Science Focus: LS4 Sponsor: LAB-AIDS®, Inc.

Sponsor: LAB-AIDS<sup>®</sup>, Inc. Virginia Rehberg, Wilson High School, Tacoma, Wash. In this activity from the SEPUP high school biology program, learn about conditions that lead to speciation, including isolation due to temporal, geographical, and behavioral factors,

A7, Convention Center

and more. We will then apply this knowledge to determine whether selected animal or plant pairs are in the early, mid, or late stages of speciation.

### Hands-On Science with Classroom Critters

(Grades K–12) A8, Convention Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

### **Carolina Teaching Partner**

Add action and excitement to your science class with live organisms! Discover simple hands-on activities featuring pill/sow bugs, termites, bessbugs, and butterflies. Learn about care and handling, as well as easy ways to introduce inquiry to your labs. Free product samples and literature.

### **Biology with Vernier**

(Grades 8-College)

A9, Convention Center

Science Focus: LS, SEP Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will use various digital tools—including some of our wireless options—to conduct experiments from our popular biology lab books. Use LabQuest Mini with a computer or LabQuest 2 as a standalone device. Learn about data collection options for iPad, Chromebook, and BYOD environments.

# Physics with PASCO scientific, Featuring PASCO Capstone<sup>™</sup>, the Ultimate Data Collection and Analysis Software for Physics

(Grades 9–College) Science Focus: PS Sponsor: PASCO scientific

**Brett Sackett,** PASCO scientific, Roseville, Calif.

Get hands on with the most sophisticated and flexible physics software available today—PASCO Capstone—with advanced physics analysis features, including video analysis. See how using PASCO probeware, software, and equipment can enhance your physics demonstrations and labs.

### Zombie Apocalypse!

(Grades 6-12)

A11, Convention Center

A10, Convention Center

Science Focus: GEN, NGSS

Sponsor: Texas Instruments, Inc.

Jeffrey Lukens, Sioux Falls (S.Dak.) School District

An airborne contagion! A devastating pandemic! What are we going to do? Scenario-based lessons are a great way to engage students and present concepts in context. STEM Behind Hollywood is a free program from TI and the Science & Entertainment Exchange (www.STEMhollywood.com).

### Friday, 11:00 AM-12 Noon

### Let's Get Helical

(Grades 6–College) A13, Convention Center Science Focus: ETS1.A, ETS1.B, ETS2, LS1.A, LS1.B, LS3, LS4.A, LS4.D, CCC1, CCC2, CCC6, CCC7, SEP1, SEP2 Sponsor: 3D Molecular Designs

Diane Munzenmaier (munzenmaier@msoe.edu) and Tim Herman (herman@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

DNA can be viewed as a macromolecule or a source of genetic information. Explore both features with two interactive DNA models and a paper bioinformatics exercise focusing on the beta subunit of hemoglobin. Examine the mutation that leads to sickle cell disease and the regulation of fetal and adult hemoglobin expression.

# Creating to Understand: Come Build Your Muscles in Clay!

(Grades 8–College) A16, Convention Center Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

Chuck Roney, Retired High School Teacher, Haddonfield, N.J.

Get introduced to a new method of learning anatomy and physiology. We will discuss how to teach skeletal, muscular, and other body systems in a powerful kinesthetic way using clay! Learn how to build your muscles in clay and engage your students with immediate hands-on learning while following *NGSS* and STEM practices.

Take your students to the next level with **PreK to AP teacher** resource materials for plant and soil science and crop nutrients.



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Visit our exhibit booth today for free posters, flashcards, and more!

### **BioInteractive Resources for Exploring DNA-Based** Phylogenies

(Grades 9-College) Science Focus: LS4

A17, Convention Center

A19, Convention Center

Sponsor: HHMI BioInteractive

Cheryl Hollinger, Portland, Ore.

Today, scientists build phylogenetic trees using computational methods to analyze the vast amounts of DNA sequence data available. Come learn how to introduce your students to basic bioinformatics concepts, explore sequence alignment and tree-building tools, and guide interpretation of alignments and phylogenetic trees with free multimedia resources from HHMI.

### National Geographic Explorers: Ideal Role Models of STEM

(Grades 3-12) A18, Convention Center Science Focus: ETS1.A, ETS1.B, SEP1, SEP3, SEP4, SEP8 Sponsor: National Geographic Learning

Tom Hinojosa (tom.hinojosa@cengage.com), National Geographic Learning/Cengage Learning, Littleton, Colo.

See how National Geographic provides your students with exciting examples of an integration of disciplines that removes the traditional barriers between Science, Technology, Engineering, and Mathematics, and instead focuses on innovation and the applied process of addressing questions and designing solutions to complex contextual problems using current tools and technologies.

### STEM and NGSS Inquiry in Chemistry-Effective, Efficient, and Economical

(Grades 9-12) Science Focus: PS Sponsor: Pearson

Ed Waterman, Retired Educator, Fort Collins, Colo.

Learn how to transition to a STEM and NGSS studentcentered chemistry classroom by implementing safe, simple, easy-to-use, material-conserving, time-efficient, and effective inquiry activities in chemistry. Safety and differentiation are built in. Teach core content while fostering problem solving, creativity, and invention. Students design original experiments not possible with traditional methods.

### 11:00 AM–12:15 PM Exhibitor Workshop

### Investigate Photosynthesis and Cellular Respiration with Algae Beads

(Grades 9–College)	A12, Convention Center
Science Focus: LS	
Sponsor: Bio-Rad Laboratories	

Damon Tighe (damon\_tighe@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Learn how algae can be used in authentic inquiry investigations to study both photosynthesis and cellular respiration (AP Biology Big Idea 2: Labs 5 and 6). Use encapsulated algae beads in a colorimetric assay to examine the consumption and release of CO<sub>2</sub> that occur during photosynthesis and cellular respiration—with both qualitative and quantitative measurements. Then learn how to extend this experiment into an open or guided inquiry investigation.

### 11:00 AM–1:00 PM Hands-On Workshop

ACS Session Two: Energy in Chemistry—A Particulate View

(Grades 9-12) C3, Convention Center Science Focus: PS3, SEP2

Marta Gmurczyk, (m\_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Chad Bridle (chadbridle@gmail.com), Grandville High School, Grandville, Mich.

Vicente Talanquer (vicente@u.arizona.edu), The University of Arizona, Tucson

Julie Ann Andrew (julie.andrew@colorado.edu), University of Colorado Boulder

**Rebecca Stober** (beckystober@gmail.com), Mapleton Expeditionary School of the Arts (MESA), Denver, Colo.

Engage in modeling activities focused on energy transfer during physical and chemical processes by building and analyzing particulate models of matter. These activities are designed to deepen students' conceptual understanding of how kinetic and potential energy of particles change during phase changes and in chemical reactions, and how this information can be used to analyze changes in our surroundings.

### 11:30 AM-1:00 PM Hands-On Workshop

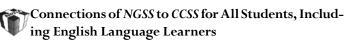
### AAPT Session: Introduction to Modeling Instruction, Part 2

(Grades 7–College) D1, Convention Center Science Focus: PS, SEP2, SEP3, SEP4

Lee Trampleasure (@leetramp; *leetramp.lists@gmail.com)*, Sacred Heart Cathedral Preparatory, San Francisco, Calif. Modeling instruction meshes well with the *NGSS* practices. In this workshop, participants will get their hands on some data and explore how students develop and use models.



### 12:30–1:30 PM Featured Presentation



(General)

C1, Convention Center

Science Focus: GEN, NGSS



**Okhee Lee** (@LeeOl16; *olee*@ *nyu.edu*), New York University, New York, N.Y.

Presider: Traci Loftin, Bundling the *NGSS* and *CCSS* Strand Leader, NSTA Reno Area Conference, and Washoe County School District, Reno, Nev.

This presentation will address con-

nections of the NGSS to the Common Core State Standards, in English language arts and mathematics for all students... and English language learners in particular. Okhee Lee will highlight relationships and convergences between the NGSS and CCSS from both a content perspective and a language perfective. In addition, the presentation will engage participants to explore how teachers can promote disciplinary practices in the NGSS and CCSS while

promoting language development.

Okhee Lee is a professor in the Steinhardt School of Culture, Education, and Human Development at New York University. Her research areas include science education, language and culture, and teacher education. Okhee's current research involves the scale-up of a curricular and teacher professional development intervention to promote science learning and language development of English language learners.

Okhee was a member of the writing team to develop the Next Generation Science Standards (NGSS) and leader for the NGSS Diversity and Equity Team through Achieve, Inc. She is also a member of the Steering Committee for the Understanding Language Initiative at Stanford University. Okhee was a 2009 Fellow of the American Educational Research Association (AERA), received the Distinguished Career Award from the AERA Scholars of Color in Education in 2003, and was awarded a 1993–1995 National Academy of Education Spencer Postdoctoral Fellowship.

### 12:30–1:30 PM Presentations



NSTA Press® Session: What Are They Really Thinking? Connecting Concepts and Practices Through Formative Assessment

(General) A2, Convention Center Science Focus: GEN, SEP

**Page Keeley** (@CTSKeeley; *pagekeeley*@gmail.com), 2008–2009 NSTA President, Fort Myers, Fla.

How do you know what your students are really thinking about core concepts in the *NGSS*? How can the practices be used to reveal student thinking in order to make better instructional decisions? Learn how formative assessment probes and techniques connect to core *NGSS* ideas and practices.

### Healthy Land, Healthy Us! Informal/Formal Education Partnership

(Grades K–12) A5, Convention Center Science Focus: GEN, INF, NGSS

Amanda Rowland (@AmandaRowland1; amanda\_rowland@ nps.gov) and Ellen Anderson (ellen\_anderson@nps.gov), Lake Mead National Recreation Area, Boulder City, Nev.

Learn about a seven-year partnership between the National Park Service and Southern Nevada schools linking students with real experiences outside the classroom.

### **Edible Labs**

(Grades 6–12) D2, Convention Center Science Focus: LS, PS

Lee Ann Richardson (richardsonl@rcschools.net) and John Vaden (vadenj@rcschools.net), Riverdale High School, Murfreesboro, Tenn.

Serve up new learning in your classroom with edible labs, which can give you an innovative means of presenting science concepts such as DNA and density to diverse students using food.

# NASA's "Eyes on the Solar System": Bringing Planets into Your Classroom

(Grades 3–12) D3, Convention Center Science Focus: ESS1, CCC3, CCC4, SEP2

Rachel Zimmerman Brachman (@RachelZBrachman; rachel.zimmerman-brachman@jpl.nasa.gov) and Kevin Hussey (@nasa\_eyes; kjhussey@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Bring the solar system to your classroom using this free online tool from NASA. Explore planets, spacecraft, and more!

### Physical Structures, Plants, and Everyday Tools: Helping Children Understand the Impact of Science and the Essential Integration of All STEM Disciplines

(Grades P–6) D4, Convention Center Science Focus: PS

**Donna Knoell** (*dknoell@sbcglobal.net*), Educational Consultant, Overland Park, Kans.

Discover strategies to actively engage elementary students by growing plants, constructing physical structures (bridges, ramps, etc.), and exploring everyday objects and tools. Handouts!

### How Does My School STEAM Ahead?

(Grades 6–8) D7, Convention Center Science Focus: GEN

**Stephanie Sassetti** (*ssassetti@oda.edu*), The Out-of-Door Academy, Middle and Upper School, Sarasota, Fla.

The government has put a great deal of funding for schools to teach STEM in their buildings. What they haven't told you is how. I can show you how to get your school STEAM-ing ahead.

NSELA Session: Tools for Science Leaders, Part 2

(Grades P–12) E1, Convention Center Science Focus: GEN

Elizabeth Mulkerrin (@nselascience; elizabethm@ omahazoo.com), NSELA President, and Omaha's Henry Doorly Zoo and Aquarium, Omaha, Neb.

Presider: Kenn Heydrick, The University of Texas at Tyler Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

# Presidential STEM Teachers: PAEMST Success for K–12 Educators

(Grades K–12)	E2, Convention Center
Science Focus: GEN	

**Marilyn Suiter** (*info@paemst.org*), National Science Foundation, Arlington, Va.

K–12 teachers are invited to apply to the Presidential Awards for Excellence in Mathematics and Science Teaching. Recipients receive a paid trip to Washington, D.C.; a citation signed by the President of the United States; and \$10,000. Past awardees will discuss the application process and their leadership roles as PAEMST alumni. (Grades 5-12)

### Teaching to the Target

F9, Convention Center

Science Focus: GEN, NGSS

**Christine Whitcome** (*cwhitcome*(*att.net*), Eagle Valley Middle School, Carson City, Nev.

**Amy Burton** (*aburton*@*carson.k12.nv.us*), Carson Middle School, Carson City, Nev.

Middle school science teachers from Nevada share how they developed a scope and sequence based on NGSS and wrote learning targets to focus student learning.

### 12:30–1:30 PM Hands-On Workshops

### **NGSS** Turning Traditional Labs into Ones That Reflect NGSS

(Grades 9-12) A3, Convention Center Science Focus: PS1, PS3, CCC1, CCC2, CCC6, SEP2, SEP3, SEP4, SEP6, SEP7

Jacklyn Bonneau (bonneau@wpi.edu), Massachusetts Academy of Math and Science at WPI, Worcester

Let's look at a traditional lab done in chemistry and change it—making it an NGSS-compliant lab BEYOND having kids write their own procedure.

### ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding

(Grades 6-8)

C2, Convention Center Science Focus: PS1.A

James Kessler (jhkessler@acs.org), American Chemical Society, Washington, D.C.

Explore the periodic table and bonding through a card game, molecular model animations, and videos of chemical reactions from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at www.middleschoolchemistry.com.

### STEM Is Elementary: Engaging Students with Engineering Investigations

(Grades K-5) D5, Convention Center Science Focus: ETS, CCC3, SEP1, SEP3

**Terri George** (terrigeorgel@gmail.com), Metro RESA, Smyrna, Ga.

Nancy Adgate, Retired Teacher, Jonesboro, Ga.

Through hands-on investigations, every K-5 student can participate in STEM engineering investigations that support the CCSS and NGSS!

### **Evaluate Your Sessions Online!**

This year, we're giving away an Apple iPad mini 2 Wi-Fi tablet to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See pages 11 and 39 for details.)

### Book a Flight with Us! Intersecting Newton's Laws with Literacy

(Grades K-4)

D6, Convention Center

Science Focus: PS, SEP2, SEP3

Stephanie Wendt and Amy Leigh Rogers, Tennessee Tech University, Cookeville

Boarding call for K-4 teachers! Join us in this hands-on workshop where you will learn about motion, forces, and flight while designing paper airplanes.

### A Planning Process for NGSS-Supported Middle School Progression

D9/10, Convention Center (Grades 6-8) Science Focus: GEN, NGSS

**Casey Passmore** (@SFUSD\_Science; *passmorec*@sfusd.edu) and **Bonnie Daley** (*daleyb@sfusd.edu*), San Francisco (Calif.) Unified School District

Explore the process and receive templates to begin to develop a scope and sequence for the California integrated middle school progression.

### **NESTA Shares: Innovative Ways to Teach About** Minerals, Rocks, and Resources

(Grades 1-12) F1/2, Convention Center Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

**Jenelle Hopkins** (*jhopkins*(*a*)*interact.ccsd.net*), Shadow Ridge High School, Las Vegas, Nev.

Joseph Monaco, Retired Earth Science Teacher, Highland, Calif.

**Richard Jones** (@mtzennmaster; *rmjones7@hawaii.edu*), University of Hawaii–West Oahu, Kaploei

NESTA members share examples of grade-appropriate, classroom-ready activities to address NGSS concepts about minerals, rocks, and natural resources.

F4, Convention Center

### Decoding Starlight—From Photons to Pixels to Images

(Grades 6–12) F10, Convention Center Science Focus: ESS, ETS1, PS3, PS4, SEP2, SEP4, SEP5, SEP8

**Donna Young** (*donna@aavso.org*), NASA Astrophysics Division, Bullhead City, Ariz.

Explore a STEAM activity using NASA data to produce a scientific photon intensity image of a supernova remnant and a separate artistic image for public release.

### The Heart of Learning Is a Remarkably Good Story

F3, Convention Center

(Grades 6–12)

Science Focus: GEN, SEP

**Tamorah Janisko**, Central Arizona College, Coolidge In this participatory breakout session, learn how to engage and challenge students with content by telling a story using visual, audio, kinesthetic, and emotional anchors.

### 12:30–1:30 PM Exhibitor Workshops

**Project-Based Inquiry Science<sup>TM</sup>** (PBIS): Creating "Coherence and Science Storylines" for Middle School Science: Grades 6–8

(Grades 6–8) A6, Convention Center Science Focus: GEN, NGSS Sponsor: It's About Time

Jean Pennycook, SAM Academy, Sanger, Calif.

Explore the power of clearly articulated middle school science content storylines developed around answering a Big Question and addressing a Big Challenge. Join us and investigate the storyline for the *Project-Based Inquiry Science* unit "Living Together," an ecology/water quality unit, and discuss the nature of carefully ordered investigations that help students to actively engage. Formative and summative assessments included.

### **Cell Differentiation and Gene Expression**

(Grades 9–12) A7, Convention Center Science Focus: LS1

Sponsor: LAB-AIDS®, Inc.

**Virginia Rehberg,** Wilson High School, Tacoma, Wash. Students often have trouble conceptualizing how selective gene expression works. In this workshop, we will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the *Science & Global Issues: Biology* program from SEPUP and LAB-AIDS.

### How to Get Students to Ask Effective Questions: Using the QFT

(General)

Science Focus: GEN, SEP

Shelace Shoemaker (@shelace; sshoemaker@washoeschools. net) and Kelly Barber (@kjries; kbarber@washoeschools.net), Washoe County School District, Reno, Nev.

Participants will engage in the Question Formulation Technique (QFT) process to develop an understanding of how it can be used to get students to ask effective questions.

### Integrating Chromebook with Vernier Technology

(Grades 3–12) A9, Convention Center

Science Focus: GEN

Sponsor: Vernier Software & Technology

**David Carter,** Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. This hands-on workshop will address data collection with Chromebook and Vernier technology, including LabQuest Mini. Experiments, such as Boyle's Law, Grip Strength Comparison, and Ball Toss, will be conducted.

### A Matter of Life and Death

(Grades 6-12)

A11, Convention Center

Science Focus: ETS, LS

Sponsor: Texas Instruments, Inc.

Jeffrey Lukens, Sioux Falls (S.Dak.) School District Disease affects all of us. Learning the science and math behind the mechanisms, treatments, and the STEM careers involved is a powerful way to engage students and put context around the concepts students are required to learn. STEM Behind Health is a free program from TI and Sanford Research.

### Double (Helix) Trouble: Maintaining Fidelity in **DNA Replication**

(Grades 6-College) A13, Convention Center Science Focus: ETS1.B, LS1.A, LS3, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP1, SEP2, SEP4, SEP5, SEP6 Sponsor: MSOE Center for BioMolecular Modeling Diane Munzenmaier (munzenmaier@msoe.edu) and Tim Herman (herman@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

DNA replication is an essential process to ensure that accurate genetic information is passed down to future generations. We will explore this process using an interactive representation of the replication fork that simulates the process of DNA synthesis and 3-D models of the critical proteins that keep it in check.

### Engineering in the Upper Elementary Classroom

(Grades 4-6)

A14/15, Convention Center Science Focus: ETS

Sponsor: SAE International A World In Motion Program Kenneth Francis (kfrancis@sae.org), SAE International, Warrendale, Pa.

Want a fun and engaging way to incorporate engineering into your science class? Come learn about the award-winning A World In Motion program, which supports the NGSS standards as it uses the Engineering Design Experience in a project-based learning environment.

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### The Origins of Humans and Recent Adaptations

A17, Convention Center

A19. Convention Center

(Grades 9–12) Science Focus: LS4 Sponsor: HHMI BioInteractive

Mary Colvard, Retired Educator, Deposit, N.Y.

Explore a wealth of free resources from BioInteractive for teaching human evolution. These resources include a new short film for the classroom that presents a clarified, accurate picture of our evolutionary history from the world's leading experts. You will also learn about ready-to-use worksheets, lesson plans, and interactives.

### The Secrets to Successful PBL

(Grades 3–12) A18, Convention Center Science Focus: PS2.C, CCC4, SEP2, SEP3

Sponsor: Accelerate Learning-STEMscopes

**Terry Talley** (*ttalley@acceleratelearning.com*), Accelerate Learning–STEMscopes, Houston, Tex.

Project Based Learning can be challenging the first time you implement it. Come experience a hands-on engaging PBL that reveals the strategies for seamless facilitation. Allow your students the autonomy to solve problems that interest them and see high levels of engagement that lead to high levels of learning.

### Teaching Geoscience in an NGSS Curriculum

(Grades K–12) Science Focus: ESS, ETS Sponsor: Pearson

Michael Wysession, Washington University in St. Louis, Mo.

Join Michael Wysession, member of the *NGSS* writing team, as he addresses the challenges and solutions to teaching Earth/Space Science (ESS) that meet the *NGSS*. ESS not only has a more prominent role within the *NGSS* than in most past state standards, but also has a strong focus on the topics of human sustainability and human impacts on Earth systems, including climate change, which lend to connections in engineering and technology.

### 2:00–3:00 PM Exhibitor Workshops

### Debunking the Myths of Project Based Learning— Yes We CAN!

(Grades 6–12)

A6, Convention Center

A7, Convention Center

Science Focus: GEN, NGSS

Sponsor: It's About Time

**Amanda Wilson,** It's About Time, Mount Kisco, N.Y. Skeptical of Project Based Learning? Concerned about the time and resources required? Join us in debunking the myths of PBL. We will explore how common concerns are just myths and how PBL can be the teaching style that works for you and your students.

### Energy Flow Through an Ecosystem

(Grades 9–12) Science Focus: LS2, LS3, LS4 Sponsor: LAB-AIDS®, Inc.

**Virginia Rehberg,** Wilson High School, Tacoma, Wash. Join us as we use an interactive card sort with organism cards and ecosystem events to predict the effect of different events on the food web and ecosystem. We will then construct an energy pyramid to examine how much energy is stored at each level of a food web.

# Engineer Excitement in Your Classroom with a Carolina STEM Challenge®

A8, Convention Center

Science Focus: GEN Sponsor: Carolina Biological Supply Co.

### Carolina Teaching Partner

(Grades 6-12)

Catapult, float, and race your way into hands-on activities that can engage your middle school and high school students while encouraging critical thinking and creative problem solving! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes!

### Integrating iPad with Vernier Technology

A9, Convention Center

Science Focus: GEN, SEP

(Grades 3-12)

Sponsor: Vernier Software & Technology

**David Carter,** Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data helps students learn critical science concepts that increase test scores and promote science inquiry. This hands-on workshop will address data collection with iPads and Vernier technology, including our new Go Wireless® Link. Experiments, such as Boyle's Law and Grip Strength Comparison, will be conducted. (Grades 9-College)

### The GMO Debate Rages On!

A12, Convention Center

Science Focus: PS Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Are GM crops a good thing? Do you feel that genetic modifications create frankenfoods or do they help produce safe food to feed the ever-expanding world population? Do all countries have the same GM food-labeling requirements? Learn more about GMOs, how to test for the presence of GM content in foods, join a debate, and learn how to bring this experience to your classroom.

### Navigating the Shifts: Making the Transition to the Next Generation Science Standards with Leaders from The Lawrence Hall of Science

(Grades K–8) A13, Convention Center Science Focus: GEN, NGSS Sponsor: Amplify

**Rebecca Abbott** (*rebabbott*@*berkeley.edu*) and **Traci Wierman** (*twierman*@*berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

How can district leadership support systematic transition to the NGSS? Examine critical pedagogical and content shifts, including the convergence with *Common Core State Standards*, in English language arts and mathematics. Experience an NGSS curriculum exemplar from Amplify Science to envision the next generation classrooms you support.

### Engineering Design in the Middle School Classroom

(Grades 6–9) A16, Convention Center Science Focus: ETS, SEP1, SEP2, SEP6

Sponsor: eCYBERMISSION

Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, Va.

Learn about the engineering design process and how to help students become engineers in the science classroom. Also, hear about the free online STEM competition eCYBERMIS-SION and how you and your students can participate.

### The Best Test Prep Book Ever for AP Chemistry

(Grades 9–12) Science Focus: PS

Sponsor: Pearson

Ed Waterman, Retired Educator, Fort Collins, Colo.

A19, Convention Center

Hear how this test prep book concisely summarizes all the important content in the six Big Ideas and 117 Learning Objectives, as well as expands content to include photoelectron spectroscopy (PES), mass spectrometry, and chromatography. It comes with hundreds of new and revised practice questions, focusing on graphical and tabular data analysis and atomic-molecular representations.

### 3:30–4:30 PM Presentations

**D.N.A. (Developing Nonfiction Arguments): Purposeful Literacy Instruction in the Science Classroom** (Grades 7–12) A4, Convention Center Science Focus: GEN

Sylvia Scoggin, Kathleen Stynen, Shelly Brewster-Meredith, and Kira Temple (#DNANSTA), McQueen High School, Reno, Nev.

Leave with purposeful vocabulary as well as reading and writing strategies embedded within a cross-curricular unit to break the boundaries between "science lab" and "writing workshop."

# Dazzling Deceptions: Discrepant Events That Delight and Mystify!

(Grades 3–College) C1, Convention Center Science Focus: GEN, SEP

Alan McCormack (amccorma@mail.sdsu.edu), 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.

Science experiences that seem contrary to "common sense" are great motivators and gateways to science and engineering practices and development of concepts.

# Teach STEM Content and Spark Science Career Interest with Free Online Games

(Grades 6–College) D3, Convention Center Science Focus: GEN, INF, NGSS

Lynn Lauterbach (lynnlauterbach@gmail.com), Rice University Center for Technology in Teaching and Learning, Houston, Tex.

See how free online games get students involved in science career simulations by solving real-world science problems using the authentic tools and practices of scientists.

### We Have 'em, Now What Do We Do with 'em?

(Grades 6–8) D7, Convention Center Science Focus: GEN, NGSS

**Sarah Andres** (*rdhdinreno@yahoo.com*), Hyde Park Middle School, Las Vegas, Nev.

This session covers challenges we face implementing the *NGSS*, what can be done to accept and overcome these challenges, the pitfalls that occur during the changing process, and how to eliminate these pitfalls.

### The NSTA Learning Center: Free Professional Learning Resources and Opportunities for Educators

(General)

D8, Convention Center

Science Focus: GEN

**Al Byers** (@alsbyers; *abyers*@*nsta.org*), Associate Executive Director, Government Partnerships and e-Learning, NSTA, Arlington, Va.

Flavio Mendez (*flavio\_m@nsta.org*), Senior Director, NSTA Learning Center/SciLinks, NSTA, Arlington, Va. Lost when it comes to finding online professional learning resources to enhance your content knowledge and skills? With more than 12,000 resources (25% of which are free) and quality professional learning opportunities to assist educators with core subject content and pedagogy, the Learning Center has the answers! Get free resources and ICE CREAM!

### Facilitating Global Collaboration: A Case Study of a University Partnership with a Rural School District

(General)

Science Focus: GEN, NGSS

E2, Convention Center

**Terry Sutton** (*terrysutton2011@aol.com*) and **Karen McNallen** (*karen.mcnallen@ttu.edu*), Texas Tech University Global PriSE Graduate Students, Lubbock

As global STEM educators, students in Texas Tech University's Global PRiSE program worked with K–12 teachers to facilitate student engagement in international collaborations.

### NASA's Goldstone Apple Valley Radio Telescope (GAVRT) Project

(Grades 4–College) F10, Convention Center Science Focus: ESS

**Shannon McConnell,** NASA Jet Propulsion Laboratory, Pasadena, Calif.

Study planets, track the scintillating flux density of mysterious black holes, and observe the galactic plane with S.E.T.I. (Search for Extra-Terrestrial Intelligence) by joining NASA's GAVRT Student Program. Find out how students can team with NASA scientists and collect data operating 34-meter radio telescope from your classroom computer.

# Time- and Money-Saving Techniques in Teaching Forensic Science

(Grades 6–College) F3, Convention Center Science Focus: GEN, NGSS

Anthony Bertino (abertino@nycap.rr.com), and Patricia Nolan Bertino (nolanp@nycap.rr.com), Retired Educators, Scotia, N.Y.

Limited budget for your forensics class? Learn techniques and replacements for expensive supplies. Fingerprinting, blood spatter, ballistics, chromatography, and digital photography will be addressed.

### Science and Engineering Practices Share Session

(Grades 9–12) F4, Convention Center Science Focus: GEN, SEP

**Bev DeVore-Wedding** (@bdevore; bdevorewedding@gmail. com), NSTA Director, High School Science Teaching, and University of Nebraska–Lincoln

Come to this share session for a smorgasbord of lessons, activities, and ideas covering all disciplines springboarding from the science and engineering practices of the *NGSS*.

# A Model for Understanding and Explaining the NRC *Framework for K–12 Science Education*

(Grades K–12) F9, Convention Center Science Focus: GEN, NGSS

**Ana Houseal** (ahouseal@uwyo.edu), University of Wyoming, Laramie

This model illuminates the power of integrating the dimensions of the NRC *Framework*. It is also an evaluation tool for reviewing new or current science curricula.

### 3:30–4:30 PM Hands-On Workshops



NSTA Press<sup>®</sup> Session: Outdoor Science: A Practical Guide

(Grades K-8)

A2, Convention Center

Science Focus: GEN

**Steve Rich** ((*a*)bflyguy; *bflywriter*(*a*)comcast.net), West GYSTC, Carrollton, Ga.

Explore STEM in the school yard with NSTA Press books, and find out how birds and students can "engineer" with sticks and stems. Free seeds!

### 🔂 Put the "E" in STEM!

### (ENG)

A3, Convention Center

(Grades 7-College) Science Focus: ETS

**Greg Dodd** (*gbdodd*(*a*)*gmail.com*), Retired Educator, Pennsboro, W.Va.

Join this hands-on workshop to learn how to include engineering in your science classroom and meet the NGSS engineering design standard. Handouts!

### **NGSS** Biomagnification in Ocean Food Webs: You Are What You Eat

(Grades 9-12)

A5, Convention Center Science Focus: LS2.C, LS4.D, CCC2, SEP4, SEP6

Elizabeth Callaghan (@bethofall; bcallaghan@mbayaq. org), Monterey Bay Aquarium, Monterey, Calif.

Explore the difference between bioaccumulation and biomagnification and learn about a consequence that plastic has on our ocean food web through an engaging simulation activity.

### ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences

(Grades 6-8) C2, Convention Center Science Focus: PS1.A

James Kessler (jhkessler@acs.org), American Chemical Society, Washington, D.C.

Explore water characteristics and what makes water a polar molecule through hands-on activities and molecular model animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at www.middleschoolchemistry.com.

### **AAPT Session: Revealing the Unseen**

(Grades 4–College) D1, Convention Center Science Focus: PS

Dan Burns (dburns@lgsuhsd.org), Los Gatos High School, Los Gatos, Calif.

Investigate properties of infrared radiation in the classroom by making an inexpensive near-IR camera. This workshop will make IR measurable, visible, and audible, and test the transmission, reflection, and refraction of IR.

### Gene-Environment Interactions in the Nematode Caenorhabditis elegans

D2, Convention Center

Science Focus: LS1.A, LS3.B

(Grades 7-12)

Joan Griswold (jcgriz@uw.edu), University of Washington, Seattle

Compare the activity of two nematode strains at two salt concentrations and then use the data to describe how geneenvironment interactions determine traits.

### National Earth Science Teachers Association (NESTA) Shares: Rock, Mineral, and Fossil Raffle

(General) F1/2, Convention Center Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

Jenelle Hopkins (jhopkins@interact.ccsd.net), Shadow Ridge High School, Las Vegas, Nev.

Joseph Monaco, Retired Earth Science Teacher, Highland, Calif.

**Richard Jones** (@mtzennmaster; rmjones7(@hawaii.edu), University of Hawaii-West Oahu, Kaploei

NESTA offers a chance to win one or more display- and classroom-quality rock, mineral, and fossil specimens, as well as other Earth science-related materials.

### 3:30–4:30 PM Exhibitor Workshops

Meet the NGSS Using Amplify Science, the Newest Grades K–5 Curriculum from UC Berkeley's Lawrence Hall of Science and Amplify

(Grades K–5) A13, Convention Center Science Focus: GEN, NGSS Sponsor: Amplify

**Rebecca Abbott** (*learningdesigngroup@berkeley.edu*) and **Traci Wierman**, The Lawrence Hall of Science, University of California, Berkeley

Experience our field-tested, technology-enhanced, 100% *NGSS*-designed K-8 curriculum. Built around argumentation, digital simulations, modeling tools, hands-on investigations, and explicit disciplinary literacy instruction, Amplify Science engages students with deep dives into understanding the natural and designed worlds. This workshop, focusing on units for grades K-5, provides a sneak peek at this new curriculum.

### EarthComm and Biocomplexity—Designed to Explore Human-Earth Interactions

A6, Convention Center

(Grades 9–12) Science Focus: ESS

Sponsor: It's About Time

Amanda Wilson, It's About Time, Mount Kisco, N.Y. Explore the design and philosophy of project-based learning through EarthComm and the "flipped classroom" approach of Biocomplexity. Each program involves students in designing

### 3:30–5:00 PM Exhibitor Workshop

### Fostering High School Science Engagement Using an NGSS-Focused Interactive Experience

(Grades 5–12) A12, Convention Center

Science Focus: PS

Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Engage with curriculum training specialist Damon Tighe as he presents an *NGSS*-focused science experience for high school students. Developed collaboratively with Kirk Brown—master teacher, curriculum expert, and lead writer of the revised California science framework—this presentation encourages audience participation in an engaging activity focused on understanding the mechanism underlying size exclusion chromatography (SEC). Practical measures and insights included for encouraging three-dimensional learning and assessment in your classroom. solutions to problems based on real-world issues. Learn how students investigate human interactions with Earth systems by combining inquiry and technology.

### Carolina's Young Scientists Dissections with Carolina's Perfect Solution® Specimens

(Grades 6–12) A8, Convention Center Science Focus: LS Sponsor: Carolina Biological Supply Co. Carolina Teaching Partner

Transform your students into Young Scientists when you bring these simple hands-on dissections to your classroom! We will guide you through the dissection of a squid and frog, promoting classroom discussion of easily observable adaptions and the relationship between structure and function. Participants receive free dissection supplies and door prizes.

### Physics and Physical Science with Vernier

(Grades 8–College) A9, Convention Center Science Focus: PS, SEP Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will use various digital tools—such as probeware—to conduct experiments from our popular physics and physical science lab books. Use Lab-Quest Mini with a computer or LabQuest 2 as a stand-alone device. Learn about data collection for iPad, Chromebook, and BYOD environments, including wireless options.



### 3:30–5:30 PM Special Session

Children's Literature—From Stories to Creating Science Engagement

(Grades K–6) Science Focus: GEN







Grand Ballroom 3, Atlantis

Vicki Cobb

Pamela Turne

Authors:

Vicki Cobb (email@vickicobb.com), Children's Book Author, White Plains, N.Y.

Joy Hakim (joyhakim@aol.com), Author, Englewood, Colo. Emily Morgan (emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio

**Pamela Turner** (*pstrst@pacbell.net*), Children's Author, Oakland, Calif.

Moderator: Christine Royce (*caroyce@aol.com*), Shippensburg University/PSTA, Shippensburg, Pa.

Come to this innovative session and see the connections among children's literature and science activities, experiments, and practices. During this special session, children's authors and teachers can interact in an informal manner. Learn how children's literature can assist you in making concepts more real and receive guidance in what to look for in good literature and ideas for activities for certain types of books. Walk away with ideas that can be used in the science classroom.

Vicki Cobb, the "Julia Child" of hands-on science, is a former science teacher with a MA in secondary school science. The publication of her classic book, Science Experiments You Can Eat, established her as an innovator in hands-on science.

Joy Hakim (joyhakim.com), a former teacher, is the author of 14 books, including the award-winning series A History of US published by Oxford University Press, and The Story of Science, published by the Smithsonian.

Emily Morgan is the author of the Next Time You See series from NSTA Kids and coauthor of the Picture-Perfect Science series from NSTA Press<sup>®</sup>.

Pamela Turner is the author of many books, including Hachiko: The True Story of a Loyal Dog, The Frog Scientist, and two upcoming titles: Samurai Rising and Crow Smarts: Inside the Brain of the World's Smartest Bird.

### 3:30–5:30 PM Presentation

### Alliance of Affiliates Session: The 3Rs—Research, Resources, and Relationships

E3, Convention Center

*(General)* Science Focus: GEN, NGSS

Lisa Martin-Hansen (@lmartinhansen; *l.martinhansen*@ *csulb.edu*), ASTE President, and California State University, Long Beach

**Juan-Carlos Aguilar** (*jaguilar@doe.k12.ga.us*), Georgia Dept. of Education, Atlanta

Come connect with NSTA affiliates to learn about research and resources and form relationships to support your work in science education.

### 3:30–5:30 PM Hands-On Workshop

ACS Session Three: Energy in Chemistry—An Atomic View

(Grades 9–12) C3, Convention Center Science Focus: PS3, SEP7

**Marta Gmurczyk** (*m\_gmurczyk@acs.org*), American Chemical Society, Washington, D.C.

Chad Bridle (chadbridle@gmail.com), Grandville High School, Grandville, Mich.

Vicente Talanquer (vicente@u.arizona.edu), The University of Arizona, Tucson

Julie Ann Andrew (julie.andrew@colorado.edu), University of Colorado Boulder

**Rebecca Stober** (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts (MESA), Denver, Colo.

Engage in argumentation activities focused on energy transfer at the atomic level by building arguments based on evidence and scientific models and ideas. These activities are designed to deepen students' conceptual understanding about atomic models of matter, quantization of energy, and atomic emission spectroscopy.

### 5:00–5:30 PM Presentation

Lessons in Collaborative Development of *NGSS*-Supported Integrated Science Curricula for Michigan Through the Mi-STAR Initiative

(Grades 5–9) D7, Convention Center Science Focus: GEN, NGSS

Amy Lark (@AmyMLark; amlark@mtu.edu), Brenda Bergman (bgbergma@mtu.edu), Jacqueline Huntoon, Christopher Wojick, Brad Baltensperger, and Stephanie Tubman, Michigan Technological University, Houghton

We present findings and facilitate discussion regarding the development of *NGSS*-supported curricula, assessment, and teacher professional development by collaborative teams of educators from across Michigan.

### 5:00–6:00 PM Presentations

### Biomass: Taking It to Your Classroom

(Grades 9–12) A3, Convention Center Science Focus: ETS2.B, LS1.A, LS2.B, PS1.B, PS3.D, CCC5, CCC6, SEP4, SEP5, SEP6

Kelly Ramey (@kellyramey; kellyramey@mac.com), Tennessee Tech University, Cookeville

Receive an overview of the background science behind lignocellulosic biomass and examine ways that it can be easily used in the grades 9–12 science classroom.

### Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success

(Grades K–6) D4, Convention Center Science Focus: GEN, NGSS

**Donna Knoell** (*dknoell@sbcglobal.net*), Educational Consultant, Overland Park, Kans.

Receive an overview of the components of differentiation in the K–6 science classroom. Discussion centers on ways to differentiate effectively to maximize student participation and learning. Handouts!

# Turning Lead to Gold—From Classroom Science to Expo-Winning Science Projects

(Grades K–8) D5, Convention Center Science Focus: PS1.A, PS1.B, PS2.A, LS1.A, LS1.B, LS3.B, CCC1, CCC2, CCC6

Jonathan Wilson (jonathan.wilson@morgan.edu), Morgan State University, Baltimore, Md.

Find out how to successfully engage urban K–8 students in integrated STEM projects using classroom lessons as science projects that integrate math and language arts.



-Photo courtesy of Jacob Slaton

### **Coral Reefs: Fragile Wonders Under Threat**

(Grades 4–12) D8, Convention Center Science Focus: ESS

**June Teisan** (@jlteisan; *june.teisan@noaa.gov*), Einstein Fellow, NOAA, Washington, D.C.

Coral reefs are a unique and stunning global treasure, but these fragile ecosystems are under increasing threat from pollution, harmful fishing practices, and ocean acidification. Even areas far from coasts can impact marine health. Incorporate coral reefs into your existing curriculum—biology, chemistry, climate studies, art, and more—using lesson plans, demos, labs, activities, and multimedia from the National Oceanic and Atmospheric Administration (NOAA).

### **Basic Polymer Science for the Science Classroom**

(Grades 9–12) D9/10, Convention Center Science Focus: LS1.A, PS1.A, PS1.B, CCC3, CCC6, SEP2, SEP6

**Debbie Goodwin** (nywin@hotmail.com), Retired High School Science Teacher, Chillicothe, Mo.

Andrew Nydam (andrewnydam@hotmail.com), Educational Consultant, Olympia, Wash.

Simple demonstrations, labs, and activities bring polymers that are STEM relevant into your curriculum. Concepts include formation, classification, structure, and properties as well as *NGSS* correlations. Take home a CD of activities/ information.

### 5:00-6:00 PM Hands-On Workshops



NSTA Press® Session: Scientific Argumentation in Biology: 30 Classroom Activities

(Grades 6–12) A2, Convention Center Science Focus: LS, CCC, SEP

**Victor Sampson** (@drvictorsampson; *victor.sampson*@ *utexas.edu*), The University of Texas at Austin

**Sharon Schleigh** (*sharonpschleigh@gmail.com*), East Carolina University, Greenville, N.C.

Join us for a brief overview of scientific argumentation and learn about three different approaches for engaging students in scientific argumentation.

# NGSS NASA Astrobiology: The Search for Life Beyond Earth

(Grades 5–College) A5, Convention Center Science Focus: ESS, CCC4, SEP2, SEP4

Rachel Zimmerman Brachman (@RachelZBrachman; rachel.zimmerman-brachman@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Astrobiologists seek answers to the fundamental question, "Are we alone?" Learn how astrobiologists at NASA's Jet Propulsion Laboratory search for signs of life on icy moons of our solar system.



### ACS Middle Level Session: Chemical Change— Breaking and Making Bonds

(Grades 6–8) C2, Convention Center Science Focus: PS1.B James Kessler (jhkessler@acs.org), American Chemical

Society, Washington, D.C.

Explore the production of a gas, a precipitate, and changes in temperature through hands-on activities and molecular model animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at *www.middleschoolchemistry.com*.

# Using Case Studies in Biology to Teach AP and IB Science Content

(Grades 9–12) D2, Convention Center Science Focus: LS, SEP2

Kristen Dotti (kdotti@vvsaz.org), Verde Valley School, Sedona, Ariz.

Create your own take-home models to learn how hands-on activities can be used to access higher-order thinking, engagement, and long-term understanding.

### **Schoolyard Quadrats**

(Grades K–2) D6, Convention Center Science Focus: LS2.A, SEP1, SEP3, SEP4

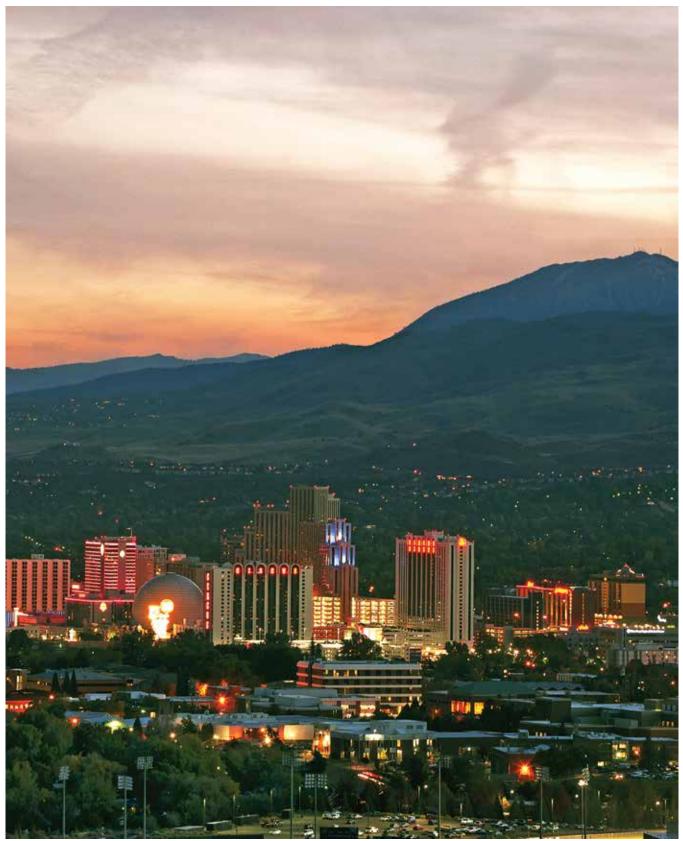
**Joey Lehnhard** (@joeyelle; *jlehnhard*@mbayaq.org), Monterey Bay Aquarium, Monterey, Calif.

Engage your students in authentic science outside! Join Monterey Bay Aquarium educators to experience a long-term data collection project designed for primary elementary classrooms.

### 5:00–6:30 PM Meeting

### Multicultural/Equity Roundtable

Grand Ballroom 1/2, Atlantis



—Photo courtesy of VisitRenoTahoe.com Nestled in the Sierra Nevada, Reno is known as "America's Adventure Place" for its scenic vistas combined with exciting city life.

### 8:00–9:00 AM Presentations

# I'm a PACK RAT! What Will I Do with All the STUFF?!?

(Grades 6–12) A3, Convention Center Science Focus: GEN, SEP1, SEP2, SEP3, SEP6, SEP7 Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Ever wanted to know what to do with the things you find lying around your home—especially in a junk drawer—or at the dollar store, or wonder how can I do this lab cheaper? Come learn how to create labs, demos, and activities with such items and take home a CD of activities.

### NGSS Shifting Instruction with the NGSS

(Grades 6–8) A5, Convention Center Science Focus: GEN, NGSS

**Amy Burton** (*aburton@carson.k12.nv.us*), **Phyllis Atkinson** (*patkinson@carson.k12.nv.us*), **Josh Billings** (*jbillings@carson.k12.nv.us*), and **Chelise Crookshanks** (*ccrookshanks@carson.k12.nv.us*), Carson Middle School, Carson City, Nev.

Christine Whitcome (*cwhitcome@att.net*), Sandra Helfrick-Hendrix, and Sue Moulden (*smoulden@carson.k12.nv.us*), Eagle Valley Middle School, Carson City, Nev.

A panel of middle school teacher researchers share insights from its self-study of how to shift from teaching to learning using the *NGSS*.

### Let the Tablet Tell a Science (Digital) Story!

(Grades 3–12)

Science Focus: GEN

Roger Pence (rogpence@yahoo.com), Benicia High School, Benicia, Calif.

Learn how to use digital tablets for crafting science digital stories with popular video-editing apps while promoting science writing and visual literacy skills. Samples, live demonstration, and resources provided.

# Teaching Science Content to Teachers: Taming the Elephant in the Room

(Grades K-8)

D4, Convention Center

D3, Convention Center

Science Focus: GEN, NGSS

Grinell Smith (grinell@gmail.com) and Colette Rabin (colettelucia@gmail.com), San Jose State University, San Jose, Calif.

This entertaining approach to content mastery, organized around the *NGSS*, is designed to help teachers strengthen their science content understanding in the context of their teaching.



Teach Your Students to Read Like Scientists: Effective and Engaging Strategies for Success

(Grades 5–10) D7, Convention Center Science Focus: GEN

**Darl Kiernan** (@WCSDStrivRdrsHS; @DarlKiernan; *dkiernan@washoeschools.net*), Nevada's Northwest RPDP, Reno

**Carol Gebhardt** (cgebhardt@washoeschools.net), WCSD Striving Readers, Reno, Nev.

Learn how paired texts and research-based instructional strategies can transform your passive readers into active and engaged readers in science!

### Academic Language Development in Science

(Grades K–12) D8, Convention Center Science Focus: GEN, SEP1, SEP6, SEP7, SEP8 Laura Lyke (lel276@interact.ccsd.net), Clark County School

District, Las Vegas, Nev.

Help students develop the academic language of science! Gain simple classroom tricks to help both English language learners (ELL) and standard English learners (SEL).

# Modeling NGSS Crosscutting Concepts with Aligned Topics

(Grades 7–12)	E1, Convention Center
Science Focus: GEN, CCC	

Carol Engelmann (cengelmann@unomaha.edu), University of Nebraska Omaha

**Mark Klawiter** (*mfklawit@mtu.edu*), Michigan Technological University, Houghton

**Jenelle Hopkins** (*jhopkins@interact.ccsd.net*), Shadow Ridge High School, Las Vegas, Nev.

Join us as we address the *NGSS* crosscutting concepts with science activities developed and teacher tested through Michigan Teacher Excellence Program (MiTEP) and STEM Preservice Teacher Academic Learning Community Program.

### AMS DataStreme Project: Fueling Environmental Literacy for a Brighter Future

(General)

E2, Convention Center

Science Focus: ESS James Brey (@AMSeducation; *brey@ametsoc.org*), American Meteorological Society, Washington, D.C.

Hear about AMS DataStreme courses for content and lessons that investigate Earth's natural resources. They can be easily adapted for use in your classroom!

### 8:00–9:00 AM Hands-On Workshops

### What! We Have to Teach English, Too?

(Grades 9–12)

C3, Convention Center

Science Focus: GEN

Laurie Hayes (*lhayes@cart.org*), Elijah Carlo (*ecarlo@ cart.org*), and Angela Thornton (*athornton@cart.org*), The Center for Advanced Research and Technology, Clovis, Calif. Join us as we share ideas on how a high school is integrating the *CCSS ELA* into the science classroom. We'll cover a variety of writing activities from chemistry to medicine. Take home a CD.

### High Five: Five Ways to Make Teaching Biotechnology Easier and Faster

(Grades 7–College) D1, Convention Center Science Focus: LS

Whitney Hagins (whitney.hagins@massbio.org), Massachusetts Biotechnology Education Foundation, Chelmsford Make biotechnology more hands on and manageable. From reagent prep to running gels and PCR, you and your students will love these innovative ideas and solutions.

### Taking STEM Outside

(Grades K–8) Science Focus: GEN D6, Convention Center

Jennifer Robinson (jennifer@sierranevadajourneys.org) and Jamie Garaventa (jamie@sierranevadajourneys.org), Sierra Nevada Journeys, Reno

In addition to hitting STEM benchmarks, learn how outdoor science lessons can enhance students' knowledge of trees, forests, and the environment around them.

### Using Word Webs to Build Essays in Science

(Grades 6–12) F9, Convention Center Science Focus: GEN

**Kelly Ramey** (@kellyramey; *kellyramey@mac.com*), Tennessee Tech University, Cookeville

This session will look at using word banks, word webs, and essays to promote the *CCSS* in science classes while focusing on the content. Potential for writing, listening, and speaking activities will be discussed.

### Using Modeling Activities in the High School Chemistry Class

(Grades 9–College) D9/10, Convention Center Science Focus: PS, SEP2, SEP6

**Michael Mury** (*m\_mury@acs.org*), American Chemical Society, Washington, D.C.

Visualization is difficult for many students. Join me as I discuss and demonstrate several modeling activities you can use in your chemistry class.

### Stellar Evolution—From Star Formation to Catastrophic Destruction

(Grades 6-12)

F10, Convention Center

Science Focus: ESS1, CCC5 **Donna Young** (*donna@aavso.org*), NASA Astrophysics Division, Bullhead City, Ariz.

Model star and planet formation and destruction using images from NASA missions, including stellar nurseries, protostars, supernovas, white dwarfs, neutron stars, pulsars, and black holes.

### 8:00-9:00 AM Exhibitor Workshop

### Photosynthesis and Respiration—It's a Plant's Life! DuPont Agriscience Institute

A7, Convention Center

A4, Convention Center

(Grades 9–12) Science Focus: LS1

Sponsor: LAB-AIDS®, Inc.

### Presenter to be announced

Help your students sprout and grow with a different approach to teaching photosynthesis and respiration. Learn how to captivate students through inquiry activities that can challenge and excite them. Easily implement activities into your current horticulture or plant science class.

### 8:00 AM-5:00 PM Meeting

### **NSELA Board of Directors Meeting**

*(By Invitation Only)* Grand Ballroom 1, Atlantis Please visit www.nsela.org for details.

### 9:00 AM-12 Noon Exhibits

Hall #2, Convention Center Did you know that NSTA offers Exclusive Exhibits Hall hours today from 10:30 AM to 12 Noon? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

### 9:30–10:30 AM Presentations



### Recycled Goods as Inspiration in Learning: The Secret Life of Everyday Things

(Grades 4–12) A3, Convention Center Science Focus: GEN, NGSS

Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Learn about the process of how a toy and water bottles are made and what happens to them after they are discarded. Take home a CD with information.

### Bridging the Content Gap with Notable Nonfiction

(Grades P-8)

Science Focus: GEN, NGSS

**Deborah Ford** (@jlgdeborahford; *dford@juniorlibraryguild. com)*, Junior Library Guild, Plain City, Ohio

Connecting *NGSS* and *CCSS* has never been easier with the integration of new science nonfiction trade books. From free online resources that include ready-to-use lesson plans to using technology to evaluate the student learning experience, participants will leave this workshop with a game plan to use next week.

### 50 Labs You Can Do on a Small Budget

(Grades 9–College) D3, Convention Center Science Focus: PS, SEP3, SEP4

**Theodore Koehn** *(tedkoehn66@yahoo.com),* Metropolitan Community College, Omaha, Neb.

This presentation will share 25 chemistry and 25 physics labs using inexpensive materials. All shown equipment will be given away.

### Matter, Matters: An Innovative Collaboration on Informal Science Learning

(Grades P–2)	D4, Convention Center
Science Focus: INF	

Meghan Schiedel (mschiedel@nvdm.org), Terry Lee Wells Nevada Discovery Museum, Reno

Jamie Garaventa (jamie@sierranevadajourneys.org), Sierra Nevada Journeys, Reno

We will demonstrate how one partnership between two informal science institutions can create a powerful standardsbased learning experience for grade 2 students.

### How Do You Know They Know? Developing Balanced Assessments in Middle School Science

(Grades 6–8) D7, Convention Center Science Focus: GEN

**Jewlana Smith-Hunter** (*ithinklearn@gmail.com*), iThinkiLearn Educational Consulting, LLC, Norcross, Ga. In this session, middle school preservice and inservice teachers learn how to effectively monitor student learning with diagnostics, formative assessments, rubrics, and summative assessments that support the NGSS.

# AMSE Session: A Teacher's Power—Tangible Examples of Equity in Classroom Contexts

(Grades K–12) D8, Convention Center Science Focus: GEN

**Deb Morrison** (@educatordeb; *educator.deb@gmail.com*), TREE Educational Services, Boulder, Colo.

Explore specific classroom practices and tools for engaging with students in more equitable ways, including linguistic ability and racial/cultural contexts.



# The Ever-Changing World of MOOCs—What's in It for YOU?

*(General)* Science Focus: GEN, INF, SEP E1, Convention Center

John Graves (@cjmogan; graves@montana.edu) and Holly Thompson (msse@montana.edu), Montana State University, Bozeman

Hear about MOOCs from the perspective of a seasoned MOOC instructor and developer. How can MOOCs be used effectively to deliver and obtain professional development?

# Corrosion: Chemistry Made Simple, Relevant, and Fun

(Grades 9–12) E2, Convention Center Science Focus: PS1.A, PS1.B, CCC1, CCC2, CCC6, CCC7, SEP1, SEP3, SEP6, SEP8

**Debbie Goodwin** (nywin@hotmail.com), Retired High School Science Teacher, Chillicothe, Mo.

Andrew Nydam (andrewnydam@hotmail.com), Educational Consultant, Olympia, Wash.

Join us for labs, demonstrations, and examples that make reactivity, oxidation/reduction, and corrosion engineering exciting, practical, and easy to teach and learn. Take home STEM connections and a CD of information.

### You Can Do It! Addressing Literacy and Crosscutting Concepts via Peer-Reviewed Science Journal Articles

(Grades 7–12) Science Focus: GEN, CCC

F9, Convention Center

**Ginna Guiang-Myers** (gmyers@eurekausd.org), Eureka Union School District, Granite Bay, Calif.

Promote close reading strategies while addressing crosscutting concepts. Deconstruct these concepts and explore ways to address mastery via the utilization of rigorous pieces of text.

### 9:30-10:30 AM Hands-On Workshops

NGSS Critical Thinking in Earth Science: Using the Model-
Evidence Link Diagram

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(Grades 6–College)	A5, Convention Center
Science Focus: ESS, SEP	
Jenelle Hopkins (jhopkins@inter	ract.ccsd.net), Shadow Ridge
High School, Las Vegas, Nev.	
Petya Crones (pcrones@interac	t.ccsd.net), Clark County
School District, Las Vegas, Nev.	
Janelle Bailey (janelle.bailey@te	mple.edu), Temple Univer-

sity, Philadelphia, Pa. Our workshop will feature model-evidence link diagrams for Earth science topics that help students critically evaluate connections between evidence and alternative scientific explanations.

### From Food to Fuel—Recycling the Molecules of Life

(Grades 9–12) D2, Convention Center Science Focus: LS, CCC

Molly Malone (molly.malone@utah.edu), University of Utah Genetic Science Learning Center, Salt Lake City

How exactly does food fuel the body? Explore energy and matter cycling at the molecular and cellular levels through the lens of digestion. Free materials available at *learn.genetics.utah.edu*.

### Let's Get Physical—From Force and Friction to Water and Weather

(Grades P–3) D5, Convention Center Science Focus: PS

Ruth Ruud (*ruth.ruud@yahoo.com*), Cleveland State University, Cleveland, Ohio

The *CCSS* asks that you teach physical sciences as early as kindergarten, and the *NGSS* have very specific goals for early primary. No more procrastinating! The good news is that you have your equipment. Come get easy activities, lit basics, and basic teacher background so that you can start right away!

# Teach About the Solar System Using a Human-Powered Model

D6, Convention Center

Science Focus: ESS, CCC4, SEP2

(Grades 5-8)

**Gary Nakagiri,** SETI Institute, Mountain View, Calif. This model simulates planetary motion by having students

assume planetary roles. Their movements in relation to each other provide a greater understanding of our solar system.

### Catapults! A STEM Center's Approach to Inquiry

(Grades 5–8) D9/10, Convention Center Science Focus: ETS1

**Catherine Pozarski-Connolly** and **Kazi Shahidullah** (*kazishahidullah@unr.edu*), University of Nevada, Reno

**David Crowther** (crowther@unr.edu), NSSTA President; Chairperson, NSTA Reno Area Conference; and University of Nevada, Reno

Design and build the best catapults in STEM centers! A modified 5E inquiry cycle takes participants through each STEM discipline and an Engineering Design process.

### Opportunities and Challenges for Bilingual Students in the Science Classroom: Improving Practice Through Online Professional Development Communities

(Grades K–12) F4, Convention Center Science Focus: GEN, SEP

**Christopher Carson** (christopher.carson@ucdenver.edu), University of Colorado Denver

Joy Barnes-Johnson (@drjoybjo; *drjoybjohnson@gmail. com*), Princeton High School, Princeton, N.J.

Find out why a classroom rich in *NGSS* science and engineering practices is also the best place for language and literacy development for bilingual students.

# We're Made of Stars? Explore the Elements with NASA!

(Grades 5–10) F10, Convention Center Science Focus: ESS1.A, PS1.A, PS1.C Sarah Eyermann (sarah.e.eyermann@nasa.gov) and Sara Mitchell (sara.mitchell@nasa.gov) Syneren Technologies and NASA Goddard Space Flight Center, Greenbelt, Md. In this workshop, experience the life of a star and take home

activities to help your students understand their cosmic connection to the elements.

### 9:30-10:30 AM Exhibitor Workshop

# Tree CSI: Dendrochronology DuPont Agriscience Institute

(Grades 9–12)

A7, Convention Center

Science Focus: LS, CCC3

Sponsor: LAB-AIDS®, Inc.

### Presenter to be announced

Trees have secret pasts that can be discovered using dendrochronology. Attend this workshop and become a tree detective and learn how you can get your students engaged in an inquiry-based activity that is sure to dig.

### 11:00 AM-12 Noon Meeting

### **NSSTA Business Meeting**

(Open to Any Current NSSTA Member) Emerald C, Atlantis Visit www.nvscience.org for additional information.

### 12:30–1:00 PM Presentation

### Wild Bighorn Sheep—On the Edge?

(Grades 6–8) D7, Convention Center Science Focus: LS

**Ryan Brock** (*rbrock@washoeschools.net*), Jessie Beck Elementary School, Reno, Nev.

Learn how to utilize a STEM-based unit that uses real-life wild sheep data to excite students about life science.



-Photo courtesy of Jacob Slaton

### 12:30–1:30 PM Presentations

### Take Chemistry into the Art Room

(Grades 6-12) D1, Convention Center Science Focus: ETS, PS, CCC1, CCC3, SEP1, SEP2 Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Draw your students into learning about chemistry through art. There is so much chemistry done in the art classroom that students don't realize. Take home a CD with activities.

### Teach Engineering Principles on the Cheap with Concrete

(Grades 9-12) D3, Convention Center Science Focus: ETS, CCC2, CCC6, SEP1, SEP3, SEP4, SEP6 **Debbie Goodwin** (nywin@hotmail.com), Retired High School Science Teacher, Chillicothe, Mo.

Andrew Nydam (andrewnydam@hotmail.com), Educational Consultant, Olympia, Wash.

Solidify new learning in your classroom by teaching engineering with concrete and other composite materials. Discover inexpensive STEM projects that engage students using the #1 building material in the world. NGSS correlations addressed!

### Putting Students' Schoolyard Habitat Improvements on the Map

(Grades K-8) D4, Convention Center Science Focus: GEN

Lindsay Glasner (@BirdSleuth; lig27@cornell.edu), The Cornell Lab of Ornithology, Ithaca, N.Y.

Anne Lowry (alowrynews1@yahoo.com), Aleph Academy, Reno, Nev.

Through schoolyard habitat improvements, students discover the characteristics that create good habitat for birds and other wildlife. Come learn about grants and resources and take a bird feeder back to your school!

### **Connecting Standards to Practice While Navigating** the PAEMST Application

(Grades K-12) D8, Conention Center Science Focus: GEN, NGSS Gail Bushey (gmbusher ( 50, 200), COOn Middle School, Andre DeLeon a Mon@doa gov, Education, Cason Cipro9 Chang

Andre DeLeon adleon@doongov, Nevada Dept. of Education, Cason CiprogetalS Traci Lofting@fin@scorbeschools.net), Washoe County

School District, Reno, Nev.

This session will focus on how to successfully incorporate the three dimensions of the NGSS into the application for the PAEMST.



-Photo courtesy of Jennifer C. Williams

E1, Convention Center

### How to Support Teacher Learning of the NGSS at the **High School Level**

(Grades 9-12) Science Focus: GEN, NGSS

Nicholl Johnson (ndjohnson@washoeschools.net), Sparks High School, Sparks, Nev.

Join me as I take you through sample lessons used to support teacher learning of the NGSS at a local high school.

### Developing a Plan for Assessing ELLs Responsively in Secondary Science Classrooms

E2. Convention Center (Grades 6-9) Science Focus: PS1.B, PS1.A, SEP3, SEP6

Edward Lyon (edglyon@gmail.com), Sonoma State University, Rohnert Park, Calif.

**Emily Carrasco** (@Emily]Carrasco; *ejcarrasco*@mpsaz.org) and Marissa Beaith (mmbeaith@mpsaz.org), Rhodes Junior High School, Mesa, Ariz.

Join us as we describe a plan for assessing ELLs responsively through contextualized science and literacy practices during two middle school science units (density and pH).

### Advancing Scientific Literacy with Inquiry Lesson Plans Using Science Reading Materials

(Grades 9-12) F9, Convention Center Science Focus: GEN, NGSS

Patrice Pages and Marta Gmurczyk, American Chemical Society, Washington, D.C.

We will describe how we developed inquiry lesson plans based on successful ChemMatters articles that support the NGSS and CCSS.

### 12:30–1:30 PM Hands-On Workshops

NSTA Press® Session: Argument-Driven Inquiry in Biology and Chemistry: Lab Investigations for Grades 9–12

(Grades 9-12)

Science Focus: LS, PS

A2, Convention Center

**Victor Sampson** (@drvictorsampson; *victor.sampson*@ *utexas.edu*), The University of Texas at Austin

Receive a brief overview of argument-driven inquiry and learn how it can be used to address both the *NGSS* and *CCSS ELA*. Argument-driven inquiry is an innovative approach to laboratory instruction.

### Shake, Rattle, and Roll! Designing an Earthquake-Proof Structure

(Grades 3–5) A3, Convention Center Science Focus: ESS, ETS1, SEP6

**Stacy Cohen** (@Sciencenerd1980; *scohen1@interact.ccsd. net)*, Southern Nevada RPDP, North Las Vegas

**Teri Mann** (@GateNerd; *tmann@interact.ccsd.net*), Clark County School District, Las Vegas, Nev.

Engage in a hands-on earthquake lab using the engineering design process by constructing explanations and designing solutions.

### Shh! What's That Sound? It's Scientific Discourse!

(Grades 5–12) A4, Convention Center Science Focus: PS3.A, CCC5, SEP1, SEP7, SEP8 **Kirsten Daehler** (@MSS\_WestEd) and **Kathy Huncosky**, Making Sense of SCIENCE at WestEd, San Francisco, Calif. Learn how to support productive scientific discourse in the classroom. Help students make sense of complex science ideas through evidence-based discussions.

### Science Practices—Effective, Fun, and Relevant

(Grades 3–10) C3, Convention Center Science Focus: GEN, SEP

**Steve Weinberg** (*weinberg@ntplx.net*), Science Consultant, Boynton Beach, Fla.

W. Tony Heiting, Science Consultant, Portland, Ore.

This workshop will involve participants in a number of authentic and engaging investigatory activities that exemplify specific science practices that are effective, fun, and relevant.

### The Human Microbiome

(Grades 9–12) Science Focus: LS D2, Convention Center

**Molly Malone** (*molly.malone@utah.edu*), University of Utah Genetic Science Learning Center, Salt Lake City

Explore the ecosystem of the human body. Learn what we're discovering about the body's microbes and how they influence our health. Free materials available at *learn.genetics.utah.edu*.

# Transfer of Learning—"...But I Thought I Taught That?"

D6, Convention Center

Science Focus: GEN, NGSS

(Grades 3-6)

LaNelle Harvey (*lnh3456@lausd.net*), 93rd Street Elementary School, Los Angeles, Calif.

This workshop offers strategies for achieving Transfer of Learning and the three *NGSS* goals: science literacy in citizens, college preparation, and foundation for sciencerelated fields.

### Science and Engineering Practices in the Chemistry Curriculum

(Grades 9–College)	D9/10, Convention Center
Science Focus: PS, SEP	

**Michael Mury** (*m\_mury@acs.org*), American Chemical Society, Washington, D.C.

With the *NGSS*, incorporation of science and engineering practices is vital. Come learn how to integrate these practices into lessons.

### **Black Holes Suck!**

(Grades 7–College) Science Focus: ESS F10, Convention Center

Jeffery Adkins (@astronmyteachr; *astronomyteacher@mac. com)*, Deer Valley High School, Antioch, Calif.

Get the basics of how black holes work, including a hands-on activity to build a model of a black hole. In an act of cosmic revenge, the black hole does not eat you—you eat the black hole! Learn how to divide by zero and get away with it, the meaning of the scientific term "spaghettification," and the amazing Unified Theory of Active Galactic Nuclei, which explains everything from quasars to blazars and everything in between.



### **Exhibitors**

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Activate Learning	#720
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Greenwich, CT 06836	PH, PD, T
Phone: 630-215-3017	PreK-8
E-mail: info@activatelearning.com	
Website: www.activatelearning.com	

Activate Learning is a mix of former teachers and leading researchers focused on classroom success and differentiation. The Activate Learning developers include team members that developed the *Framework for K–12 Science Education* and the *NGSS*. Our curricula are not textbooks; they emphasize writing and talking about and doing science. Through the use of hands-on activities, kits, and digital components, Active Science (K–5) and IQWST (middle school) give students the ability to use data and explain it in a meaningful way, both orally and in writing.

American Chemical Societ	ty #407
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Washington, DC 20036	K–12, College
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Subject areas are abbreviated here as
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Earth/Space Science	EA
Environmental Science	EN
Integrated/General Science	G
Physics/Physical Science	PH
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### Exhibitors

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Phone: 423-290-4641		
E-mail: drwaynerobinson@gmail.com		
Website: www.cdmfun.org		

Creative Discovery Museum in Chattanooga, is working with the BioEnergy Science Center in Oak Ridge, Tennessee, on a biofuels/alternative energies project called Farming For Fuels. Stop by our booth to pick up FREE STEM materials, including curricula, hands-on activities, a "Road Trip Challenge" iPad app, website *(www. learnbiofuels.org)*, and distance learning lesson information.

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It's About Time partners with educators to move STEM education forward with studentfocused and project- and problem-based programs—with the engineering process embedded throughout. It's About Time is the leading publisher of NSF-funded middle school and high school science and math STEM programs.

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Myriad Sensors (Pocket Lab)	#303
505 Cypress Point Dr.	G, PH, T
Mountain View, CA 94043	5–12, College
Phone: 719-651-3764	
E-mail: contact@thepocketlab.com	
Website: www.thepocketlab.com	

PocketLab is a wireless sensor for exploring the world and building science experiments. It connects with a single button to a smart phone, tablet, or Chromebook and instantly streams measurement data that you can see and record. PocketLab measures acceleration, force, angular velocity, magnetic field, pressure, altitude, and temperature.

Nasco	#206
PO Box 101	B, C, EA, EN, G, PH
Salida, CA 95368	PreK-12
Phone: 920-545-1600	
E-mail: mrosenblum@enasco.com	
Website: www.enasco.com	1

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### Exhibitors

The National Academies	Press	#302
500 5th St. NW		PD
Washington, DC 20001	PreK-12,	College
Phone: 202-334-1902		
E-mail: bmurphy@nas.edu		
Website: www.nap.edu		

The National Academies Press (NAP) was created by the National Academy of Sciences to publish the reports of The National Academies of Sciences, Engineering, and Medicine. The NAP actively promotes science education and our many titles recommend science standards, explore teacher and student evaluation, and discuss education research and practice.

National Geographic Learning/	#410
Cengage Learning	All
20 Channel Center St.	K-12
Boston, MA 02210	
Phone: 888-915-3276	
Website: www.ngl.cengage.com/school	

National Geographic Learning, a part of Cengage Learning, provides quality preK-12, academic, and adult education instructional solutions for reading; science; social studies; mathematics; ESL/ELD; advanced, honors, and electives; career and technical education; and professional development. See our new catalog at NGL.Cengage.com/catalogs.

2	NatureBridge	#625
)	28 Geary St., Suite 650	B, EA, EN, G, PD
e	San Francisco, CA 94108	K –12
	Phone: 415-992-4764	
	E-mail: mcarr@naturebridg	e.org
	Website: www.naturebridge.	org

NatureBridge provides hands-on environmental science programs for youth. Our multiday programs take place in six national park locations: Yosemite, Golden Gate, Olympic, Santa Monica Mountains, Channel Islands, and Prince William Forest.

#420

NGSS@NSTA
1840 Wilson Blvd.
Arlington, VA 22201
E-mail: ngss@nsta.org
Website: www.nsta.org/ngss

How can NSTA help you prepare for the Next Generation Science Standards? Stop by our booth to hear the latest news about state adoption and check out a sampling of NSTA resources dedicated to helping teachers understand and implement the new standards.

NOAA Office of Education	#521
1401 Constitution Ave. NW	EA,EN
#6863	2-12
Washington, DC 20230	
Phone: 301-713-1208	
E-mail: education@noaa.gov	
Website: www.education.noaa.gov	

NOAA is a federal science agency providing free information about weather, climate, oceans, coasts, satellite data, solar weather, and fisheries. Every day, NOAA's science touches the lives of all Americans.

### NSTA 2016 Portland Area #525 Conference 1840 Wilson Blvd. Arlington, VA 22201 E-mail: conferences@nsta.org Website: www.nsta.org/conferences

You are invited to join us at the NSTA 2016 Portland Area Conference, November 10-12, 2016, in Portland, Oregon. Stop by the booth to learn about the exciting program we are preparing for you in Portland.

# #askNSTA

The DuPont Challenge Booth #321 • E-mail: thedupontchallenge@gmail.com Website: thechallenge.dupont.com

**eCYBERMISSION** Booth #324 • E-mail: missioncontrol@ecybermission.com Website: www.ecybermission.com

NGSS@NSTA Booth #420 • E-mail: ngss@nsta.org Website: www.nsta.org/ngss

NSTA Membership Booth #420 • E-mail: membership@nsta.org Website: www.nsta.org/membership

**NSTA Professional Learning Opportunities** Booth #421 • E-mail: fmendez@nsta.org Website: www.nsta.org/conferences

**NSTA Science Matters Booth** #324 • E-mail: membership@nsta.org Website: www.nsta.org/sciencematters

Shell Science Lab Challenge Booth #320 • E-mail: shellsciencelab@nsta.org **Website:** *www.nsta.org/shellsciencelab* 

Toshiba/NSTA ExploraVision **Booth** #322 • E-mail: exploravision@nsta.org Website: www.exploravision.org

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How can I find funds to attend an NSTA conference?

Where can I can find free articles tailored to my grade level and subject area?

What are the Next Generation Science Standards?

What does NSTA have for student teachers?





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#### **Exhibitors**



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Arlington, VA 22201	PreK–12, College
Phone: 703-243-7100	
E-mail: membership@nsta.or	. <i>9</i>
Website: www.nsta.org/membership	

Meet the NSTA staff and other members, pick up copies of recent journals, get info on the *NGSS*, find out how to enter our teacher award programs, and see our new Learning Center. NSTA members—this is the place to pick up your district ribbon to display on your badge so you can more easily identify and meet other teachers from your region. Come by and ASK US ANYTHING about NSTA benefits, products, and resources—and earn a chance to win prizes, including tweet-shirts and Southwest Airline vouchers good on travel to future conferences!

#### NSTA Professional Learning #421 Opportunities

1840 Wilson Blvd. Arlington, VA 22201 Website: www.nsta.org/conferences

The NSTA Professional Learning team supports science educators in school districts and institutions of higher education through a variety of face-to-face, online, and blended experiences tailored to their specific needs. The Learning Center, NSTA's professional learning portal, is designed to enhance the content and pedagogical knowledge of teachers of science. Visit our booth to learn more about the professional learning opportunities available through NSTA.

Nutrients for Life Foundation	#510
425 3rd St. SW, Suite 950	EA
Washington, DC 20024	K-12
Phone: 202-515-2714	
E-mail: jmcguire@nutrientsforlife.org	
Website: www.nutrientsforlife.org	

Nutrients for Life Foundation provides free education resources about soil science and crop nutrients.

OHAUS Corp.	#615
7 Campus Dr., Suite 310	B, C, EA, EN,
Parsippany, NJ 07054	G, PH, T
Phone: 973-377-9000	K–12, College
E-mail: sales@ohaus.com	
Website: www.ohaus.com	

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Santa Ana, CA 92705	
Phone: 714-540-5595	
E-mail: <i>ademkutlug@gmail.com</i>	
Website: www.unimedmassager.com	

We manufacture and distribute handheld portable, digital massagers. PASCO scientific 10101 Foothills Blvd. Roseville, CA 95747 Phone: 800-772-8700 E-mail: *tstout@pasco.com* Website: *www.pasco.com*  **#509** All K–12, College

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Pearson Education, Inc.	#617
501 Boylston St.	All
Boston, MA 02116	PreK-12
Phone: 800-848-9500	
Website: www.pearsonschool.com	

Pearson's defining goal is to help people progress in their lives through learning. Pearson Science assists in this goal by helping teachers spark students' natural interest in science and create lifelong critical thinkers. We provide powerful standards-based instructional solutions, STEM activities, and professional development to help educators improve student learning.

Project Learning Tree	#623
2000 M St. NW, Suite 550	EN, PD
Washington, DC 22036	PreK-12
Phone: 202-765-3641	
E-mail: information@plt.org	
Website: www.plt.org	

Project Learning Tree is a nationally awardwinning environmental education program designed for preK–12 formal and nonformal educators. The supplementary materials provide hands-on/minds-on multidisciplinary activities.

-	RoboRobo Co.	#310
<b>′</b>	5F RoboRobo Bldg.	G, PD, T
	DobongRo 54-6 Mia-Dong	K-12
	Gangbuk-Gu, Seoul, 142-803	
	South Korea	
	Phone: +82 70-8766-7050	
	E-mail: info@roborobo.co.kr	
	Website: www.roborobo.co.kr	

Founded in 2000 by PhD doctors of Engineering, RoboRobo strives to engage elementary to university students by developing educational robot courses and tools. RoboRobo incorporates the STEM education with the creativitiy of students, including dynamic applications of sensors, electronics, machinery, and computer technology.

SAE International	#715
400 Commonwealth Dr.	G
Warrendale, PA 15096	K-8
Phone: 724-772-8526	
E-mails: julie.macintyre@sae.org	
Website: www.awim.org	

A World In Motion® (AWIM) is a teacheradministered, industry volunteer-assisted program that brings science, technology, engineering, and math (STEM) education to life in the classroom.

School Specialty Science	#520
80 Northwest Blvd.	
Nashua, NH 03063	

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SeaWorld Parks &	#314
Entertainment, Inc.	B, EN
9205 Southpark Center Loop	K-12
Orlando, FL 32819	
Phone: 813-918-5246	
E-mail: <i>bill.street@seaworld.com</i>	
Website: www.seaworld.com	

The SeaWorld and Busch Gardens parks have online education programs and free educator resources that you can use in the classroom. Join the new SeaWorld myActions program and inspire your students to make wise decisions about the environment by tracking their daily behaviors that benefit wildlife.

Shell Science Lab Challenge #320 B, C, EA, EN, G, PH 1840 Wilson Blvd. Arlington, VA 22201 6 - 12Phone: 703-312-9378 E-mail: shellsciencelab@nsta.org Website: www.nsta.org/shellsciencelab

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Santa Rosa, CA 95409	5–12, College
Phone: 707-539-9236	
E-mail: info@speakeasies.biz	
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Arlington, VA 22201		K-12		
Phone: 800-Explor9				
E-mail: exploravision@nsta.org				
Website: www.exploravision.org				

The ExploraVision K-12 competition challenges students in the U.S. and Canada to research a technology of interest and explore what that technology could be like 20 years from now. Up to \$240,000 in savings bonds (at maturity) are awarded annually to student winners for the most innovative ideas that combine imagination with the tools of science.

#### U.S. Dept. of Energy-Bioenergy #719 **Technologies** Office EN, T

1000 Independance Ave. SW Washington, DC 20585 Phone: 202-586-5188 E-mail: eere\_bioenergy@ee.doe.gov Website: www.energy.gov/eere/bioenergy

U.S. National Library of Medicine #711 UCLA Biomedical Library B, PD 10833 Le Conte Ave. 12-077CHS Box 951798 Los Angeles, CA 90095-1798 Phone: 310-825-1200

E-mail: psr-nnlm@library.ucla.edu Website: www.nlm.nih.gov

The National Library of Medicine provides free information to science educators, consumers, health professionals, clinicians, and researchers. Resources of interest include TOXNET, ToxTown, Environmental Student Health Portal, PubMed, MedlinePlus, and more. All are available at www.nlm.nih.gov. Stop by our booth for a hands-on demonstration!

#### **Exhibitors**

Vernier Software &	#506	Western Governors Uni	versity #717	Wonder Workshop	#210
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Beaverton, OR 97005	3–12, College	Phone: 866-225-5948	K-12	Phone: 415-680-6967	
Phone: 888-837-6437	-	E-mail: <i>wgu@wgu.edu</i>		E-mail: june@makewonder.com	
E-mail: info@vernier.com Website: www.vernier.com		Website: www.wgu.edu		Dash & Dot robots by Wonder Work	shop are
website. www.veriner.com		The Teachers College at '	Western Governors	hands-on learning tools for students i	n grades

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H	E-mail: <i>wgu@wgu.edu</i>	
١	Website: www.wgu.edu	
7	The Teachers College at Weste	rn Governors
l	University offers regionally, na	ationally, and
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а	aid are available.	

Dash & Dot robots by Wonder Workshop are hands-on learning tools for students in grades K–5! Targeted at teaching creative problem solving and coding, Dash & Dot help students learn fundamental processes relevant for all 21st-century skills. They come with lessons that support both the *Common Core State Standards* and the *Next Generation Science Standards*.



-Photo courtesy of Jacob Slaton

#### 3D Molecular Designs (Booth #315)

Thursday, Oct 22	11:00 AM-12 Noon	A13, Conv. Center	Constructing and Crossing Cell Membranes (p. 41)
Thursday, Oct 22	2:00-3:00 PM	A13, Conv. Center	Genes, Schemes, and Molecular Machines (p. 50)
Friday, Oct 23	11:00 AM-12 Noon	A13, Conv. Center	Let's Get Helical (p. 74)

#### Accelerate Learning-STEMscopes (Booth #515)

Thursday, Oct 22	9:30–10:30 AM	A18, Conv. Center	Demystifying the NGSS with STEMscopes (p. 38)
Thursday, Oct 22	11:00 AM–12 Noon	A18, Conv. Center	Engineering Design Process in the STEM Classroom (p. 41)
Friday, Oct 23	12:30-1:30 PM	A18, Conv. Center	The Secrets to Successful PBL (p. 81)

#### Activate Learning (Booth #720)

Thursday, Oct 22	12:30-1:30 PM	A16, Conv. Center	Making Critical Thinking More Than Just a Cliché Using
			Three-Dimensional Learning (p. 46)
Friday, Oct 23	9:30-10:30 AM	A16, Conv. Center	Integrating Literacy and Science—The Wow Factor (p. 69)

#### Amplify (Booth #415)

Thursday, Oct 22	9:30–10:30 AM	A13, Conv. Center	Navigating the Shifts: Making the Transition to the <i>Next</i> <i>Generation Science Standards</i> with Leaders from The Lawrence
			Hall of Science (p. 38)
Friday, Oct 23	9:30-10:30 AM	A13, Conv. Center	Meet the NGSS Using Amplify Science, the Newest Grades 6–8
			Curriculum from UC Berkeley's Lawrence Hall of Science and
			Amplify (p. 68)
Friday, Oct 23	2:00-3:00 PM	A13, Conv. Center	Navigating the Shifts: Making the Transition to the Next
			Generation Science Standards with Leaders from The Lawrence
			Hall of Science (p. 82)
Friday, Oct 23	3:30-4:30 PM	A13, Conv. Center	Meet the NGSS Using Amplify Science, the Newest Grades K–5
<i>y</i> ,		Curriculum from UC Berkeley's Lawrence Hall of Science and	
			Amplify (p. 85)

#### **ANATOMY IN CLAY® Learning System (Booth #622)**

Thursday, Oct 22	3:30-4:30 PM	A16, Conv. Center	Human Anatomy Lab: Building from the Inside Out (p. 54)
Friday, Oct 23	11:00 AM-12 Noon	A16, Conv. Center	Creating to Understand: Come Build Your Muscles in Clay! (p. 74)

#### **Bio-Rad Laboratories (Booth #414)**

11:00 AM-12:15 PM	A12, Conv. Center	Contagion! Track the Progress of Dangerous Viruses That Are
		Spreading Throughout the Country (p. 41)
3:30-5:00 PM	A12, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big
		Idea 3) (p. 55)
8:00-9:30 AM	A12, Conv. Center	How to Use Pop Culture Science in Your Classes (p. 65)
11:00 AM-12:15 PM	A12, Conv. Center	Investigate Photosynthesis and Cellular Respiration with Algae
		Beads (p. 75)
2:00-3:00 PM	A12, Conv. Center	The GMO Debate Rages On! (p. 82)
3:30-5:00 PM	A12, Conv. Center	Fostering High School Science Engagement Using an
		NGSS-Focused Interactive Experience (p. 85)
	3:30–5:00 PM 8:00–9:30 AM 11:00 AM–12:15 PM 2:00–3:00 PM	3:30-5:00 PM       A12, Conv. Center         8:00-9:30 AM       A12, Conv. Center         11:00 AM-12:15 PM       A12, Conv. Center         2:00-3:00 PM       A12, Conv. Center

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#### Carolina Biological Supply Co. (Booth #607)

Thursday, Oct 22	8:00-9:00 AM	A8, Conv. Center	STEM: Investigating Touch-Screen Devices (p. 36)
Thursday, Oct 22	9:30-10:30 AM	A8, Conv. Center	Bring Visual Science into K–5 Classrooms—It's a Game
			Changer! (p. 38)
Thursday, Oct 22	11:00 AM-12 Noon	A8, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 40)
Thursday, Oct 22	2:00-3:00 PM	A8, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for
			the New Chemistry Teacher (p. 49)
Thursday, Oct 22	3:30-4:30 PM	A8, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect
·			Solution® Pigs (p. 54)
Friday, Oct 23	8:00-9:00 AM	A8, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect
			Solution® Specimens (p. 63)
Friday, Oct 23	9:30-10:30 AM	A8, Conv. Center	Engineering Design for Grades K-2 (p. 68)
Friday, Oct 23	11:00 AM-12 Noon	A8, Conv. Center	Hands-On Science with Classroom Critters (p. 73)
Friday, Oct 23	2:00-3:00 PM	A8, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM
			Challenge® (p. 81)
Friday, Oct 23	3:30-4:30 PM	A8, Conv. Center	Carolina's Young Scientists Dissections with Carolina's Perfect
			Solution® Specimens (p. 85)
			bolutiones operations (p. 03)

#### CPO Science/School Specialty Science (Booth #522)

Thursday, Oct 22	8:00-9:00 AM	A6, Conv. Center	CPO's Science Link <sup>TM</sup> Chemistry Models: Fun with Atom
			Building and the Periodic Table (p. 36)
Thursday, Oct 22	9:30-10:30 AM	A6, Conv. Center	CPO's New Physics AP1 Link Module: Rotational Motion
			with the CPO Roller Coaster (p. 37)
Thursday, Oct 22	11:00 AM-12 Noon	A6, Conv. Center	Genetics: Crazy Traits and CPO's Link Learning Module (p. 40)
Thursday, Oct 22	12:30-1:30 PM	A6, Conv. Center	CPO's Link <sup>TM</sup> Wind Turbine Learning Module: A STEM
			Approach to Engineering and Design (p. 45)
Thursday, Oct 22	2:00-3:00 PM	A6, Conv. Center	Building an Electric Motor the STEM Way with CPO's Link
			Learning Module (p. 49)
Thursday, Oct 22	3:30-4:30 PM	A6, Conv. Center	CPO's New Physics AP1 Link <sup>TM</sup> Module: Rotational Motion
-			with the CPO Roller Coaster (p. 54)

#### Delta Education/School Specialty Science (Booth #520)

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			Electromagnetism (p. 54)

#### Delta Education/School Specialty Science–FOSS (Booth #520)

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			Middle School (p. 36)
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			an Elementary Classroom? (p. 38)
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Thursday, Oct 22	2:00-3:00 PM	A11, Conv. Center	What to Look for in Science Learning Progressions:
Experience			FOSS Next Generation (p. 50)
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			Changing Climate (p. 54)

Friday, Oct 23	11:00 AM–12 Noon	A1, Conv. Center	Observing and Inferring in the Science Classroom: New Tips and Tools from Dinah Zike's Notebooking Central (p. 73)
eCYBERMISSION	l (Booth #324)		
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Educational Inno	ovations, Inc. (Booth #	514)	
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Flinn Scientific, I	nc. (Booth #406)		
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Frey Scientific/So	chool Specialty Science	e (Booth #524)	
Thursday, Oct 22	9:30-10:30 AM	A10, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 38)
Thursday, Oct 22	2:00-3:00 PM	A10, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 49)
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Friday, Oct 23	12:30-1:30 PM	A17, Conv. Center	The Origins of Humans and Recent Adaptations (p. 81)
lt's About Time (	(Booth #500)		
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Friday, Oct 23	9:30-10:30 AM	A6, Conv. Center	Engineering in the <i>NGSS</i> : Grades 9–12 (p. 68)
Emiday Oat 22	11.00 AM 12 Noon	AG Conv. Contor	DDIS Doundtables, Discussions to Support Suggessful

11:00 AM-12 Noon

A6, Conv. Center

Friday, Oct 23

PBIS Roundtables: Discussions to Support Successful

Implementation (p. 73)

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#### It's About Time, cont.

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			Science Storylines" for Middle School Science: Grades 6-8 (p. 79)
Friday, Oct 23	2:00-3:00 PM	A6, Conv. Center	Debunking the Myths of Project Based Learning: Yes We
			CAN! (p. 81)
Friday, Oct 23	3:30-4:30 PM	A6, Conv. Center	EarthComm and Biocomplexity: Designed to Explore Human-
			Earth Interactions (p. 85)

#### LAB-AIDS®, Inc. (Booth #411)

Thursday, Oct 22	8:00-9:00 AM	A7, Conv. Center	Gas Exchange (p. 36)
Thursday, Oct 22	9:30-10:30 AM	A7, Conv. Center	Modeling Convection Currents and Plate Motion (p. 37)
Thursday, Oct 22	11:00 AM-12 Noon	A7, Conv. Center	Calling All Carbons (p. 40)
Thursday, Oct 22	12:30-1:30 PM	A7, Conv. Center	Prospecting for Mineral Ore (p. 45)
Thursday, Oct 22	2:00-3:00 PM	A7, Conv. Center	Reclaiming the Metal (p. 49)
Friday, Oct 23	8:00-9:00 AM	A7, Conv. Center	pH Scale and Math Modeling (p. 63)
Friday, Oct 23	9:30-10:30 AM	A7, Conv. Center	Chemical Formula and Amino Acids (p. 68)
Friday, Oct 23	11:00 AM-12 Noon	A7, Conv. Center	What Is a Species? (p. 73)
Friday, Oct 23	12:30-1:30 PM	A7, Conv. Center	Cell Differentiation and Gene Expression (p. 79)
Friday, Oct 23	2:00-3:00 PM	A7, Conv. Center	Energy Flow Through an Ecosystem (p. 81)
Saturday, Oct 24	8:00-9:00 AM	A7, Conv. Center	Photosynthesis and Respiration—It's a Plant's Life! DuPont
			Agriscience Institute (p. 93)
Saturday, Oct 24	9:30-10:30 AM	A7, Conv. Center	Tree CSI: Dendrochronology DuPont Agriscience Institute (p. 95)

#### The MiniOne<sup>™</sup> Electrophoresis (Booth #306)

Friday, Oct 23	9:30-10:30 AM	A14/15, Conv. Center	MiniOne <sup>TM</sup> Electrophoresis: Revolutionizing Biotechnology in
			Real Time (p. 69)

#### MSOE Center for BioMolecular Modeling (Booth #317)

Thursday, Oct 22	12:30-1:30 PM	A13, Conv. Center	Of All the Nerve! (p. 46)
Friday, Oct 23	8:00-9:00 AM	A13, Conv. Center	Lights, Camera, Enzymes in Action! (p. 64)
Friday, Oct 23	12:30-1:30 PM	A13, Conv. Center	Double (Helix) Trouble: Maintaining Fidelity in DNA
			Replication (p. 80)

#### National Geographic Learning (Booth #410)

Friday, Oct 23	11:00 AM-12 Noon	A18, Conv. Center	National Geographic Explorers: Ideal Role Models of STEM (p. 75)
PASCO scientifi	c (Booth #509)		
Friday, Oct 23	8:00-9:00 AM	A10, Conv. Center	Use Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and
Friday, Oct 23	9:30–10:30 AM	A10, Conv. Center	Reaction Kinetics! (p. 63) Adapting Traditional Biology Labs to Sensor Technology (p. 68)
Friday, Oct 23	11:00 AM–12 Noon	A10, Conv. Center	Physics with PASCO scientific, Featuring PASCO Capstone <sup>TM</sup> , the Ultimate Data Collection and Analysis Software for Physics (p. 73)

#### **Index of Exhibitor Workshops**

#### Pearson (Booth #617)

Friday, Oct 23 Friday, Oct 23	9:30–10:30 AM 11:00 AM–12 Noon	A19, Conv. Center A19, Conv. Center	Using Problem-Based Learning to Up Your <i>NGSS</i> Game (p. 70) STEM and <i>NGSS</i> Inquiry in Chemistry: Effective, Efficient, and
Tilday, Oct 25	11.00 /////-12 1000	Arry, conv. center	Economical (p. 75)
Friday, Oct 23	12:30-1:30 PM	A19, Conv. Center	Teaching Geoscience in an NGSS Curriculum (p. 81)
Friday, Oct 23	2:00-3:00 PM	A19, Conv. Center	The Best Test Prep Book Ever for AP Chemistry (p. 82)

#### SAE International A World In Motion Program (Booth #715)

Thursday, Oct 22	11:00 AM-12 Noon	A14/15, Conv. Center	STEM and the Young Learner (p. 41)
Friday, Oct 23	8:00-9:00 AM	A14/15, Conv. Center	SAE Middle School Educational Offerings (p. 64)
Friday, Oct 23	12:30-1:30 PM	A14/15, Conv. Center	Engineering in the Upper Elementary Classroom (p. 80)

#### Texas Instruments, Inc. (Booth #401)

Friday, Oct 23	11:00 AM-12 Noon	A11, Conv. Center	Zombie Apocalypse! (p. 73)
Friday, Oct 23	12:30-1:30 PM	A11, Conv. Center	A Matter of Life and Death (p. 79)

#### Vernier Software & Technology (Booth #506)

Friday, Oct 23	8:00-9:00 AM	A9, Conv. Center	Integrating Chromebook with Vernier Technology (p. 63)
Friday, Oct 23	9:30–10:30 AM	A9, Conv. Center	Chemistry with Vernier (p. 68)
Friday, Oct 23	11:00 AM-12 Noon	A9, Conv. Center	Biology with Vernier (p. 73)
Friday, Oct 23	12:30-1:30 PM	A9, Conv. Center	Integrating Chromebook with Vernier Technology (p. 79)
Friday, Oct 23	2:00-3:00 PM	A9, Conv. Center	Integrating iPad with Vernier Technology (p. 81)
Friday, Oct 23	3:30-4:30 PM	A9, Conv. Center	Physics and Physical Science with Vernier (p. 85)

#### Schedule at a Glance

#### Earth and Space Science

#### Thursday

8:00-9:00 AM	K-12	A5, Conv. Center	Implementing and Assessing NGSS Science Practices with MY NASA DATA (p. 33)
8:00-9:00 AM	K-2	A10, Conv. Center	Earth Science for Our Next Generation of Very Young Scientists (p. 36)
9:30-10:30 AM	6-8	A7, Conv. Center	Modeling Convection Currents and Plate Motion (p. 37)
11:00 AM-12 Noon	9-12	A7, Conv. Center	Calling All Carbons (p. 40)
11:00 AM-12 Noon	5-C	A13, Conv. Center	Constructing and Crossing Cell Membranes (p. 41)
12:30-1:30 PM	7–C	A3, Conv. Center	Using Project Based Learning to Teach Climate Change (p. 42)
12:30-1:30 PM	9-12	A7, Conv. Center	Prospecting for Mineral Ore (p. 45)
12:30-1:30 PM	6-C	D2, Conv. Center	The Classroom "WITHOUT" Walls (p. 42)
12:30-1:30 PM	5-9	F3, Conv. Center	Hands-On Activities About the Nature and Uses of Water (p. 45)
12:30-1:30 PM	6-12	F10, Conv. Center	Bringing Space Science Down to Earth (p. 45)
2:00-3:00 PM	7-12	A3, Conv. Center	Project ReCharge: Educating About Energy and Reducing Your Carbon
			Footprint (p. 47)
2:00-3:00 PM	K-8	D5, Conv. Center	Students' Cloud Observations Online: Hands-On Science for Your Students (p. 48)
2:00-3:00 PM	K-2	D6, Conv. Center	Changing Primary Teachers' Perceptions of Science (p. 48)
2:00-3:00 PM	K-12	E2, Conv. Center	Extending the NGSS Beyond the Classroom and Measuring Impact: Practices for
			Informal Education (p. 47)
2:00-3:00 PM	9-С	F10, Conv. Center	I Measured the Age of the Universe and You Can, Too (p. 48)
3:30-4:30 PM	6-8	A11, Conv. Center	Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing
			Climate (p. 54)
3:30-4:30 PM	3-10	F10, Conv. Center	JetStream: An Online School for Weather (p. 53)
5:00-6:00 PM	5-9	A3, Conv. Center	Cycles, Sinks, and Solutions: A Complete STEM Mini-Unit on Global Climate
			Change (p. 58)
5:00-6:00 PM	K-12	D7, Conv. Center	NOAA in Your Backyard: Free Professional Development and Local Educator
			Resources Are Closer Than You Think! (p. 56)
5:00-6:00 PM	6-8	D9/10, Conv. Center	Ocean Plastic Pollution: Examining Issues and Solutions in a Middle School
			Classroom (p. 58)

#### Friday

8:00–9:00 AM	6-C	F1/2, Conv. Center	NESTA Shares Innovative Ways to Teach About Weather Observation and Weather Hazards (p. 62)
9:30-10:30 AM	6-12	A3, Conv. Center	Climate Literacy $\rightarrow$ Climate Solutions (p. 66)
9:30-10:30 AM	6-C	F1/2, Conv. Center	NESTA Shares Innovative Ways to Teach About Climate and Climate Change (p. 67)
9:30–10:30 AM	8-12	F10, Conv. Center	Teach and Enhance <i>CCSS Mathematics</i> Practices Using NASA's Kepler Mission Data (p. 67)
11:00 AM-12 Noon	P-12	A5, Conv. Center	Create Your Own NASA Portal to the NGSS with NASA Wavelength (p. 72)
11:00 AM-12 Noon	6-C	F1/2, Conv. Center	NESTA and CIESIN Share—Exploring a Compendium of Online Resources for
			Teaching Earth Science (p. 71)
11:00 AM-12 Noon	9-C	F10, Conv. Center	Ice Core Records: From Volcanoes to Solar Proton Events to Supernova
			Events (p. 72)
12:30-1:30 PM	K-12	A19, Conv. Center	Teaching Geoscience in an NGSS Curriculum (p. 81)
12:30-1:30 PM	3-12	D3, Conv. Center	NASA's "Eyes on the Solar System": Bringing Planets into Your Classroom (p. 77)
12:30-1:30 PM	1-12	F1/2, Conv. Center	NESTA Shares Innovative Ways to Teach About Minerals, Rocks, and
			Resources (p. 78)
12:30-1:30 PM	6-12	F10, Conv. Center	Decoding Starlight—From Photons to Pixels to Images (p. 79)
3:30-4:30 PM	9-12	A6, Conv. Center	EarthComm and Biocomplexity—Designed to Explore Human-Earth
			Interactions (p. 85)
3:30-4:30 PM	G	F1/2, Conv. Center	National Earth Science Teachers Association (NESTA) Shares: Rock, Mineral,
			and Fossil Raffle (p. 84)
3:30-4:30 PM	4–C	F10, Conv. Center	NASA's Goldstone Apple Valley Radio Telescope (GAVRT) Project (p. 83)

#### Schedule at a Glance Earth and Space Science

5:00-6:00 PM	5-C	A5, Conv. Center	NASA Astrobiology: The Search for Life Beyond Earth (p. 88)
5:00-6:00 PM	4-12	D8, Conv. Center	Coral Reefs: Fragile Wonders Under Threat (p. 87)
Saturday			
8:00–9:00 AM	G	E2, Conv. Center	AMS DataStreme Project: Fueling Environmental Literacy for a Brighter Future (p. 92)
8:00-9:00 AM	6-12	F10, Conv. Center	Stellar Evolution—From Star Formation to Catastrophic Destruction (p. 92)
9:30-10:30 AM	6-C	A5, Conv. Center	Critical Thinking in Earth Science: Using the Model-Evidence Link
9:30–10:30 AM	5-8	DC Come Conton	Diagram (p. 94) Trank About the Salar Surtan Ulaine - Ulanan Demond Medal (r. 94)
		D6, Conv. Center	Teach About the Solar System Using a Human-Powered Model (p. 94)
9:30-10:30 AM	5-10	F10, Conv. Center	We're Made of Stars? Explore the Elements with NASA! (p. 95)
12:30-1:30 PM	3-5	A3, Conv. Center	Shake, Rattle, and Roll! Designing an Earthquake-Proof Structure (p. 97)
12:30-1:30 PM	7-С	F10, Conv. Center	Black Holes Suck! (p. 97)

#### Engineering, Technology, and the Application of Science

#### Thursday

8:00-9:00 AM	6-8	A3, Conv. Center	Making a Better City (p. 34)
8:00-9:00 AM	K-8	A8, Conv. Center	STEM: Investigating Touch-Screen Devices (p. 36)
8:00-9:00 AM	9-12	E2, Conv. Center	Engineer Your World: Integrating Engineering Design, Computational
			Thinking, and 21st-Century Skills (p. 34)
11:00 AM-12 Noon	K-2	A10, Conv. Center	Engineering Design—Will It Sink or Float? (p. 40)
11:00 AM-12 Noon	P-12	A18, Conv. Center	Engineering Design Process in the STEM Classroom (p. 41)
12:30-1:30 PM	6-12	A6, Conv. Center	CPO's Link <sup>TM</sup> Wind Turbine Learning Module: A STEM Approach to
			Engineering and Design (p. 45)
12:30-1:30 PM	3-5	A10, Conv. Center	High-flying Connections with Science and Literacy (p. 45)
12:30-1:30 PM	K-5	A11, Conv. Center	Engineering in Elementary Science: Designing with FOSS (p. 46)
12:30-1:30 PM	6-C	D2, Conv. Center	The Classroom "WITHOUT" Walls (p. 42)
12:30-1:30 PM	4-8	D5, Conv. Center	NGSS: A Model for the Engineering Design Process (p. 44)
2:00-3:00 PM	6-12	A6, Conv. Center	Building an Electric Motor the STEM Way with CPO's Link <sup>TM</sup> Learning
			Module (p. 49)
2:00-3:00 PM	6-C	A13, Conv. Center	Genes, Schemes, and Molecular Machines (p. 50)
2:00-3:00 PM	9-12	C2, Conv. Center	Hands-On Standards: Having Your Curriculum Meet the NGSS, CCSS, and
			More (p. 47)
2:00-3:00 PM	P-5	D4, Conv. Center	Tying It All Together: Building Elementary Science Literacy with Math and
			Language Arts (p. 47)
2:00-3:00 PM	K-12	D7, Conv. Center	How to Implement STEM and the NGSS into Your Classroom Through the Use
			of NSTA Competitions (p. 47)
2:00-3:00 PM	K-12	E2, Conv. Center	Extending the NGSS Beyond the Classroom and Measuring Impact: Practices for
			Informal Education (p. 47)
3:30-4:30 PM	G	C1, Conv. Center	Featured Presentation: Saturn to Smartphone Cameras: A Story of Science and
			Technology Innovation (p. 50)
3:30-4:30 PM	6-8	D9/10, Conv. Center	Build Your Students' Skill in Using Science and Engineering Practices with
			Modeling Instruction (p. 53)
5:00-6:00 PM	K-6	D6, Conv. Center	Using PBL to Integrate Our School Garden and Properties to Solve a Pest
			Problem (p. 58)
Friday			

8:00-9:00 AM	6-C	A13, Conv. Center	Lights, Camera, Enzymes in Action! (p. 64)
9:30-10:30 AM	9-12	A6, Conv. Center	Engineering in the NGSS: Grades 9-12 (p. 68)
9:30-10:30 AM	K-2	A8, Conv. Center	Engineering Design for Grades K–2 (p. 68)

#### Schedule at a Glance Engineering, Technology, and the Application of Science

9:30–10:30 AM 9:30–10:30 AM 11:00 AM–12 Noon 11:00 AM–12 Noon 12:30–1:30 PM 12:30–1:30 PM 12:30–1:30 PM 12:30–1:30 PM 12:30–1:30 PM 12:30–1:30 PM 2:30–1:30 PM	$\begin{array}{c} 4-12 \\ K-8 \\ 9-11 \\ 6-C \\ 3-12 \\ 6-12 \\ 6-C \\ 4-6 \\ K-12 \\ K-5 \\ 6-12 \\ 6-9 \end{array}$	D4, Conv. Center D5, Conv. Center A3, Conv. Center A13, Conv. Center A18, Conv. Center A18, Conv. Center A11, Conv. Center A13, Conv. Center A14/15, Conv. Center D5, Conv. Center F10, Conv. Center A16, Conv. Center	A Look at Engineering in the Real World: A System of Systems (p. 66) How to Host the Perfect Family Science Night (p. 67) Engineering Design (p. 71) Let's Get Helical (p. 74) National Geographic Explorers: Ideal Role Models of STEM (p. 75) A Matter of Life and Death (p. 79) Double (Helix) Trouble: Maintaining Fidelity in DNA Replication (p. 80) Engineering in the Upper Elementary Classroom (p. 80) Teaching Geoscience in an <i>NGSS</i> Curriculum (p. 81) STEM Is Elementary: Engaging Students with Engineering Investigations (p. 78) Decoding Starlight—From Photons to Pixels to Images (p. 79) Engineering Design in the Middle School Classroom (p. 82)
		,	
3:30-4:30 PM 5:00-6:00 PM	7—С 9—12	A3, Conv. Center A3, Conv. Center	Put the "E" in STEM! (p. 84) Biomass: Taking It to Your Classroom (p. 87)

#### Saturday

9:30-10:30 AM	5-8	D9/10, Conv. Center	Catapults! A STEM Center's Approach to Inquiry (p. 95)
12:30-1:30 PM	3-5	A3, Conv. Center	Shake, Rattle, and Roll! Designing an Earthquake-Proof Structure (p. 97)
12:30-1:30 PM	6-12	D1, Conv. Center	Take Chemistry into the Art Room (p. 96)
12:30-1:30 PM	9-12	D3, Conv. Center	Teach Engineering Principles on the Cheap with Concrete (p. 96)

#### **General Science Education**

#### Thursday

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8:00-9:00 AM       3-12       C2, Conv. Center       Think-Connect-Act : A 3-D Learning Model for Teaching Vocabulary Students Need to Succeed (p. 34)         8:00-9:00 AM       K-6       D6, Conv. Center       Generating a Spark for Learning with STEM (p. 35)	·1 ·
8:00-9:00 AMK-6D6, Conv. CenterVocabulary Students Need to Succeed (p. 34)Generating a Spark for Learning with STEM (p. 35)	-g the readoune
8:00–9:00 AM K–6 D6, Conv. Center Generating a Spark for Learning with STEM (p. 35)	
	s for Students to Learn
and Practice the Most Important Words! (p. 34)	
8:00–9:00 AM G F1/2, Conv. Center Welcome to Your First NSTA Conference (p. 35)	
9:30–10:30 AM K–5 A8, Conv. Center Bring Visual Science into K–5 Classrooms—It's a Game	Changer! (p. 38)
9:30–10:30 AM K–5 A11, Conv. Center Scientific Practices: What Does Argumentation Look Lik	e 1
Classroom? (p. 38)	,
9:30–10:30 AM K–8 A13, Conv. Center Navigating the Shifts: Making the Transition to the Next G	Generation Science
Standards with Leaders from The Lawrence Hall of Science	
9:30–10:30 AM P–11 A18, Conv. Center Demystifying the NGSS with STEMscopes (p. 38)	
11:00 AM-12 Noon P-4 A14/15, Conv. Center STEM and the Young Learner (p. 41)	
11:00 AM–12 Noon 6–9 A16, Conv. Center Student Collaboration in the Science Classroom (p. 41)	
11:10 AM-12:10 PM G NSTA Exhibits Entrance Meet the Presidents and Board/Council (p. 41)	
12:30–1:30 PM K–5 A2, Conv. Center NSTA Press® Session: Teaching Science Through Integra	ating Children's
Literature and Outdoor Investigations (p. 43)	
12:30–1:30 PM K–5 A4, Conv. Center Keep Calm and Teach Scienceand Mathand ELA: An	n Integrated
Approach (p. 44)	
12:30–1:30 PM 6–8 A16, Conv. Center Making Critical Thinking More Than Just a Cliché Using	g Three-Dimensional
Learning (p. 46)	
12:30–1:30 PM G C1, Conv. Center Featured Presentation: Bundling the NGSS Performance I	Expectations (p. 42)
12:30–1:30 PM 7–12 C2, Conv. Center Brain Boot Camp (p. 44)	
12:30–1:30 PM 7–12 C3, Conv. Center "STEM"ing The Zombie Tide (p. 44)	
12:30–1:30 PM K–12 D1, Conv. Center AMSE Session: Making Sense of Science Learning Through	igh Community Science
Workshops (p. 44)	

12:30–1:30 PM	K-8	D4, Conv. Center	Moving from STEM to STEAM (p. 42)
12:30-1:30 PM	K-6	D6, Conv. Center	Using Collaborative Problem Solving and Team Building to Meet the Standards (p. 44)
2:00-3:00 PM	K-5	A2, Conv. Center	NSTA Press® Session: Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry, K–5 (p. 47)
2:00-3:00 PM	K-12	A5, Conv. Center	NSTA Press® Session: Teaching for Conceptual Understanding in Science (p. 46)
2:00-3:00 PM	3-С	C1, Conv. Center	Magical Illusions for Science: It's Showtime! (p. 46)
2:00-3:00 PM	4-12	C3, Conv. Center	Bringing the Positive Back to Science Education (p. 48)
2:00-3:00 PM	G	D3, Conv. Center	Grant Writing for the Science Classroom (p. 46)
2:00-3:00 PM	С	D8, Conv. Center	CAEP Elementary Standards: A First Look (p. 47)
2:00-3:00 PM	6-8	D9/10, Conv. Center	Text Sets for Middle School STEM Curricula (p. 48)
2:00-3:00 PM	9-C	F3, Conv. Center	Population Activities for AP Environmental Science (p. 48)
3:30-4:00 PM	9-C	F3, Conv. Center	ASTE Session: Adventure Learning: Solutions for Resource Management (p. 50)
3:30-4:30 PM	3-12	A2, Conv. Center	NSTA Press® Session: Uncovering Student Ideas in Science with Digital Devices (p. 51)
3:30-4:30 PM	6-12	A3, Conv. Center	Using the Science Writing Heuristic as a Method for Implementing Three-Dimensional Learning (p. 52)
3:30-4:30 PM	7-12	A4, Conv. Center	Science Has Many Stories to Tell: NASA Literacy Resources for Your Students (p. 52)
3:30-4:30 PM	K-12	C2, Conv. Center	Practice-Practices! Aligning Teaching to the Core STEM Practices (p. 52)
3:30-4:30 PM	4–C	D1, Conv. Center	English Language Development Opportunities for ELLs Through Meaningful Integration of <i>NGSS</i> and <i>CCSS</i> (p. 53)
3:30-4:30 PM	P–K	D4, Conv. Center	Big Science on a Shoestring Budget (p. 52)
3:30-4:30 PM	K-8	D5, Conv. Center	Feeding Our Feathered Friends (p. 53)
3:30-4:30 PM	K-5	D6, Conv. Center	Get to the CORE of Science Texts (p. 53)
3:30-4:30 PM	G	D7, Conv. Center	Exploring the Science and Engineering Practices (p. 52)
3:30-4:30 PM	С	D8, Conv. Center	The NSTA Learning Center: A Tool to Develop Preservice Teachers (p. 52)
3:30-4:30 PM	4-12	E2, Conv. Center	Young Adult Literature as a Value-added Dimension to the Science Classroom (p. 52)
3:30-4:30 PM	K-8	F1/2, Conv. Center	CESI Session: Elementary Science Share-a-Thon (p. 53)
3:30-5:00 PM	9-C	A12, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3) (p. 55)
4:00-4:30 PM	P-5	F3, Conv. Center	ASTE Session: Science and Literacy—Fostering Classroom Talk in Elementary Science (p. 55)
5:00-6:00 PM	1-8	A2, Conv. Center	All Learners and the Next Generation Science Standards (p. 58)
5:00-6:00 PM	K-5	A4, Conv. Center	Innovative Strategies That Work in Growing Language in Grades K–5: Lessons Learned from Research (p. 56)
5:00-6:00 PM	G	C3, Conv. Center	The Science and Engineering Practices of Analyzing and Interpreting Data: A Conceptual Examination (p. 58)
5:00-6:00 PM	P-3	D4, Conv. Center	Engaging and Nurturing the Curiosity of Young Children with Everyday Science That Surrounds Them (p. 56)
5:00-6:00 PM	K-12	D7, Conv. Center	NOAA in Your Backyard: Free Professional Development and Local Educator Resources Are Closer Than You Think! (p. 56)
5:00-6:00 PM	9-12	D8, Conv. Center	Rigor vs. Rhetoric: Developing Scientific Skepticism in Our Students (p. 56)
5:00–6:00 PM	3–C	E2, Conv. Center	Problem-Based Learning: A Partnership Using NGSS and CCSS (p. 56)
5:00–6:00 PM	G G	F3, Conv. Center	ASTE Session: Poster Session Featuring Innovations and Research from Multiple
	5		Science Educators (p. 56)
5:00-6:00 PM	3-12	F9, Conv. Center	Time Will Tell: Time-Lapse Photography/Digital Storytelling to Observe Change (p. 57)

#### Friday

8:00-9:00 AM	K-5	A2, Conv. Center	NSTA Press® Session: Next Time You See (p. 62)
8:00-9:00 AM	3-12	A9, Conv. Center	Integrating Chromebook with Vernier Technology (p. 63)
8:00-9:00 AM	6–9	A14/15, Conv. Center	SAE Middle School Educational Offerings (p. 64)
8:00-9:00 AM	7-С	D3, Conv. Center	Fun Forensic Apps: Inexpensive, Interesting Ways to Integrate Math, Science,
			and Technology (p. 61)

8:00-9:00 AM	K-8	D4, Conv. Center	Teaching with the Language(s) of Science in Mind (p. 61)
8:00–9:00 AM	K-6	D5, Conv. Center	Journey into the School Yard: A Context for Cross-Curricular Learning (p. 62)
8:00–9:00 AM	3-6	D6, Conv. Center	Write Like an Ecologist! (p. 62)
8:00-9:00 AM	6-8	D7, Conv. Center	Creating and Implementing a Learning Progression for Literacy in Grade 6–8
		,	Science (p. 61)
8:00-9:00 AM	P-6	E2, Conv. Center	Science and Writing: A Research-based Approach That Enhances Learning in
			Both Domains (p. 61)
8:00-9:00 AM	6-12	F9, Conv. Center	Connecting Three-Dimensional Learning to Student-Designed Investigations: A
			Template to Help You Survive Experimentation! (p. 61)
8:00-9:30 AM	9-C	A12, Conv. Center	How to Use Pop Culture Science in Your Classes (p. 65)
9:30-10:30 AM	K-5	A2, Conv. Center	NSTA Press® Session: Gardening with Books and Butterflies (p. 66)
9:30-10:30 AM	6-8	A13, Conv. Center	Meet the NGSS Using Amplify Science, the Newest Grades 6–8 Curriculum
			from UC Berkeley's Lawrence Hall of Science and Amplify (p. 68)
9:30-10:30 AM	P-5	A16, Conv. Center	Integrating Literacy and Science—The Wow Factor (p. 69)
9:30-10:30 AM	K-12	A19, Conv. Center	Using Problem-Based Learning to Up Your NGSS Game (p. 70)
9:30-10:30 AM	G	C1, Conv. Center	Featured Presentation: The What and Why of 3-D Science Learning (p. 65)
9:30-10:30 AM	4-5	D6, Conv. Center	Open the Floodgates to Real-World Learning! (p. 67)
9:30-10:30 AM	6-12	D8, Conv. Center	Do You Need a New Science Lab? (p. 66)
11:00 AM-12 Noon	G	A1, Conv. Center	Observing and Inferring in the Science Classroom: New Tips and Tools from
			Dinah Zike's Notebooking Central (p. 73)
11:00 AM-12 Noon		A2, Conv. Center	NSTA Press® Session: Scientific Argumentation Classroom Activities (p. 71)
11:00 AM-12 Noon		A4, Conv. Center	Chapter Books at the Crossroads of the NGSS and CCSS (p. 71)
11:00 AM-12 Noon		A6, Conv. Center	PBIS Roundtables: Discussions to Support Successful Implementation (p. 73)
11:00 AM-12 Noon		A7, Conv. Center	What Is a Species? (p. 73)
11:00 AM–12 Noon		A11, Conv. Center	Zombie Apocalypse! (p. 73)
11:00 AM–12 Noon		D5, Conv. Center	Linking Science and Literacy for Improved Student Outcomes (p. 72)
11:00 AM–12 Noon	G	D7, Conv. Center	The NGSS@NSTA Hub (p. 70)
11:00 AM-12 Noon	G	D8, Conv. Center	Publish Your Teaching Ideas in an NSTA Journal (p. 70)
11:00 AM-12 Noon		D9/10, Conv. Center	CESI Session: Engaging Students in Argumentation and Better Explanations (p. 72)
11:00 AM-12 Noon		E1, Conv. Center	NSELA Session: Tools for Science Leaders, Part 1 (p. 71)
11:00 AM-12 Noon	6-12	E2, Conv. Center	Utilizing Virtual Simulations to Enhance Lab Experiences in All Types of Classrooms (p. 71)
11:00 AM-12 Noon	G	E3, Conv. Center	So We're RetiredWhat Can We Do Now? (p. 71)
11:00 AM-12 Noon	G	F3, Conv. Center	Selecting and Using the Best in Trade Books (p. 72)
11:00 AM-12 Noon		F4, Conv. Center	Michigan Teacher Excellence Program's (MiTEP) Implementation of Lesson
1110011111 12110011			Study: Preparing the Next Generation of Science Teachers to Be Teacher
			Leaders for Implementing the NGSS (p. 71)
12:30-1:30 PM	G	A2, Conv. Center	NSTA Press® Session: What Are They Really Thinking? Connecting Concepts
		,	and Practices Through Formative Assessment (p. 77)
12:30-1:30 PM	K-12	A5, Conv. Center	Healthy Land, Healthy Us! Informal/Formal Education Partnership (p. 77)
12:30-1:30 PM	6-8	A6, Conv. Center	Project-Based Inquiry Science <sup>TM</sup> (PBIS): Creating "Coherence and Science
		,	Storylines" for Middle School Science: Grades 6–8 (p. 79)
12:30-1:30 PM	3-12	A9, Conv. Center	Integrating Chromebook with Vernier Technology (p. 79)
12:30-1:30 PM	G	C1, Conv. Center	Featured Presentation: Connections of NGSS to CCSS for All Students,
			Including English Language Learners (p. 76)
12:30-1:30 PM	6-8	D7, Conv. Center	How Does My School STEAM Ahead? (p. 77)
12:30-1:30 PM	6-8	D9/10, Conv. Center	A Planning Process for NGSS-Supported Middle School Progression (p. 78)
12:30-1:30 PM	P-12	E1, Conv. Center	NSELA Session: Tools for Science Leaders, Part 2 (p. 77)
12:30-1:30 PM	K-12	E2, Conv. Center	Presidential STEM Teachers: PAEMST Success for K–12 Educators (p. 77)
12:30-1:30 PM	6-12	F3, Conv. Center	The Heart of Learning Is a Remarkably Good Story (p. 79)
12:30-1:30 PM	G	F4, Conv. Center	How to Get Students to Ask Effective Questions: Using the QFT (p. 79)
12:30-1:30 PM	5-12	F9, Conv. Center	Teaching to the Target (p. 78)
2:00-3:00 PM	6-12	A6, Conv. Center	Debunking the Myths of Project-Based Learning: Yes We CAN! (p. 81)

2:00-3:00 PM	6-12	A8, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 81)
2:00-3:00 PM	3-12	A9, Conv. Center	Integrating iPad with Vernier Technology (p. 81)
2:00-3:00 PM	K-8	A13, Conv. Center	Navigating the Shifts: Making the Transition to the Next Generation Science
			Standards with Leaders from The Lawrence Hall of Science (p. 82)
3:30-4:30 PM	K-8	A2, Conv. Center	NSTA Press® Session: Outdoor Science: A Practical Guide (p. 84)
3:30-4:30 PM	7-12	A4, Conv. Center	D.N.A. (Developing Nonfiction Arguments): Purposeful Literacy Instruction in
			the Science Classroom (p. 82)
3:30-4:30 PM	K-5	A13, Conv. Center	Meet the NGSS Using Amplify Science, the Newest Grades K-5 Curriculum
			from UC Berkeley's Lawrence Hall of Science and Amplify (p. 85)
3:30-4:30 PM	3-C	C1, Conv. Center	Dazzling Deceptions: Discrepant Events That Delight and Mystify! (p. 82)
3:30-4:30 PM	6-C	D3, Conv. Center	Teach STEM Content and Spark Science Career Interest with Free Online
			Games (p. 83)
3:30-4:30 PM	6-8	D7, Conv. Center	We Have 'em, Now What Do We Do with 'em? (p. 83)
3:30-4:30 PM	G	D8, Conv. Center	The NSTA Learning Center: Free Professional Learning Resources and
			Opportunities for Educators (p. 83)
3:30-4:30 PM	G	E2, Conv. Center	Facilitating Global Collaboration: A Case Study of a University Partnership with
			a Rural School District (p. 83)
3:30-4:30 PM	6-C	F3, Conv. Center	Time- and Money-Saving Techniques in Teaching Forensic Science (p. 83)
3:30-4:30 PM	9-12	F4, Conv. Center	Science and Engineering Practices Share Session (p. 83)
3:30-4:30 PM	K-12	F9, Conv. Center	A Model for Understanding and Explaining the NRC Framework for K-12 Science
			Education (p. 83)
3:30-5:30 PM	K-6	Grand Ballroom 3, Atlantis	Children's Literature—From Stories to Creating Science Engagement (p. 86)
3:30-5:30 PM	G	E3, Conv. Center	Alliance of Affiliates Session: The 3Rs-Research, Resources, and
			Relationships (p. 86)
5:00-5:30 PM	5-9	D7, Conv. Center	Lessons in Collaborative Development of NGSS-Supported Integrated Science
			Curricula for Michigan Through the Mi-STAR Initiative (p. 87)
5:00-6:00 PM	K-6	D4, Conv. Center	Differentiating K-6 Science Instruction to Enable All Students to Inquire,
			Explore, Participate, and Achieve Success (p. 87)

#### Saturday

8:00-9:00 AM	6-12	A3, Conv. Center	I'm a PACK RAT! What Will I Do with All the STUFF?!? (p. 91)
8:00-9:00 AM	6-8	A5, Conv. Center	Shifting Instruction with the NGSS (p. 91)
8:00-9:00 AM	9-12	C3, Conv. Center	What! We Have to Teach English, Too? (p. 92)
8:00-9:00 AM	3-12	D3, Conv. Center	Let the Tablet Tell a Science (Digital) Story! (p. 91)
8:00-9:00 AM	K-8	D4, Conv. Center	Teaching Science Content to Teachers: Taming the Elephant in the Room (p. 91)
8:00-9:00 AM	K-8	D6, Conv. Center	Taking STEM Outside (p. 92)
8:00-9:00 AM	5-10	D7, Conv. Center	Teach Your Students to Read Like Scientists: Effective and Engaging Strategies
			for Success (p. 91)
8:00-9:00 AM	K-12	D8, Conv. Center	Academic Language Development in Science (p. 91)
8:00-9:00 AM	7-12	E1, Conv. Center	Modeling NGSS Crosscutting Concepts with Aligned Topics (p. 91)
8:00-9:00 AM	6-12	F9, Conv. Center	Using Word Webs to Build Essays in Science (p. 92)
9:30-10:30 AM	4-12	A3, Conv. Center	Recycled Goods as Inspiration in Learning: The Secret Life of Everyday
			Things (p. 93)
9:30-10:30 AM	P-8	A4, Conv. Center	Bridging the Content Gap with Notable Nonfiction (p. 93)
9:30-10:30 AM	6-8	D7, Conv. Center	How Do You Know They Know? Developing Balanced Assessments in Middle
			School Science (p. 93)
9:30-10:30 AM	K-12	D8, Conv. Center	AMSE Session: A Teacher's Power—Tangible Examples of Equity in Classroom
			Contexts (p. 93)
9:30-10:30 AM	G	E1, Conv. Center	The Ever-Changing World of MOOCs—What's in It for YOU? (p. 94)
9:30-10:30 AM	K-12	F4, Conv. Center	Opportunities and Challenges for Bilingual Students in the Science
			Classroom: Improving Practice Through Online Professional Development
			Communities (p. 95)
9:30-10:30 AM	7-12	F9, Conv. Center	You Can Do It! Addressing Literacy and Crosscutting Concepts via Peer-
			Reviewed Science Journal Articles (p. 94)

12:30-1:30 PM	3-10	C3, Conv. Center	Science Practices—Effective, Fun, and Relevant (p. 97)
12:30-1:30 PM	K-8	D4, Conv. Center	Putting Students' Schoolyard Habitat Improvements on the Map (p. 96)
12:30-1:30 PM	3-6	D6, Conv. Center	Transfer of Learning: "But I Thought I Taught That?" (p. 97)
12:30-1:30 PM	K-12	D8, Conv. Center	Connecting Standards to Practice While Navigating the PAEMST
			Application (p. 96)
12:30-1:30 PM	9-12	E1, Conv. Center	How to Support Teacher Learning of the NGSS at the High School Level (p. 96)
12:30-1:30 PM	9-12	F9, Conv. Center	Advancing Scientific Literacy with Inquiry Lesson Plans Using Science Reading
			Materials (p. 96)

#### **Informal Science Education**

#### Thursday

12:30-1:30 PM	K-12	D1, Conv. Center	AMSE Session: Making Sense of Science Learning Through Community Science
			Workshops (p. 114)
12:30-1:30 PM	6-C	D2, Conv. Center	The Classroom "WITHOUT" Walls (p. 42)
2:00-3:00 PM	K-12	E2, Conv. Center	Extending the NGSS Beyond the Classroom and Measuring Impact: Practices for Informal Education (p. 47)

#### Friday

8:00–9:00 AM	G	D1, Conv. Center	AAPT Session: The Physics Show Excites Young People About Science (p. 61)
9:30-10:30 AM	K-8	D5, Conv. Center	How to Host the Perfect Family Science Night (p. 67)
9:30-10:30 AM	K-8	E1, Conv. Center	NARST Session: Me? A Scientist—A Next Generation of After-School Students
			Internalizing Their Identities as Scientists (p. 66)
9:30-10:30 AM	G	E2, Conv. Center	STEM Festivals Bridge Schools and Community (p. 66)
12:30-1:30 PM	K-12	A5, Conv. Center	Healthy Land, Healthy Us! Informal/Formal Education Partnership (p. 77)
3:30-4:30 PM	6-C	D3, Conv. Center	Teach STEM Content and Spark Science Career Interest with Free Online
			Games (p. 83)

#### Saturday

9:30-10:30 AM	P-2	D4, Conv. Center	Matter, Matters: An Innovative Collaboration on Informal Science Learning (p. 93)
9:30-10:30 AM	G	E1, Conv. Center	The Ever-Changing World of MOOCs—What's in It for YOU? (p. 94)

#### Life Science

#### Thursday

8:00-9:00 AM	6-8	A7, Conv. Center	Gas Exchange (p. 36)
8:00-9:00 AM	6-8	A11, Conv. Center	Archaea and the Three Domains: Classification of Life for Middle School (p. 36)
9:15-10:30 AM	G	C4, Conv. Center	General Session: Monster Fish: What the World's Largest Freshwater Fish Teach
			Us About Discovery, Sustainability, and Becoming Better Stewards of the
			Natural World (p. 37)
9:30-10:30 AM	9-12	A1, Conv. Center	Advanced Inquiry Labs for AP Biology from Flinn Scientific (p. 37)
9:30-10:30 AM	6-C	A9, Conv. Center	Teaching STEM Using Agarose Gel Electrophoresis (p. 38)
9:30-10:30 AM	6-12	A10, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 38)
11:00 AM-12 Noon	6-12	A6, Conv. Center	Genetics: Crazy Traits and CPO's Link <sup>TM</sup> Learning Module (p. 40)
11:00 AM-12 Noon	K-12	A8, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 40)
11:00 AM-12 Noon	9-C	A9, Conv. Center	The Case of the Missing Records (p. 40)
11:00 AM-12 Noon	5-C	A13, Conv. Center	Constructing and Crossing Cell Membranes (p. 41)
11:00 AM-12:15 PM	9–C	A12, Conv. Center	Contagion! Track the Progress of Dangerous Viruses That Are Spreading
			Throughout the Country (p. 41)

#### Schedule at a Glance Life Science

12:30-1:30 PM	6-C	A5, Conv. Center	The Use of Storyboarding in Genetics: An NGSS Assessment Tool (p. 44)
12:30-1:30 PM	9-C	A9, Conv. Center	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 45)
12:30-1:30 PM	9-C	A13, Conv. Center	Of All the Nerve! (p. 46)
12:30-1:30 PM	6-C	D2, Conv. Center	The Classroom "WITHOUT" Walls (p. 42)
12:30-1:30 PM	5-10	F9, Conv. Center	Evolution for Middle School Life Science Students (p. 43)
2:00-2:30 PM	9-C	D2, Conv. Center	Technology-assisted Formative Assessment: Using 3-D Computer Simulations to
			Teach Cell Transport Concepts (p. 46)
2:00-3:00 PM	9-C	A9, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 49)
2:00-3:00 PM	6-12	A10, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 49)
2:00-3:00 PM	6-C	A13, Conv. Center	Genes, Schemes, and Molecular Machines (p. 50)
3:30-4:30 PM	6-12	A8, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 54)
3:30-4:30 PM	9-C	A9, Conv. Center	The Drunken Worms: Exploring Gene Function with C. elegans (p. 54)
3:30-4:30 PM	8-C	A16, Conv. Center	Human Anatomy Lab: Building from the Inside Out (p. 54)
3:30-4:30 PM	9-12	D2, Conv. Center	The 6th Mass Extinction: Student Inquiry-based Lessons on the Decline of
			Earth's Biodiversity (p. 53)
3:30-5:00 PM	9-C	A12, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3) (p. 55)
5:00-6:00 PM	9-C	D2, Conv. Center	Breaking Down the Stages of Cellular Respiration and Fermentation (p. 58)
5:00-6:00 PM	K-6	D6, Conv. Center	Using PBL to Integrate Our School Garden and Properties to Solve a Pest
			Problem (p. 58)

#### Friday

8:00–9:00 AM	6-12	A8, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 63)
8:00–9:00 AM	9–C	A10, Conv. Center	Use Spectrometry to Investigate Light Emission, Colored Solutions, Plant
		-,	Pigments, Solution Concentration, and Reaction Kinetics! (p. 63)
8:00–9:00 AM	6-C	A13, Conv. Center	Lights, Camera, Enzymes in Action! (p. 64)
8:00–9:00 AM	6-C	A17, Conv. Center	Are Humans Still Evolving? Genetic Evidence of Human Evolution (p. 64)
3:00–9:00 AM	9–C	D2, Conv. Center	STEM Behind Medicine: Curing Type 1 Diabetes (p. 62)
3:00–9:00 AM	7-12	F4, Conv. Center	20 in 20: The Next Chapter (p. 62)
9:30–10:30 AM	9–C	A10, Conv. Center	Adapting Traditional Biology Labs to Sensor Technology (p. 68)
9:30–10:30 AM	7–C	A14/15, Conv. Center	MiniOne <sup>TM</sup> Electrophoresis: Revolutionizing Biotechnology in Real Time (p. 6
9:30–10:30 AM	9-12	A17, Conv. Center	Free Resources for HHMI for the NGSS Disciplinary Core Idea on Evolution (p. 70
9:30–10:30 AM	6-8	D7, Conv. Center	Plant 2 Trees: A Real-World Adventure in Project Based Learning (p. 66)
11:00 AM-12 Noon	9-12	A7, Conv. Center	What Is a Species? (p. 73)
11:00 AM-12 Noon	K-12	A8, Conv. Center	Hands-On Science with Classroom Critters (p. 73)
1:00 AM-12 Noon	8-C	A9, Conv. Center	Biology with Vernier (p. 73)
1:00 AM-12 Noon	6-C	A13, Conv. Center	Let's Get Helical (p. 74)
11:00 AM-12 Noon	8-C	A16, Conv. Center	Creating to Understand: Come Build Your Muscles in Clay! (p. 74)
1:00 AM-12 Noon	9–C	A17, Conv. Center	BioInteractive Resources for Exploring DNA-Based Phylogenies (p. 75)
11:00 AM-12 Noon	7-12	D2, Conv. Center	Teaching Macromolecules Through the Lens of Nutrition (p. 70)
11:00 AM-12:15 PM	9–C	A12, Conv. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 75)
12:30-1:30 PM	9-12	A7, Conv. Center	Cell Differentiation and Gene Expression (p. 79)
12:30-1:30 PM	6-12	A11, Conv. Center	A Matter of Life and Death (p. 79)
12:30-1:30 PM	6-C	A13, Conv. Center	Double (Helix) Trouble: Maintaining Fidelity in DNA Replication (p. 80)
2:30-1:30 PM	9-12	A17, Conv. Center	The Origins of Humans and Recent Adaptations (p. 81)
2:30-1:30 PM	6-12	D2, Conv. Center	Edible Labs (p. 77)
2:00-3:00 PM	9-12	A7, Conv. Center	Energy Flow Through an Ecosystem (p. 81)
3:30-4:30 PM	9-12	A5, Conv. Center	Biomagnification in Ocean Food Webs: You Are What You Eat (p. 84)
3:30-4:30 PM	6-12	A8, Conv. Center	Carolina's Young Scientists Dissections with Carolina's Perfect Solution®
			Specimens (p. 85)
3:30-4:30 PM	7-12	D2, Conv. Center	Gene-Environment Interactions in the Nematode Caenorhabditis elegans (p. 84)
5:00-6:00 PM	6-12	A2, Conv. Center	NSTA Press® Session: Scientific Argumentation in Biology: 30 Classroom
			Activities (p. 88)
5:00-6:00 PM	9-12	A3, Conv. Center	Biomass: Taking It to Your Classroom (p. 87)

#### Schedule at a Glance Life Science

5:00-6:00 PM 5:00-6:00 PM	9–12 K–8	D2, Conv. Center D5, Conv. Center	Using Case Studies in Biology to Teach AP and IB Science Content (p. 89) Turning Lead to Gold—From Classroom Science to Expo-Winning Science
			Projects (p. 87)
5:00-6:00 PM	K-2	D6, Conv. Center	Schoolyard Quadrats (p. 89)
5:00-6:00 PM	9-12	D9/10, Conv. Center	Basic Polymer Science for the Science Classroom (p. 87)

#### Saturday

8:00–9:00 AM	9–12	A7, Conv. Center	Photosynthesis and Respiration—It's a Plant's Life! DuPont Agriscience Institute (p. 93)
8:00-9:00 AM	7-С	D1, Conv. Center	High Five: Five Ways to Make Teaching Biotechnology Easier and Faster (p. 92)
9:30-10:30 AM	9-12	A7, Conv. Center	Tree CSI: Dendrochronology DuPont Agriscience Institute (p. 95)
9:30-10:30 AM	9-12	D2, Conv. Center	From Food to Fuel—Recycling the Molecules of Life (p. 94)
12:30-1:00 PM	6-8	D7, Conv. Center	Wild Bighorn Sheep—On the Edge? (p. 95)
12:30-1:30 PM	9-12	A2, Conv. Center	NSTA Press® Session: Argument-Driven Inquiry in Biology and Chemistry:
			Lab Investigations for Grades 9–12 (p. 97)
12:30-1:30 PM	9-12	D2, Conv. Center	The Human Microbiome (p. 97)

#### **Physical Science**

#### Thursday

8:00–9:00 AM	6-12	A6, Conv. Center	CPO's Science Link <sup>TM</sup> Chemistry Models: Fun with Atom Building and the
		,	Periodic Table (p. 36)
8:00-9:00 AM	K-8	A8, Conv. Center	STEM: Investigating Touch-Screen Devices (p. 36)
8:00-9:00 AM	3-8	D5, Conv. Center	Inquiry in Action: Identify Liquids by Their Physical Properties (p. 34)
8:00-9:00 AM	7-12	D8, Conv. Center	College Ready? Lessons Learned from Math and Physics (p. 34)
8:00-9:00 AM	6-8	D9/10, Conv. Center	The Windmill and Turbine (p. 35)
9:30-10:30 AM	6-12	A6, Conv. Center	CPO's New Physics AP1 Link <sup>TM</sup> Module: Rotational Motion with the CPO
			Roller Coaster (p. 37)
11:00 AM-12 Noon	K-5	A11, Conv. Center	Engage Them Early: Engineering Experiences with FOSS (p. 40)
11:00 AM-12 Noon	5-C	A13, Conv. Center	Constructing and Crossing Cell Membranes (p. 41)
11:00 AM-12 Noon	P-12	A18, Conv. Center	Engineering Design Process in the STEM Classroom (p. 41)
12:30-1:30 PM	6-C	D2, Conv. Center	The Classroom "WITHOUT" Walls (p. 42)
12:30-1:30 PM	K-12	D8, Conv. Center	Spark Students' Curiosity with Chemistry! (p. 42)
12:30-1:30 PM	6-8	D9/10, Conv. Center	"Animate 'em Particles"—From Hands On to Animation, CCSS, and NGSS
			Through C-STEM (p. 44)
2:00-3:00 PM	9-12	A1, Conv. Center	Flinn Scientific Resources Prepare Students for AP Chemistry Success (p. 49)
2:00-3:00 PM	K-12	A4, Conv. Center	Identifying the Hidden Opportunities: Embedding CCSS ELA in Your Current
			Science Lessons (p. 47)
2:00-3:00 PM	6-8	A7, Conv. Center	Reclaiming the Metal (p. 49)
2:00-3:00 PM	9-12	A8, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry
			Teacher (p. 49)
2:00-3:00 PM	K-5	A11, Conv. Center	What to Look for in Science Learning Progressions: Experience FOSS Next
			Generation (p. 50)
2:00-3:00 PM	6-C	A13, Conv. Center	Genes, Schemes, and Molecular Machines (p. 50)
2:00-3:00 PM	7-10	D1, Conv. Center	"Seeing" the Invisible: Making the EMS Spectrum Concrete (p. 48)
3:30-4:30 PM	7-10	A5, Conv. Center	Scaffolding Student Success: Standards, Practices, and Assessment Through
			Collegial Collaborations (p. 51)
3:30-4:30 PM	6-12	A6, Conv. Center	CPO's New Physics AP1 Link $^{\rm TM}$ Module: Rotational Motion with the CPO
			Roller Coaster (p. 54)
3:30-4:30 PM	3-5	A10, Conv. Center	Crosscutting Concepts and Argumentation Using Magnets and
			Electromagnetism (p. 54)

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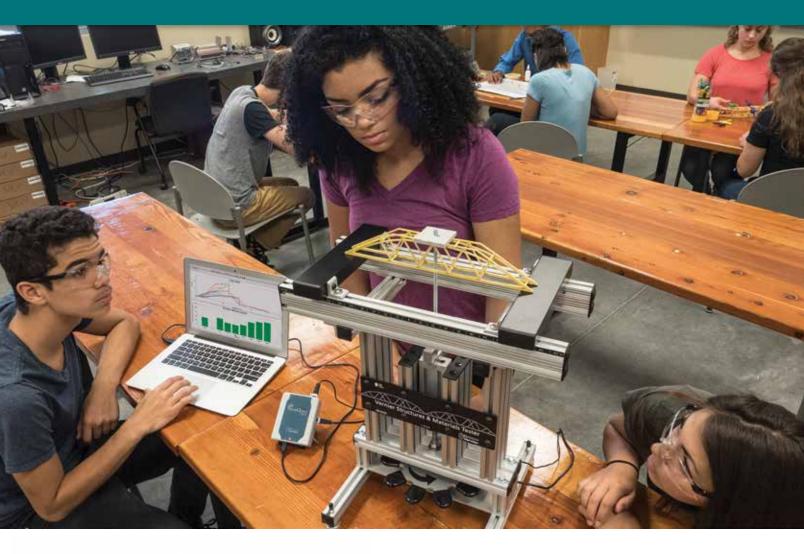
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