

NSTA AREA CONFERENCE *on* SCIENCE EDUCATION
in collaboration with CSTA



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DECEMBER 4-6, 2014



#NSTA14



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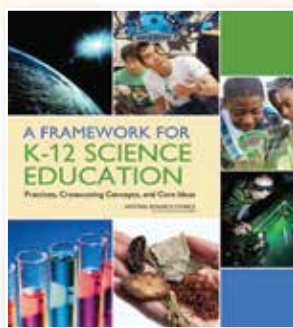
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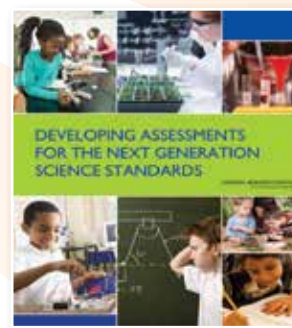
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NSTA 2014 Area Conference on Science Education in collaboration with CSTA

SCIENCE—Catch the Wave!

Long Beach, California • December 4–6, 2014



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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)

National Science Teachers Association

1840 Wilson Blvd.
Arlington, VA 22201-3000
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www.nsta.org

Welcome to Long Beach: SCIENCE—Catch the Wave!



Dean Gilbert, Jo Topps, and Laura Henriques

Welcome to the NSTA Long Beach Area Conference in collaboration with CSTA! We are thrilled to have you come to our town to Catch the Wave of science education. There is energy and momentum for science and STEM education in the state as well as the nation right now, so it is a perfect time for you to be with colleagues for the conference: SCIENCE—Catch the Wave!

The conference is organized around these three strands:

- #NGSS #Implementation
- Science: The Gateway to *Common Core State Standards*
- STEM Classrooms: Anytime/Anyplace/Anywhere

Long Beach Conference Committee

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

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The Conference Committee has worked hard to create a great professional learning experience for you. Don't miss our outstanding keynote speakers, Julie Scardina and Stephen Pruitt. There will be many opportunities to update your content via workshops, presentations, short courses, field trips, and more. Be sure to make time for networking and checking out the latest instructional materials in the Exhibit Hall.

Our sincere thanks to all the committee members who worked diligently to make this conference a reality. This is an opportune time for science education. Once again we have national attention and support for high-quality science and STEM instruction. Thank you for being with us as we all work to help students and the public better understand our content area.

2014 Long Beach Area Conference Committee Leaders
Laura Henriques, Dean Gilbert, and Jo Topps

President's Welcome

The Wave of Science Education Reform Is Coming!



Can you hear it roar? Can you feel its energy? The wave of science education reform is coming! The three dimensional learning of the NGSS and the intrinsically integrated approach of STEM learning will engulf everything we do. Ride it or be left behind!

That wave has brought science educators and those who support them here to Long Beach, California, this December. It has propelled them to work together toward a future that is both productive and sustainable. At this conference, representatives from all over the globe come together to share their expertise and resources. Unparalleled opportunities can be found in every session, meeting, and social event.

Are you well on your way to implementation of the *Next Generation Science Standards*? Meet up with others on the same path in sessions from the #NGSS #Implementation strand. You'll be propelled to further progress by their expertise. Is your learning community building bridges to integrate science and the *Common Core State Standards*? You'll find strategies that support greater synergy in these areas. Building a STEM curriculum? Remember that disciplinary integration can be found "any place, anywhere." In the rich Long Beach program, you can find expertise and advice from a wide variety of practitioners.

There are also special daylong programs in biology, chemistry (two levels), physics, and engineering. Here you can dive deeper to build a curriculum or link with those who have already tested resources to inform your work next year.

The "hash tags" in many of the conference strands aren't just punctuation. Technology built this temporary community of educators, and technology will maintain it. This Long Beach meeting won't end with the last session. The conference organizers have conceptualized a hybrid approach that includes online webinars and follow-up contacts that will enrich and inform those who begin here with their peers and continue their ride toward the future with the support of fellow professionals. It's a hybrid model of curriculum development that will propel all of us toward the future.

Most importantly, at this Long Beach conference organized by the National Science Teachers Association and its partner, the California Science Teachers Association, you'll find the energy to move forward. Take advantage of every opportunity to link up and network. Together we are an irresistible force.

Join us in energy and enthusiasm. Catch the wave!

Juliana Texley
2014–2015 NSTA President

Sponsors and Contributors to the Long Beach Conference

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

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American Society for Engineering Education
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National Association of Biology Teachers



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The environment is important to science educators. These programs are recyclable and were printed on recycled paper.

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. Brief conference previews allow us to be more focused in our conference content, since each preview is specific to a particular conference. As an added bonus, they are more environmentally friendly, as they dramatically reduce 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 Print Group, the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth Print Group works to reduce and recycle waste, use reduced or low-VOC chemicals, increase the recycled content of raw materials, and use soy- and/or vegetable-based inks. Walsworth Print Group has also obtained chain-of-custody certification for paper products to ensure they 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. •

Long Beach Convention & Entertainment Center's Green Practices

The Long Beach Convention & Entertainment Center staff is dedicated to environmental stewardship. Green practices include:

- The Exhibit Halls, Terrace Theater, and Center Theater all have "cool roofs," which act as insulation when outside temperatures are cool and retard heat during warm sunny days.
- In 2006, solar panels were installed on the roof of the Exhibit Halls and to date have produced enough energy to provide power to 21,500 homes for a single day.
- The LBCEC participates in a special program with Southern California Edison called the Demand Bidding Program in which the facility agrees to reduce energy consumption by a specific amount during certain high demand or shortage periods. During their 2007 participation of 22 days, they provided the equivalent of power to 2,840 homes for a single day as well as eliminated the equivalent of 6,460 days of pollution from an average passenger vehicle.
- Rubber wood chips, made out of recycled tires, have been used to complement the indoor/outdoor landscaping. The use of this product has resulted in the materials from approximately 600 automobile tires not being placed in a landfill.
- Over the course of a year, the LBCEC recycles 72 tons of cardboard and 55 gallons of machinery oil.
- Environmentally friendly housekeeping cleaning products are utilized, as well as a majority of the lighting fixtures around the facility have been retrofitted to accept high-efficiency bulbs.

"Go Green" at the Long Beach 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 double-sided 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.

Meeting Location and Times

The conference hotels are Hyatt Regency Long Beach (*headquarters*), Hilton Long Beach & Executive Meeting Center, Renaissance Long Beach Hotel, The Westin Long Beach, Courtyard Long Beach Downtown, The Queen Mary, Residence Inn, Holiday Inn, Rode-way Inn, The Varden Hotel, and Long Beach Marriott. Conference registration, exhibits, the NSTA Expo, the NSTA Science Store, exhibitor workshops, and many sessions will be located at the Long Beach Convention & Entertainment Center. Other sessions and events will be held at the Hyatt Regency Long Beach (*headquarters*), Hilton Long Beach & Executive Meeting Center, Renaissance Long Beach Hotel, and The Westin Long Beach. The conference will begin on Thursday, December 4, at 8:00 AM, and end on Saturday, December 6, at 12 Noon (*Note: Encore Sessions will be added until 4:30 PM on Saturday. See “Encore Sessions” icon on conference app.*)

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 (short courses, field trips, networking events, etc.).

The Registration Area, located in Hall B of the Convention Center, will be open during the following hours:

Wed., Dec. 3	5:00–7:00 PM
Thu., Dec. 4	7:00 AM–5:00 PM
Fri., Dec. 5	7:00 AM–5:00 PM
Sat., Dec. 6	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.



—Photo courtesy of the Long Beach Convention & Visitors Bureau

Purchasing Ticketed Events

The Long Beach Planning Committee has scheduled a variety of ticketed events. Each of these events requires a separate fee and ticket. You may purchase tickets for these events, space permitting, in the Registration Area. See the Conference Program section (starting on page 34) for details. Note that some events may have required advance registration.

Ground Transportation to/from Airport

Three airport options are available:

- **Long Beach Airport (LGB)** is located seven miles from the Long Beach Convention & Entertainment Center (LBCEC). Travel to the LBCEC takes approximately 16 minutes, and taxi fare is approximately \$25.
- **Los Angeles Airport (LAX)** is located 26 miles from LBCEC. Travel to the LBCEC takes approximately 30 minutes, and taxi fare is approximately \$72.
- **John Wayne, Orange County Airport (SNA)** is located 30 miles from LBCEC. Travel to the LBCEC takes approximately 36 minutes, and taxi fare is approximately \$95.

SuperShuttle Vans offer convenient transportation to downtown Long Beach from LAX, SNA, and LGB airports. For rates and to book your shuttle, go to bit.ly/1t1OCrF

or call 1-800-BLUE-VAN (800-258-3826). Be sure to use the group discount code **CL3EL**.

Getting Around Town

They say nobody walks in L.A., but that doesn't mean you need a car in Long Beach. Hop on the free Long Beach Transit Passport bus in downtown for a quick ride to all must-see Long Beach attractions (www.lbtransit.com). Also, for only \$1.25 per one-way fare, Long Beach Transit links you up with local destinations such as Belmont Shore, Alamitos Bay, and Cal State Long Beach. For a map of Long Beach area restaurants, go to bit.ly/1E5V7cT.

Conference Hotels

See page 10 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 877-352-6710 (toll-free) /801-505-4611 or e-mail at help@orchideventsolutions.com. After hours and on Saturday, call 866-748-9565.

Registration, Travel, and Hotels

Parking

Parking at the Long Beach Convention & Entertainment Center is \$10 per vehicle per entry to any of the LBCEC lots. Go to bit.ly/1pujpTQ to access a parking map.

Each of the conference hotels offers self-parking and/or valet parking. Consult your hotel for parking rates.

Airlines

NSTA has made arrangements with several major airlines to offer discounted fares to Long Beach conference attendees. Visit www.nsta.org/longbeachtravel for details.

Discounted Rental Cars

The toll-free number to contact an NSTA-designated 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."

CONFERENCE APP



Connect. Share. Engage.

Download our conference app for the NSTA Long Beach Conference on Science Education—a social experience you don't want to miss.

- Search sessions, exhibitors, and speakers to build a schedule of your favorites
- Access maps with pinpoint locations
- Take notes within app
- Bookmark an interesting speaker
- Share the play-by-play with social media channels
- Tweet a memorable quote from a session
- Access conference FAQs

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Please note that your conference app scheduler will not sync with the Personal Conference Scheduler found on NSTA's website.

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2:00 – 3:30 pm	Physics and Physical Science with Vernier

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Registration, Travel, and Hotels



1. Hyatt Regency Long Beach

(Headquarters Hotel)
200 S. Pine Ave.

2. The Westin Long Beach

333 E. Ocean Blvd.

3. Renaissance Long Beach Hotel

111 E. Ocean Blvd.

4. Hilton Long Beach & Executive Meeting Center

701 W. Ocean Blvd.

5. Courtyard Long Beach Downtown

500 E. First St.

6. The Queen Mary

1126 Queens Hwy.

7. Residence Inn

600 Queensway Dr.

8. Holiday Inn

1133 Atlantic Ave.

9. Rodeway Inn

50 Atlantic Ave.

10. The Varden Hotel

335 Pacific Ave.

11. Long Beach Marriott

4700 Airport Plaza Dr.

Schedule for the shuttle between the Convention Center and the Hilton Long Beach, The Queen Mary, Residence Inn, Holiday Inn, and Long Beach Marriott is on page 11.

Shuttle

Hours of Operation

(Please see flyers and signs for updates. Shuttle schedule may vary due to traffic and weather conditions.)

ROUTE A • runs every 15–20 minutes

Long Beach Convention & Entertainment Center

(Convention Center pick up/drop off is at the Pine Avenue and Bay Street entrance at the staircase.)

Hilton Long Beach & Executive Meeting Center • 701 W. Ocean Blvd.

(Hilton pick up/drop off is at the main entrance under the Porte de Cochere)

ROUTE B • Limited Service

Will only run Wed. evening; Thurs.–Fri., 6:30–10:30 AM and 3:30–6:30 PM; and Saturday 7:00 AM–6:00 PM

Long Beach Convention & Entertainment Center

(Convention Center pick up/drop off is at the Pine Avenue and Bay Street entrance at the staircase.)

The Queen Mary • 1126 Queens Hwy.

(Queen Mary pick up/drop off is at the main entrance.)

Residence Inn • 600 Queensway Dr.

(Residence Inn pick up/drop off is at the main entrance.)

ROUTE C • courtesy of Holiday Inn • Limited Service



Will only run Wed. evening; Thurs.–Fri., 6:30–10:30 AM and 3:30–6:30 PM; and Saturday 7:00 AM–6:00 PM

Long Beach Convention & Entertainment Center

(Convention Center pick up/drop off is at the Pine Avenue and Bay Street entrance at the staircase.)

Holiday Inn • 1133 Atlantic Ave.

(Holiday Inn pick up/drop off is at the front porte-cochere entrance.)

ROUTE D • runs every hour

Long Beach Convention & Entertainment Center

(Convention Center pick up/drop off is at the Pine Avenue and Bay Street entrance at the staircase.)

Long Beach Marriott • 4700 Airport Plaza Dr.

(Marriott pick up/drop off is at the main entrance.)

Routes	Date	Service Begins	Last Coach Conv. Center
Wednesday, December 3			
A, B, C, D	Evening Service	4:30 PM	7:30 PM
Thursday, December 4			
A, D	All-day Service	6:30 AM	6:30 PM
B, C	Limited Service	6:30 AM	10:30 AM (AM peak hours)
B, C	Limited Service	3:30 PM	6:30 PM (PM peak hours)
Friday, December 5			
A, D	All-day Service	6:30 AM	6:30 PM
B, C	Limited Service	6:30 AM	10:30 AM (AM peak hours)
B, C	Limited Service	3:30 PM	6:30 PM (PM peak hours)
Saturday, December 6			
A, B, C, D	All-day Service	7:00 AM	6:00 PM

***Special Note:** The Hyatt Regency Long Beach (headquarters hotel), Renaissance Long Beach Hotel, The Westin Long Beach, Rodeway Inn, The Varden Hotel, and Courtyard Long Beach Downtown are within walking distance of the Convention & Entertainment Center.



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 will be on-site. A complete list of exhibitors and contact information starts on page 138.

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 B, exhibits will be open for viewing during the following hours:

Thu., Dec. 4	11:00 AM–5:00 PM
Fri., Dec. 5	9:00 AM–5:00 PM
Sat., Dec. 6	9:00 AM–12 Noon

Did you know that NSTA offers Exclusive Exhibits Hall hours—Thursday 11:00 AM–12:30 PM; and Friday 11:00 AM–12:30 PM? During these hours, there are no sessions or workshops scheduled and it's a perfect time to visit the exhibits and discover all the prod-

ucts and services companies and organizations have to offer.

Lead Retrieval. NSTA exhibitors use electronic 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 156 for a complete listing of exhibitor workshops.

NSTA Expo

Stop by NSTA Expo (Booth #323) to redeem your free six-month membership and learn about NSTA's benefits, services, programs, and partners. See pages 148–149 for a complete list of NSTA services and programs.

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 sci-

ence 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-and-greet opportunities;
- Our latest books—*Uncovering Student Ideas in Physical Science, Volume 2*; *Using Physical Science Gadgets and Gizmos, Grades 3–5*; *Translating the NGSS for Classroom Instruction*; and *Hard-to-Teach Biology, Revised 2nd Edition*—and our new children's books from NSTAKids, 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; and
- Daily book and gear specials, product giveaways, and more.

Meet the Presidents and Board/Council

Be sure to stop by Thursday from 11:10 AM to 12:10 PM at the entrance to the Hall B for a 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!

Wi-Fi in Convention Center

Free Wi-Fi service is available in all common areas (hallways and lobby areas) of the Convention Center. It is not available in the exhibit halls. To access, go to the network "Instant Internet," then click on "Complimentary Wi-Fi" and follow instructions.

CSTA Booth

The California Science Teachers Association (CSTA) booth is located in the Exhibit Hall B of the Convention Center (Booth 326) and will be open during exhibit hours. As the advocate for quality science education in California for more than 50 years, the California Science Teachers Association offers networking, professional development, and representation to assure state policies and legislation support you in inspiring your students. Stop by to meet us, get resources for implementing NGSS, and to join CSTA. Tickets also will be available for purchase for the CSTA Night at the Aquarium of the Pacific, Thursday, 7:00–10:00 PM.

First Aid Services

The First Aid office is located at the bottom of the escalators next to Hall B of the Convention Center. For all emergencies, call 562-499-7515 or dial 515 from any house phones throughout the Conven-

tion Center, and your call will be directed to security who can dispatch the EMT.

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, hotels, and Exhibit Hall; Social Media plugins; Encore Sessions icon, 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 with the online Personal Scheduler.

Graduate Credit Opportunity

Long Beach conference attendees can earn one upper division credit in professional development through California State University Long Beach. Visit www.scienceteaching.org for complete details or contact Lisa Martin-Hansen at l.martinhansen@csulb.edu. The fee is \$125.

Note: To make the best of your conference experience and to assist you in preparations with your conference scheduling, we suggest that you select alternate events within your schedule to participate in during the conference due to the high attendance expectations. We expect the conference sessions to fill to the maximum capacity.

Special Offer for Long Beach Conference Registrants

NSTA and CSTA welcome you to Long Beach.

Enjoy discounted admission to the

Aquarium of the Pacific



www.aquariumofpacific.org

on the following days and times:

- Thursday, December 4, 2:00–6:00 PM
- Friday, December 5, 2:00–6:00 PM



Show your NSTA badge at the Admissions Desk for a discounted \$5 admission on Thursday and Friday of the conference between 2:00 and 6:00 PM, offered exclusively to registrants of the NSTA Long Beach Area Conference on Science Education, in collaboration with CSTA. There is no shortage of fun and interactive educational activities to create a sense of wonder, respect, and stewardship at the Aquarium of the Pacific. At the aquarium, we believe the best way to educate our visitors about imperative ocean conservation issues is to immerse them in fun. Visit www.aquariumofpacific.org to find out the latest happenings.





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 ribbon at the Presenters/Presiders booth in the Registration Area after you have registered for the conference and received your name badge.

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 now 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 Long Beach session evaluations online, December 3–19, 2014. 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 a NEW Kindle Fire HD 7" 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 January 5, 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 development 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 Evaluation

All conference attendees are invited to complete a conference evaluation form online at www.surveymonkey.com/s/BRQVWPS.

Saturday Encore Sessions

NSTA will be extending the conference hours on Saturday, December 6, to accommodate your session interests by repeating a few of the most popular sessions. Encore Sessions will be added until 4:30 PM. Please check the conference app during the conference for updates by clicking on the “Encore Sessions” icon at www.nsta.org/conferenceapp.

Saturday NSTA Information Desk

To accommodate your session interests by repeating a few of the most popular sessions, NSTA will staff an Information Desk in the Promenade 1 Lobby of the Convention Center until 3:00 PM on Saturday to answer your inquiries and provide conference assistance.

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, will be located in the following rooms:

- Show Mgmt. Storage B, Conv. Center
- Atlantic I, Hilton
- Pacific, Hyatt
- Sienna, Renaissance
- Barcelona, Westin

Business Services

The FedEx Office Print & Ship CenterSM located at 555 E. Ocean Blvd. #102, Long Beach offers printing, packing, shipping, copying, and office supplies. Hours are Monday–Friday, 7:00 AM–11:00 PM; and Saturday, 8:00 AM–9:00 PM; and Sunday, 9:00 AM–9:00 PM. For more information, call 562-495-5767 (local.fedex.com/ca/long-beach/office-0328).

The Hilton Long Beach hotel guests can use the business center located on the hotel’s lobby level. It offers complimentary use of computers and access to the internet.

At the Renaissance Long Beach Hotel, a self-service business center is located in the main lobby of the hotel, just down the hall toward the parking garage elevators. All services can be paid via credit card and include computer access, faxing, copying, and computer printing. The business center can be accessed 24 hours a day with room key.

The Westin Long Beach Business Services is located on the third floor (between escalators and elevators). Guest room key needed for access to the two computers available 24 hours a day.

Long Beach CVB Information Desk

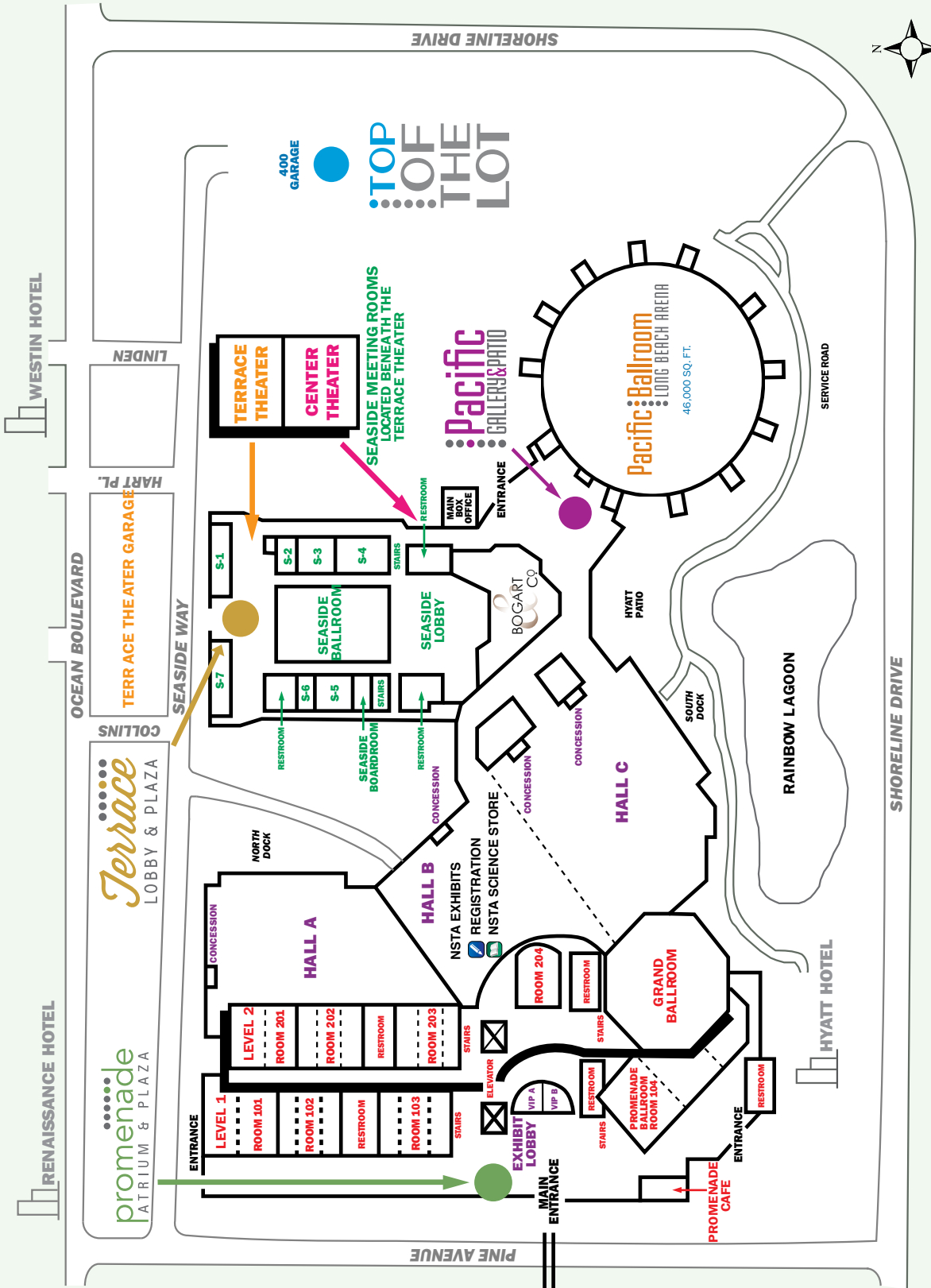
The Long Beach Convention and Visitors Bureau has an Information Desk located in the Promenade Lobby of the Convention Center. The desk is open as follows:

Wed., Dec. 3	5:00 –7:00 PM
Thu., Dec. 4	9:30 AM–5:00 PM
Fri., Dec. 5	9:30 AM–5:00 PM
Sat., Dec. 6	9:00 AM–12 Noon

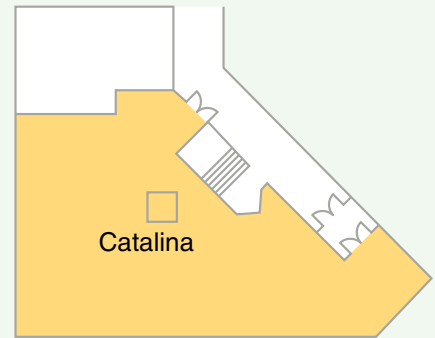
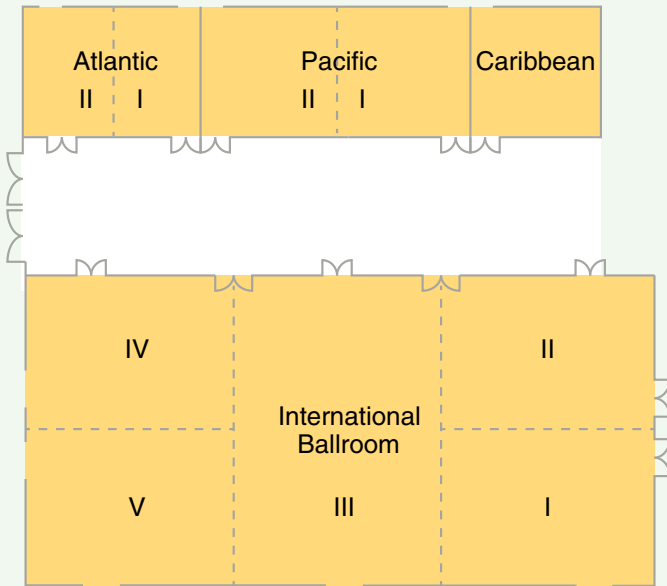
Information about Long Beach’s attractions and dining opportunities are available. The staff can also assist with dining reservations.



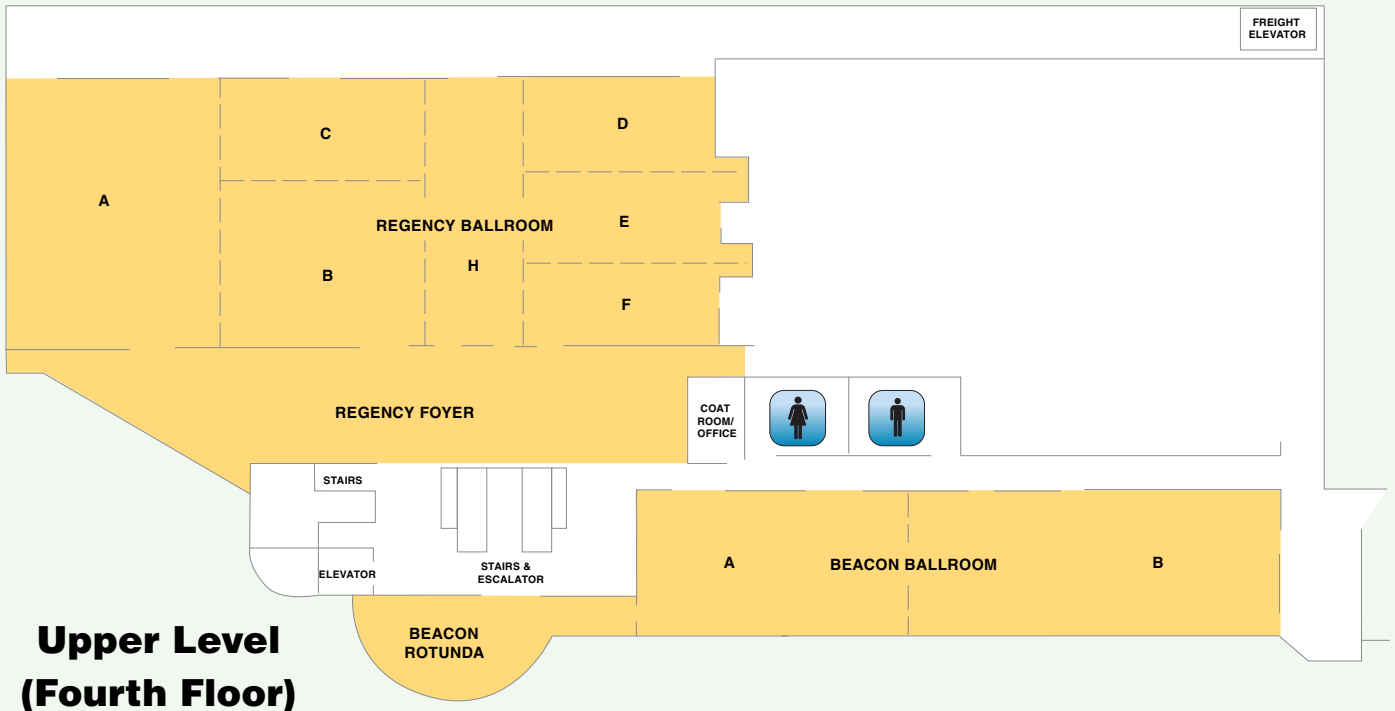
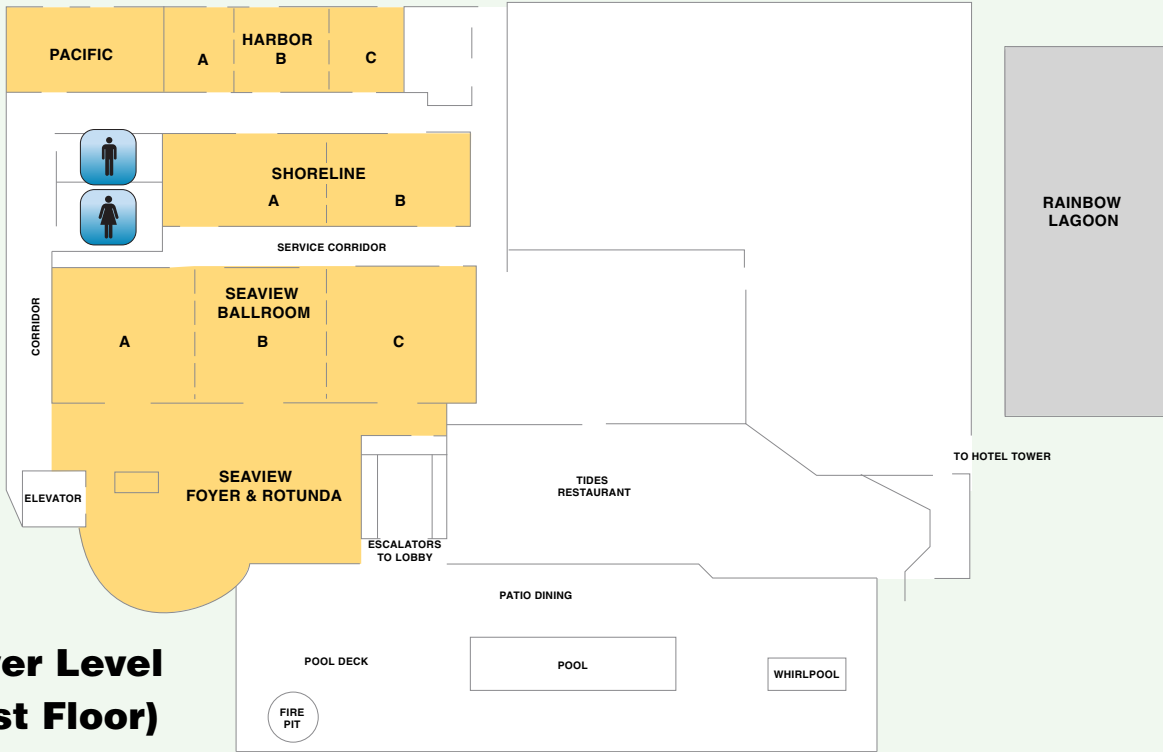
Long Beach Convention & Entertainment Center



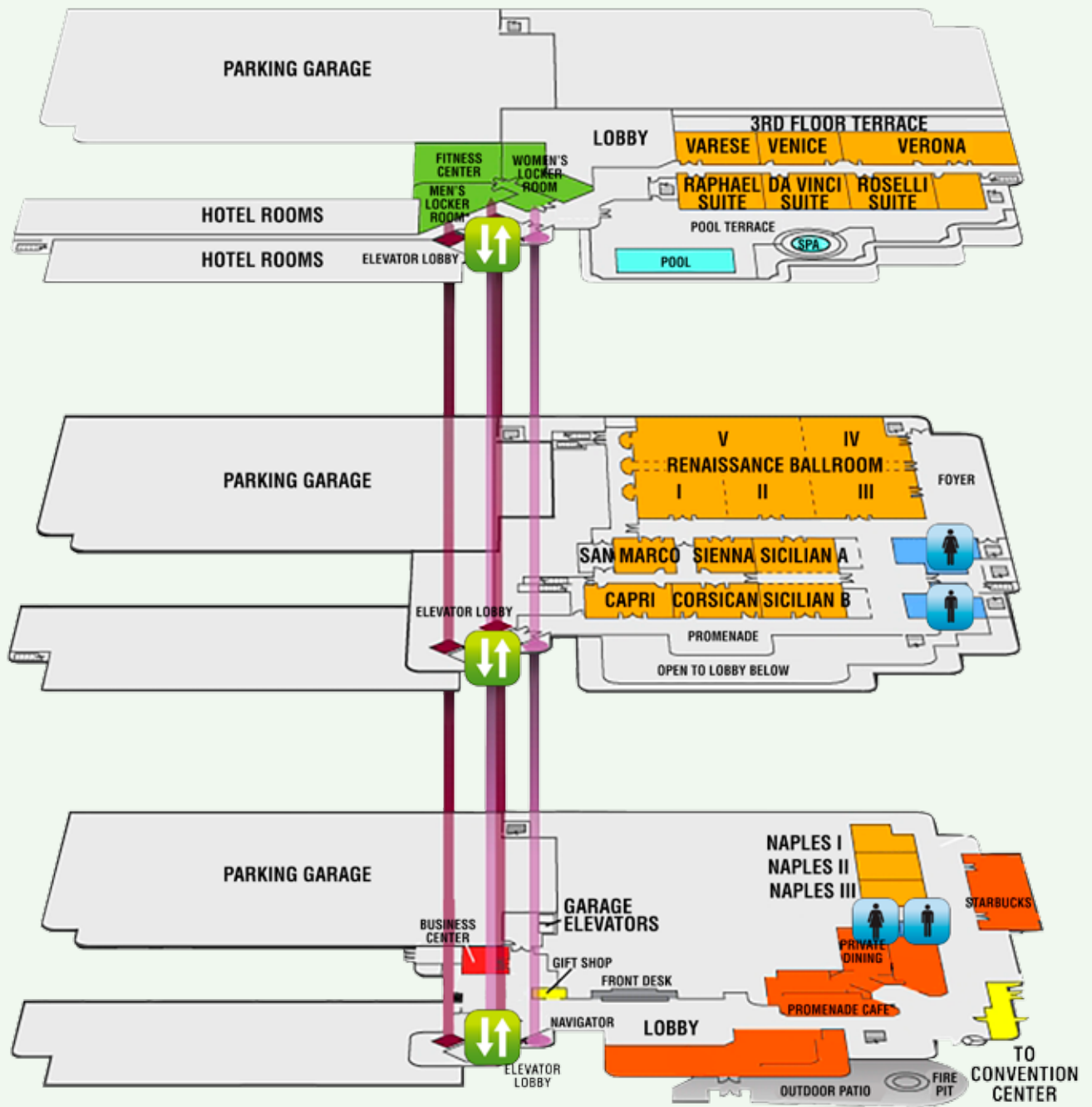
Hilton Long Beach & Executive Meeting Center



Hyatt Regency Long Beach

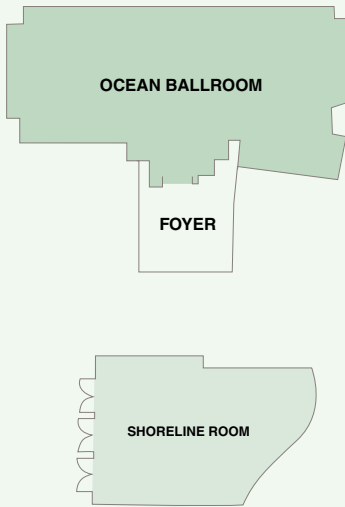


Renaissance Long Beach Hotel

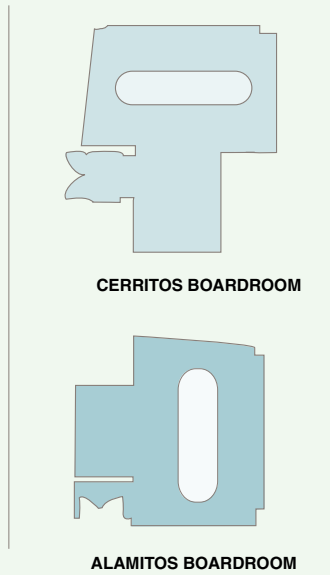


The Westin Long Beach

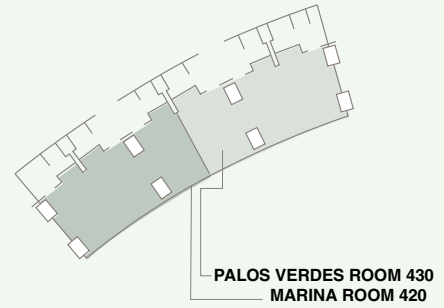
LOBBY LEVEL



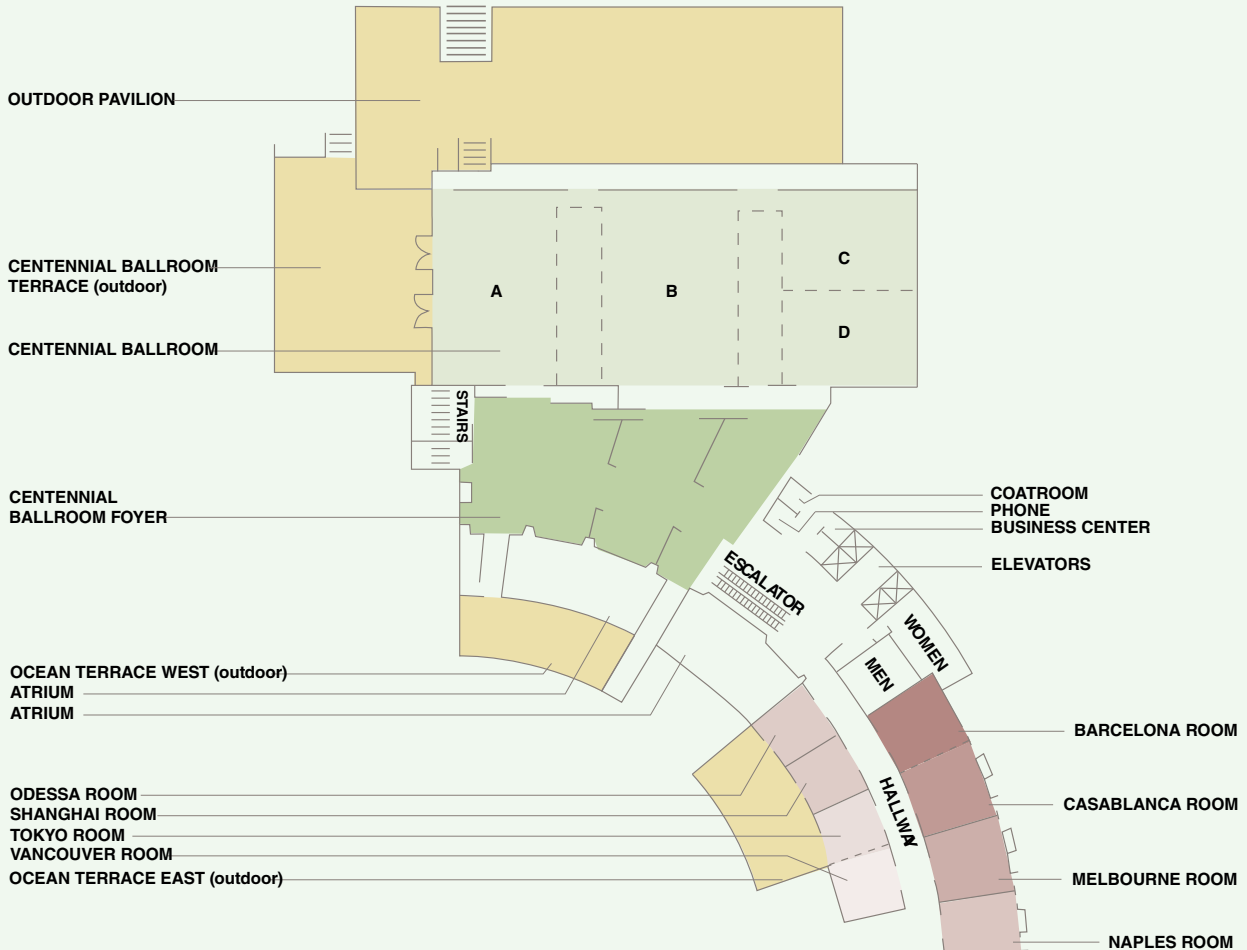
SECOND FLOOR



FOURTH FLOOR



THIRD FLOOR



HOW CAN I MOTIVATE MY STUDENTS TO LOVE SCIENCE?

TOSHIBA | NSTA

ExploraVision


The **Toshiba/NSTA ExploraVision** STEM competition inspires K–12 students to envision the technologies of the future. **ExploraVision** lets your students engage in hands-on learning, problem solving, critical thinking, and collaboration.

Great News! ExploraVision offers students the scientific and engineering learning experience central to the **Next Generation Science Standards**.

PRIZES! Up to **\$240,000*** in savings bonds + **Toshiba** products are awarded to winning students
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To celebrate ExploraVision's 23rd anniversary, the top 23 teachers who submit over 23 eligible online entries will receive a **Toshiba Tablet!**

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For more information and to sign up, please **scan the QR code** or visit **www.exploravision.org**



Through **Toshiba's** shared mission partnership with **NSTA**, the Toshiba/NSTA ExploraVision competition makes a vital contribution to the educational community.

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NSTA Mission Statement

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

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All cities are subject to change pending final negotiation.

National Conferences on Science Education

Chicago, Illinois
March 12–15, 2015

Nashville, Tennessee
March 31–April 3, 2016

Los Angeles, California
March 30–April 2, 2017

2015 STEM Forum & Expo

Minneapolis, Minnesota
May 20–23

Area Conferences on Science Education

2015 Area Conferences

Reno, Nevada—October 22–24
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



NSTA's 2015 CONFERENCES

to enthuse and stimulate our community of educators!

SHARE YOUR IDEAS!

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

2015 Area Conferences

Reno, NV	October 22–24
Philadelphia, PA.....	November 12–14
Kansas City, MO	December 3–5

2016 National Conference

Nashville, TN.....	March 31– April 3
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Proposal Deadline: 1/15/2015

Proposal Deadline: 4/15/2015

To submit a proposal, visit www.nsta.org/conferenceproposals

NSTA National Science Teachers Association



SAVE THE DATE

CHICAGO

MARCH 12-15, 2015

NSTA NATIONAL CONFERENCE ON SCIENCE EDUCATION



PROFESSIONAL DEVELOPMENT STRANDS

Natural Resources,
Natural
Partnerships

Teaching Every
Child by
Embracing
Diversity

The Science
of Design:
Structure and
Function

Student Learning—
How Do We Know
What They Know?

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

NSTA National
Science
Teachers
Association



Photo of Giant Octopus courtesy of Aquarium of the Pacific.
See Page 13 for special offer for conference registrants.

Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday, 8:00–9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! See page 46 for details.

Thursday, December 4

8:00–9:00 AM	First-Timer Conference Attendees' Orientation	46
	(Is This Your First NSTA Conference?)	
9:15–10:30 AM	General Session: Julie Scardina	52
11:00–11:05 AM	Ribbon Cutting Ceremony/Exhibits Opening	56
11:05 AM–5:00 PM	Exhibits (<i>Exclusive hours: 11:00 AM–12:30 PM</i>)	56
11:10 AM–12:10 PM	Meet the Presidents and Board/Council	56
3:15–4:30 PM	CSTA Featured Presentation/Annual Meeting: Stephen Pruitt. . .	72
7:00–10:00 PM	CSTA Night at the Aquarium of the Pacific (<i>Tickets Required</i>) . . .	84

Friday, December 5

8:00 AM–5:00 PM	Chemistry Day (For Grades 9–12)	32
8:00 AM–6:00 PM	Engineering Day	31
8:00 AM–6:00 PM	Middle School Chemistry Day	32
8:00 AM–6:00 PM	Physics Day	33
8:00 AM–6:00 PM	Biology Day	33
9:00 AM–5:00 PM	Exhibits (<i>Exclusive hours: 11:00 AM–12:30 PM</i>)	94
9:30–10:30 AM	Featured Presentation: Nancy Taylor.	94
12:30–1:30 PM	Featured Presentation: Arthur Beauchamp	104
3:30–4:30 PM	Featured Presentation: Myrna Lynn Perez Sheldon	117

Saturday, December 6

9:00 AM–12 Noon	Exhibits	130
9:30–10:30 AM	Featured Presentation: Tyrone Hayes	131

Win a round-trip Southwest travel scholarship to the **Chicago** conference.

Thanks to the generosity of **Southwest Airlines** we're giving away two Southwest Airline travel scholarships to the **NSTA Chicago National Conference on Science Education, March 12–15, 2015!**

The drawings will be held at **4:00 PM** on Dec. 4 and Dec. 5 during the conference. You must be present to win.

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

SOUTHWEST.COM

NSTA National Science Teachers Association



Students. STEM. Swift.

Reinvent your Classroom. Focus on Learning.

Rock out at our booth - **Booth 301.**



The Long Beach 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.

NGSS #NGSS #Implementation

The *Next Generation Science Standards* has three dimensions—disciplinary core ideas, science and engineering practices, and crosscutting concepts. The integration and application of rigorous content reflect how science and engineering is practiced in the real world. This strand will focus on implementing *NGSS* expectations at all grade levels. Strategies for developing grade/age-appropriate assessments that focus on student performance and complex thinking processes will also be featured.

CCSS Science: The Gateway to Common Core State Standards

In a standards-driven world, focusing on disciplines, in isolation, ignores the complexities and interrelated nature of the real world. In science, students use mathematical concepts and literacy skills to model and communicate their explanations of real-world phenomena. This strand will focus on strategies that support the implementation of the *Common Core State Standards* through scientific and engineering practices.



STEM Classrooms: Anytime/Anyplace/Anywhere

STEM engages all students in authentic learning experiences regardless of where those experiences occur. Students of all ages who need to apply science concepts to answer real-world questions will gain confidence in their science abilities and become better critical thinkers and problem solvers. Students with early and continuous experiences (preK–16, in school, after school, formal, informal, and Career Technical Education) tend to take more science classes and pursue STEM majors and careers at a rate higher than those who don't. Workshops in this strand will highlight successful programs, model practices, and demonstrate STEM-empowering strategies that teachers can apply to their own teaching plans.

#NGSS #Implementation

Thursday, December 4

8:00–9:00 AM

Exploration Questions: A Simple Way to Foster Student Engagement in the *NGSS* Practices of Science

12:30–1:30 PM

Collaborative Design of Fair Tests: Involving Students in Planning and Carrying Out Investigations

2:00–3:00 PM

Engineering Practices and the *NGSS*: Don't Be Scared

3:30–4:30 PM

Practices Made Perfect: Simple Activities to Teach Every *NGSS* Practice

5:00–6:00 PM

Tiny Science to Teach Big Ideas

Friday, December 5

8:00–9:00 AM

It's Evolutionary

8:30–11:30 AM

SC-3: Engineering is Elementary®: Putting the "T" and "E" in STEM
(Tickets required: \$35)

9:30–10:30 AM

Connect Science Content with the *NGSS* Crosscutting Concepts

12:30–1:30 PM

Developing Models to Make Student Thinking Visible and Revisable

2:00–6:00 PM

SC-4: What Does It Really Look Like? Explanation and Argumentation in the Middle School and High School Classroom
(Tickets required: \$25)

3:30–4:30 PM

Featured Presentation: Using the Past to Take Science Education into the Future
(Speaker: Myrna Lynn Perez Sheldon)

Saturday, December 6

8:00–9:00 AM

Supporting Students as They Engage in Argument from Evidence

9:30–10:00 AM

California's Science Standards: How Are We Doing?

10:00–10:30 AM

The Mighty Atom: Integrating Close Reading Strategy with the *CCSS* and the *NGSS*

11:00 AM–12 Noon

NGSS, Essential Questions, and Notebooking Practices

Science: The Gateway to *Common Core State Standards*

Thursday, December 4

8:00–9:00 AM

Scientific Explanations Using Claims, Evidence, and Reasoning: Connecting *CCSS* and *NGSS*

12:30–1:30 PM

Forensics Science: Using Math and Science to Solve Crimes

2:00–3:00 PM

Composing Science—Strategies for Writing to Learn in the Inquiry Classroom

3:30–4:30 PM

Science Seminars: How Argumentation Helps You Meet the *NGSS* and *CCSS* at the Same Time

5:00–6:00 PM

Earthquake! Integrating *CCSS* and *NGSS* Practices in the K–5 Science Classroom

Friday, December 5

9:30–10:30 AM

Finding the Hidden Opportunities: Identifying *CCSS ELA* in Your Science Lessons

12:30–1:30 PM

Featured Presentation: The Central Role of Dialogue in the Sense-making Classroom (Speaker: Arthur Beauchamp)

2:00–3:00 PM

Stop Teaching in Silos! Science Opens the Door to *Common Core*!

3:30–4:30 PM

Science Writing Task: Assessing Evidence-based Opinion Writing in Science

5:00–6:00 PM

Reading, Writing, and Seed Dispersal! Integrating *CCSS* and *NGSS*

Saturday, December 6

8:00–9:00 AM

Practicing Evidence-based Argumentation

8:30–11:30 AM

SC-6: Sinking and Floating: Teaching Students How Graphs Can Describe Relationships Between Phenomena (Tickets required: \$35)

9:30–10:30 AM

Get to the Point: Techniques for Downhill Writing

11:00 AM–12 Noon

How to Teach *Common Core* Writing Standards While Helping Students Learn Science

STEM Classrooms: Anytime/Anyplace/Anywhere

Thursday, December 4

8:00–9:00 AM

Dinner with a Scientist

12:30–1:30 PM

Students' Cloud Observations On-Line: A Worldwide STEM Classroom

2:00–3:00 PM

Water, Water, Everywhere—But What Will It Support?

2:00–5:00 PM

SC-2: How to Make STEM Learning Fun Through *NGSS* Science and Engineering Practices (Tickets required: \$40)

3:30–4:30 PM

Free Apps That Bring Real-World Science into the Classroom!

5:00–6:00 PM

Engage Students in Technology, Teach Forensic Science, and Encourage STEM Careers with CSI Web Adventures

Friday, December 5

8:00–9:00 AM

Stretch Your Legs for Science!

9:30–10:30 AM

Featured Presentation: STEM the New Normal! Really, When Did That Happen? (Speaker: Nancy Taylor)

12:30–1:30 PM

From STEM Role Models to STEM Mentors: High School Girls Benefit from Ongoing Relationships with Women in Industry

2:00–3:00 PM

Introduction to Aeronautics STEMinar

3:30–4:30 PM

Explore Our Solar System with Free NASA After-School Activity Guides

5:00–6:00 PM

Everyday Science for the Playground

Saturday, December 6

8:00–9:00 AM

Family STEM Explorations Created by Community Partnerships

9:30–10:30 AM

Teach and Enhance Graphing Skills Using NASA's Kepler Mission Data

11:00 AM–12 Noon

Engineering Encounters: Growing Confident Problem Solvers

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, December 4

- 8:00–9:00 AM *Picture-Perfect Science Lessons: Using Children’s Books to Guide Inquiry*
- 12:30–1:30 PM *Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12*
- 2:00–3:00 PM *Next Time You See...*
- 3:30–5:00 PM *Planning for Hard-to-Teach Biology Concepts Included in the NGSS*

Friday, December 5

- 8:00–9:00 AM *Uncovering Students’ Ideas in the STEM Disciplines*
- 9:30–10:30 AM *Bringing Outdoor Science In*
- 12:30–1:30 PM *Doing Good Science in Middle School*
- 2:00–3:00 PM *STEM and Art Is Smart!*
- 3:30–4:30 PM *Get the FACTs—136 Formative Assessment Classroom Techniques!*



Friday, cont.

- 5:00–6:00 PM *Uncovering Elementary Students Ideas in Science Through Talk and Argument*
- Scientific Argumentation in Biology: 30 Classroom Activities*

Saturday, December 6

- 11:00 AM–12 Noon *Citizen Science: Diverse Projects That Bring Biology to Life*

Meetings and Social Functions

Thursday, December 4

CSTA Night at the Aquarium of the Pacific (Tickets through CSTA)
Hosted by CSTA and the Aquarium of the Pacific; sponsored by Chevron
 Aquarium of the Pacific..... 7:00–10:00 PM

Friday, December 5

ASTE Far West-ASTE Business Meeting
 Shoreline A, Hyatt 12 Noon–1:00 PM

ASTE Northwest-ASTE Business Meeting
 Shoreline B, Hyatt 12 Noon–1:00 PM

NSTA Multicultural/Equity Division Reception/Keynote
 Beacon B, Hyatt6:00 –8:00 PM

CSTA Leadership Forum Meeting
 By Invitation Only
 Naples II, Renaissance..... 6:00–9:30 PM

Saturday, December 6

Shell Judging Panel Meeting
 By Invitation Only
 Centennial Salon C, Westin 8:00 AM–5:00 PM



Engineering Day at NSTA

Sponsored by the American Society for Engineering Education

Friday, December 5, 8:00 AM–6:00 PM
Centennial Salon C, Westin

The American Society for Engineering Education (ASEE) has put together a public/private partnership to develop ways of engaging elementary, middle school, and high school students and teachers in engineering. Participants will learn about innovative, hands-on, project-based engineering activities, courses, curriculum options, events, outreach programs, professional development, and competitions designed to increase engineering and technological literacy of all students; encourage more and more diverse students to pursue engineering careers; and enable teachers to learn about and

experience engineering. Presenters will share lessons learned and examples of inquiry and design activities that have been developed in partnership with K–12 science teachers for use in the classroom and in informal educational settings. The materials result from a collaboration of engineering educators and STEM professionals working with NASA, *Teachengineering.org*, Engineering is Elementary, and Colleges of Engineering across the nation who actively engage in K–12 engineering in collaboration with partner teachers and schools. All sessions will help teachers understand the new ETS Engineering Design portion of the *Next Generation Science Standards (NGSS)*.

8:00–9:00 AM	Introducing Engineering to Elementary School	2:00–3:00 PM	Engineering Girls—It Takes a Village: A Unique Two- to Four-Year Institutional Collaboration Serving the Homeless Population
9:30–10:30 AM	ASEE’s K–12 Outreach Program, eGFI: Engineering, Go For It! and TeachEngineering.org	3:30–4:30 PM	Using Communities of Practice to Engage Girls in STEM
12:30–1:30 PM	Engaging Elementary-aged Children and Parents in Engineering	5:00–6:00 PM	Effectively Modeling STEM Careers in Underserved K–12 Communities

NSTA’s 2015

STEM

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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, December 5, 8:00 AM–5:00 PM
International 4/5, Hilton*

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 Chemistry Day 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. This Day of Chemistry has been developed by the American Chemical Society (ACS) High School Chemistry Professional Development Leadership Group.

Friday, Dec. 5

8:00–10:00 AM	Energy in Chemistry: A Macroscopic View
12:30–2:30 PM	Energy in Chemistry: An Particulate View
3:00–5:00 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, December 5, 8:00 AM–6:00 PM
104C, 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 hands-on 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
12:30–1:30 PM	Density—A Molecular View
2:00–3:00 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

This form is for planning purposes only. Do NOT submit to NSTA.

NSTA 2014 Long Beach 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 Long Beach conference. Sessions/events such as exhibit hall visits may not be available for online evaluation. However, these events still qualify for professional development.

Beginning January 5, 2015, Long Beach transcripts can be accessed at the NSTA Learning Center (*learning center.nsta.org*) by logging on with your Long Beach Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Long Beach 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#** _____

Evaluate sessions by accessing the conference session browser: www.nsta.org/longbeachbrowser. You will need your badge number to evaluate sessions. See page 14 of the conference program for instructions. *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. **And don't forget, the more sessions you attend and evaluate, the more chances you have to win a Kindle Fire HD 7"!**

Sample Questions:

- I. I selected this session:
 - a. for immediate classroom use.
 - b. based on the reputation of the speaker.
 - c. to improve my personal pedagogical knowledge/skill.
 - d. to improve my science content knowledge.
2. The session met my needs.
3. The information presented was clear and well organized.
4. Safe practices were employed.
5. The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press® sessions).
6. The session should be repeated at another NSTA conference.

Sample Responses:

1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree

Wednesday, December 3 8:30 AM–4:30 PM

Start Time	End Time	Activity/Event Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Thursday, December 4 8:00 AM–6:00 PM

Start Time	End Time	Activity/Event Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

We're giving a Kindle Fire 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!

Physics Day at NSTA

*Sponsored by the American Association of Physics Teachers (AAPT)
and the Southern California Section of AAPT*



Friday, December 5, 8:00 AM–6:00 PM
Seaview Ballroom A, Hyatt

The American Association of Physics Teachers offers a full day of physics content. Physics Day consists of interactive hands-on workshops covering important physics topics for today's world. Each of these workshops 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 Long Beach is being organized by the Southern California Section of the American Association of Physics Teachers.

8:00–9:00 AM	Problem-Solving with Think-Alouds	2:30–3:00 PM	Physical Science Course for Elementary School
9:30–10:30 AM	Coming Soon to a Dwarf Planet in Your Solar System—NASA's Dawn Mission to the Asteroid Belt	3:30–4:00 PM	The Best Electricity and Magnetism Demos You Aren't Doing
12:30–1:00 PM	Physics in Literature	4:00–4:30 PM	Transformer Basics and How "Wall-Wart" Plugs Waste Energy
1:00–1:30 PM	Historical Origins of Physics Symbols	5:00–5:30 PM	Recycled Goods as Inspiration in Learning
2:00–2:30 PM	Social Homework	5:30–6:00 PM	High-Schoolers at UCLA's Plasma Lab

Biology Day at NSTA

Sponsored by the National Association of Biology Teachers



Friday, December 5, 8:00 AM–6:00 PM
Seaview Ballroom C, Hyatt

The National Association of Biology Teachers (NABT) is proud to present Biology Day. Join us for hands-on and informative sessions that include genetics for middle-level students, building conceptual story lines to help your students understand big ideas and core concepts, and a special "un-conference" to connect area

biology teachers with their local colleagues.

From free resources to expert tips, Biology Day provides relevant information and pedagogy for every biology teacher at every level. Enhance your teaching, engage your students, and enjoy NABT Biology Day in Long Beach!

8:00–9:00 AM	Do You See What I See?	12:30–4:30 PM	Make Your Class a Story Worth Telling: Conceptual Flow Graphics for NGSS Planning
9:30–10:30 AM	Meeting in the Middle: Adapting Resources for Your Middle School Student	5:00–6:00 PM	California Unconference for Biology Teachers

Picture-Perfect Science Preconference Workshop (C-1)

Tickets for this preconference workshop were available by preregistration only.



Karen Ansberry

Karen Ansberry (karen@pictureperfectscience.com) and **Emily Morgan** (emily@pictureperfectscience.com), Classroom Veterans and Award-winning Authors of *Picture-Perfect Science Lessons, Expanded 2nd Edition: Using Children's Books to Guide Inquiry, 3–6*; *More Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4*; and *Even More Picture-Perfect Science Lessons (K–5)*; and co-authors of *Teaching Science Through Trade Books*.



Emily Morgan

Level: Grades K–5

Date: Wednesday, December 3

Time: 8:30 AM–4:30 PM

Location: Beacon A, Hyatt

STEM education begins in elementary school, but it can be difficult for elementary teachers to fit science into the school day. *Picture-Perfect Science* integrates science and reading in a meaningful way, so you can teach



—Courtesy of Karen Ansberry and Emily Morgan

both subjects at once. In this full-day workshop, you will participate in model lessons that integrate science and reading, learn the benefits and cautions of using children's picture books in science, become familiar with the BSCS 5E model, and receive a bibliography of recommended science-related picture books. All attendees will also receive a copy of *Even More Picture-Perfect Science Lessons*, a \$39.95 value containing 15 classroom-ready lessons for grades K–5. Come to this Picture-Perfect Science Workshop and rejuvenate elementary science instruction in your school!

Continental breakfast is included in the ticket price.

Science Formative Assessment Preconference Workshop: Uncovering What K–12 Students Really Know and Think (C-2)

Tickets for this preconference workshop were available by preregistration only.



Page Keeley

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, and Author of 14 books, including the best-selling *Uncovering Student Ideas in Science* series and numerous journal articles.

Joyce Tugel (jtugel@mmsa.org), Maine Mathematics and Science Alliance, Augusta

Level: Grades K–12

Date: Wednesday, December 3

Time: 8:30 AM–4:30 PM

Location: Beacon B, Hyatt



Joyce B. Tugel

Research has shown that the effective use of formative assessment can significantly improve learning for all students. Learn how to use formative assessment to transform instruction while simultaneously supporting learning. During this daylong workshop, participants will be introduced to the use of formative assessment in science, learn about the types of misconceptions students have and ways to surface and address them, practice strategies for questioning and monitoring student learning during different stages in a cycle of instruction, learn how to develop their own assessments that probe students' thinking, and combine formative assessment classroom techniques (FACTs) with the eight science practices in the *Next Generation Science Standards*. Both classroom and teacher learning applications will be addressed. All participants will receive a copy of *Uncovering Student Ideas in Science, Vol. 4*, a \$31.95 value.

Continental breakfast is included in the ticket price.

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The White House Office of Science and Technology Policy.

Admission to NSTA short courses is by ticket only. Tickets, if still available, may be purchased at the Ticket Sales Counter in the NSTA Registration Area.

Ocean Plastic Pollution: Issues and Solutions (SC-1)

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

Level: Grades 6–8

Date: Thursday, December 4, 2:00–5:00 PM

Location: International 1, Hilton

Ticket Price: \$40

Enrich your middle school classroom with NGSS-based activities from the Monterey Bay Aquarium focusing on issues and solutions surrounding plastic pollution. Activities will highlight physical and chemical properties of plastics, including density and buoyancy. We will look not only at the impacts of prolific plastic use but also exploring solutions to plastic pollution, alternatives to single-use plastics, and empowering students to tackle environmental problems without experiencing ecofatigue. This short course includes strategies to encourage critical thinking about environmental issues, methods to help students examine their use of everyday resources, and ways to assist students in becoming more informed consumers and help them feel empowered to take initiative and action. Door prizes!

 **How to Make STEM Learning Fun Through NGSS Science and Engineering Practices (SC-2)**

Jerry D. Valadez (jvaladez@cvsamacademy.org), SAM Academy, Inc., Fresno, Calif.

Ana G. Lopez (anaglopez4@gmail.com), Central Valley Science Project, Sanger, Calif.

Lisa Ernst (lael21@aol.com), Alice Fong Yu Alternative School, San Francisco, Calif.

Level: Grades 3–11

Date: Thursday, December 4, 2:00–5:00 PM

Location: International 4, Hilton

Ticket Price: \$40

Explore how students and teachers become engaged with science and engineering practices in the Sanger Community Science Workshop, a free drop-in science workshop offered during out-of-school time. Participants become “makers” and develop a project vision, and then work to realize that vision using the engineering design process. Build simple to complex projects from recycled materials while learning how to effectively teach and model science and engineering practices

as well as integrate the NGSS with the CCSS. This short course can serve as a resource for those involved in K–12 STEM at the formal, informal, and after-school levels.

NGSS Engineering is Elementary®: Putting the “T” and “E” in STEM (SC-3)

Jody Sherriff (jskidmo@wested.org), K–12 Alliance/WestEd, Santa Ana, Calif.

Level: Grades 1–8

Date: Friday, December 5, 8:30–11:30 AM

Location: International 1, Hilton

Ticket Price: \$35

Engage in activities to understand technology and engineering, including the practices in the engineering design process. Through questioning, participants will discover that technology is the body of knowledge, systems, processes, and artifacts that result from engineering. In the “towers” activity, explore how engineering uses the engineering design process to produce solutions and technologies seeking solutions for societal problems and needs while aiming to produce the best solution given resources and constraints. Receive an overview of the Engineering is Elementary® curriculum and how it connects to the NGSS and CCSS. Take home an electronic version of activities to use in your classroom.

NGSS What Does It Really Look Like? Explanation and Argumentation in the Middle School and High School Classroom (SC-4)

Meredith Houle Vaughn (mhoule@mail.sdsu.edu) and Donna L. Ross (dross@mail.sdsu.edu), San Diego State University, San Diego, Calif.

Level: Grades 6–12

Date: Friday, December 5, 2:00–6:00 PM

Location: International 1, Hilton

Ticket Price: \$25

Explanation and argumentation are often used synonymously. In the NGSS science and engineering practices (SEP), students are expected to construct explanations of phenomena (SEP6) and engage in argumentation to reach agreements about explanations (SEP7). Both practices are grounded in the use of evidence. Co-led by SDSU science educators and Project Learn Noyce Master Teacher Fellows, we will work together in this short course to develop an understanding of the practices of explanation and argumentation. We will spend time

deconstructing these practices and analyze examples from the Teacher Fellows' classrooms, paying particular attention to the students' ideas about explanation and argumentation and the implications for teaching practice.

Combining the NGSS Practices and CCSS to Reach the Performance Expectations (SC-5)

Arthur Beauchamp (acbeauchamp@ucdavis.edu) and **Cindy Passmore** (cpassmore@ucdavis.edu), University of California, Davis

Rich Hedman (hedmanrd@csus.edu), MASE Center, Sacramento, Calif.

Level: Grades 6–12

Date: Saturday, December 6, 8:30–11:30 AM

Location: 103C, Convention Center

Ticket Price: \$63

Explore a lesson design method that employs “Using and Developing Models” combined with a Science Literacy Framework to meet the performance expectations of the NGSS. This short course will engage participants in lessons that show how the CCSS and the NGSS converge in the performance expectations and can be simultaneously addressed in instruction.

CCSS Sinking and Floating: Teaching Students How Graphs Can Describe Relationships Between Phenomena (SC-6)

Susan Gomez-Zwiep (susan.gomezzwiep@csulb.edu) and **David Harris** (dharris62@mac.com), WestEd/K–12 Alliance, Huntington Beach, Calif.

Level: Grades 6–10

Date: Saturday, December 6, 8:30–11:30 AM

Location: 201B, Convention Center

Ticket Price: \$35

Help your grades 6–10 students deeply understand how graphs describe scientific phenomena. This short course starts with an 5E (Engage, Explore, Explain, Elaborate, and Evaluate) activity applicable to multiple phenomena. Then participants will investigate how objects sink or float while changing the mass, volume, and size of objects. Focusing on relationships in bivariate data, we will cover how and why graphical representations are essential to describing and predicting the natural world. The concept of density underlies the explanation for a variety of natural phenomena such as weather patterns and plate tectonics.



Engineering is Elementary®: Putting the “T” and “E” in STEM (SC-3)—Photo courtesy of Engineering is Elementary®

Tickets for field trips may be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader at the Pine Avenue and Bay Street entrance of the Convention Center 15 minutes prior to departure.



F-1: Looking to the Future: Visiting the Natural History Museum of Los Angeles County and the Endeavour Space Shuttle

—Photo of Endeavour courtesy of the California Science Center

Journey into Space at the Columbia Memorial Space Center \$61

#T-1 **CANCELED** Thurs., Dec. 4 8:00 AM–1:15 PM

The Columbia Memorial Space Center is the only space science learning center in the Los Angeles area dedicated to hands-on robotics and boasts L.A.'s only Challenger Learning Center. We are also dedicated to preserving the history of aerospace engineering in Downey. During your visit, you will learn about Downey's place in the exploration of space flight, from the Apollo capsules to the Space Shuttle Orbiters. Two groups will switch between a two-hour simulation that takes place in a realistic mock-up of a spacecraft and mission control room and an exploration of the rest of the Space Center's interactive exhibits, including the popular Robotics Lab. Your visit to the Challenger Learning Center is not just a field trip—it's a unique hands-on learning experience, transforming you into a scientist, engineer, or researcher on a simulated space mission, complete with mission control and spacecraft. From the moment of liftoff to the completion of the mission, you become a critical member of one of eight mission teams. Participants will have the opportunity to become both mission controller and spacecraft astronaut. Crew members must solve real-life problems in math, science, and technology to successfully complete their mission to Mars. Each team is critical, and the success of the mission is dependent upon the work of all teams.

Up Close and Personal with Ocean Critters: Cabrillo Marine Aquarium \$42

#T-2 Thurs., Dec. 4 12 Noon–5:15 PM

Dive into marine science with an excursion to one of Southern California's finest marine education facilities, awarded the 2013 Top Honors Award for Education from the American Zoos and Aquariums Association! Located just steps from the ocean, Cabrillo Marine Aquarium, part of the City of Los Angeles Recre-

ation and Parks Department, is celebrating its 79th anniversary of marine science education. Join us and explore the Exploration Center, a hands-on learning lab where visitors use microscopes and travel through a worm's eye view of the mud flats. You will also have the opportunity to investigate our award-winning aquatic nursery and research lab. In the marine laboratory classroom, you will get a chance to touch live animals, examine them with microscopes, and even feed them! We'll also take advantage of an extreme low tide and visit the Cabrillo Beach tide pools adjacent to the aquarium. You will leave with information about student environmental stewardship through partnerships with the aquarium as well as educator resources. Don't forget to bring your camera.

Note: Wear pants and closed-toed walking/hiking shoes appropriate for tide-pooling and wet surfaces. Bring sunblock, sunglasses, a hat, and jacket. This field trip is for adults only.

The Science in Your Beer: Chemistry, Microbiology, and Sensory Analysis at Smog City Brewing Company \$73

#T-3 **SOLD OUT** Thurs., Dec. 4 12:30–5:10 PM

Ever wondered just how grain and water are transformed into an effervescent, alcoholic beverage? From prehistory to our own time, beer has evoked awe and fascination; it seems to have a life of its own. This one-of-a-kind workshop/tour/tasting will take you on a fascinating journey, explaining the underlying science and chemistry at every stage of the beer-making process. We will explore yeast microbiology, how to use a mash to study enzyme action, basic water chemistry, and an examination of esters and phenolics. We'll finish with a sensory analysis. Located in the city of Torrance, Smog City Brewing Company is a family-run craft brewery that prides itself on exceptionally well-made beers. Their award-winning brewers will help guide you through the science along with experts from Beachwood Brewing, Ballast Brewing, White Labs, and California State University, Long Beach. Your catered lunch of

build-your-own sandwiches bar along with three meat choices and sides is provided by Beachwood Brewing and BBQ—famous for their Southern-style barbecue and award-winning beers. Lunch, tour, hands-on labs, and tasting included in the price.

Note: Participants must be of legal drinking age. ID required.

Looking to the Future: Visiting the Natural History Museum of Los Angeles County and the Endeavour Space Shuttle \$44

#F-1 Fri., Dec. 5 8:00 AM–1:00 PM

Join us for this two-part field trip as we explore two science gems located in Southern California—the Natural History Museum of Los Angeles County, the largest natural and historical museum in the Western United States, and the California Science Center, home of the Space Shuttle *Endeavour* and the most attended museum in Southern California. At the Natural History Museum of Los Angeles County, get treated to a VIP walk through the museum’s newest interactive exhibits, including the Nature Lab. The Natural History Museum’s education staff will provide

exhibit-related curriculum that you can bring back to your classroom. You will also have the option of visiting one of three behind-the-scenes departments: Live Animal Care, the Marine Biodiversity Center, or the Vertebrate Paleontology Lab. Next stop at the California Science Center, view the Space Shuttle *Endeavour* up close and discover some of the science behind this amazing vehicle. In addition to interactive exhibits on *Endeavour*’s history, the Samuel Oschin Pavilion features images and dramatic video to introduce guests to *Endeavour*’s past missions and the crews who flew them.

Note: Please advise in advance of special needs for the disabled or hearing impaired.

Wet and Wild Adventures with the Southern California Marine Institute \$73

#F-2 Fri., Dec. 5 8:00 AM–1:00 PM

Come join us as we sample marine inhabitants of the Long Beach/L.A. Harbor from one of the Southern California Marine Institute’s oceanographic research vessels. You will perform hands-on analysis of inshore and offshore waters, such as examining differences in abiotic factors with a variety of oceanographic instruments; dredging for a sample of the benthic community; engaging in a grab-sample to catch mud-dwelling creatures; observing the results from a plankton tow with on-board microscopes to see the variety of zooplankton and phytoplankton available; and getting up close and personal with large fish and invertebrates caught in the otter trawl. Leave with a host of ideas and resources to conduct similar boat trips in your own region.

Note: Must wear slacks or shorts, close-toed shoes, and a jacket—best to dress in layers. Sunscreen, cameras, binoculars, and hats are a big plus! If you are prone to seasickness, bring medication. Please advise us in advance of special needs for the disabled or hearing impaired. Field trip is for adults only.

Slip-Sliding Away: A Palos Verdes Geology Tour \$53

#F-3 Fri., Dec. 5 12 Noon–5:00 PM

Discover the Palos Verdes Peninsula, a spectacularly beautiful and geologically unstable natural geological laboratory. Formed from sediments on the ocean floor, quiet volcanic eruptions, and tectonic uplift, Palos Verdes has it all: a history rich in fossils, volcanism, and topography formed from the instability of sliding land. We will do moderate hiking to explore the rocks, faulting, and mass wasting, which have given us rich fossil beds, marine terraces, a sea tunnel, tide pools, and the Portuguese Bend Landslide. Receive handouts and ideas for creating inquiry-based geology field trips in areas where you teach. Snacks and water provided.

Note: Some areas may be inaccessible to the physically disabled. Wear comfortable walking/hiking shoes.



F-2: Wet and Wild Adventures with the Southern California Marine Institute

—Photo courtesy of the Southern California Marine Institute

Conference Program • Affiliate Sessions

Association for Multicultural Science Education (AMSE)

President: Robert Ferguson

Thursday, December 4

8:00–9:00 AM	Creating and Implementing Effective Watershed Lessons: for All Students: Use of <i>Next Generation Science Standards</i> Appendix D and Case Studies	Naples I, Renaissance
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Friday, December 5

8:00–9:00 AM	The Promise of the NGSS and America's Forgotten Children	Beacon A, Hyatt
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Association for Science Teacher Education (ASTE)

President: Joanne Olson

Friday, December 5

9:30–10:30 AM	The Fish Weir Engineering Challenge: A Culturally Relevant Activity	Beacon B, Hyatt
12 Noon–1:00 PM	ASTE Far West–ASTE Business Meeting	Shoreline A, Hyatt
12 Noon–1:00 PM	ASTE Northwest–ASTE Business Meeting	Shoreline B, Hyatt
12:30–1:30 PM	Poster Session for Far West and Northwestern Regional Units	Beacon B, Hyatt

Council for Elementary Science International (CESI)

President: Julie Thomas

Thursday, December 4

8:00–9:00 AM	Integrating Science and Literacy: Proven Strategies Developed from Evidence-based Practices	Centennial Salon C, Westin
3:30–4:30 PM	Elementary Science Share-a-Thon	Grand Ballroom B, Conv. Center

Council of State Science Supervisors (CSSS)

President: Juan-Carlos Aguilar

Thursday, December 4

12:30–1:30 PM	Mastering the Science Practices and the CCSS: Using Hands-On Performance Assessment with K–5 Students	Naples I, Renaissance
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National Association for Research in Science Teaching (NARST)

President: Valarie Akerson

Thursday, December 4

2:00–3:00 PM	Strategies for Being a Great Mentor—Moving Beyond Classroom Management to Focus on Student Learning	Pacific 1, Hilton
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Friday, December 5

8:00–9:00 AM	Efficacy of Two Types of Multiple-Choice Items to Diagnose Student Understanding in the Classroom	Pacific 1, Hilton
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National Middle Level Science Teachers Association (NMLSTA)

President: Todd Hoover

Thursday, December 4

2:00–3:00 PM	Using Problem-Based Learning to Address CCSS and NGSS	Naples I, Renaissance
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Friday, December 5

8:00–9:00 AM	Making Global Connections on a Budget for Middle School STEM	Naples I, Renaissance
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National Science Education Leadership Association (NSELA)

President: Craig Gabler

Friday, December 5

9:30–10:30 AM	Tools for Science Leaders, Part 1	Beacon A, Hyatt
2:00–3:00 PM	Tools for Science Leaders, Part 2	Beacon A, Hyatt

Society for College Science Teachers

President: Nancy L. Elwess

Friday, December 5

2:00–3:00 PM	Using Bean Beetles to Encourage Inquiry and Critical Thinking	Pacific 1, Hilton
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NSTA National
Science
Teachers
Association

8:30 AM–3:30 PM Preconference Workshops

Picture-Perfect Science Preconference Workshop (C-1)

(Grades K–5)

Beacon A, Hyatt

By Preregistration Only

Karen Ansberry (karen@pictureperfectscience.com), Mason (Ohio) City Schools

Emily Morgan (@EmilyMorganNTYS; emily@pictureperfect-science.com), Picture-Perfect Science, West Chester, Ohio

For description, see page 34.

Science Formative Assessment Workshop: Uncovering What K–12 Students Really Know and Think (C-2)

(Grades K–12)

Beacon B, Hyatt

By Preregistration Only

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, Fort Myers, Fla.

Joyce Tugel (jtugel@mmsa.org), Maine Mathematics and Science Alliance, Augusta

For description, see page 34.

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 162, 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 Long Beach 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 28.

NGSS #NGSS #Implementation

CCSS Science: The Gateway to Common Core State Standards



STEM Classrooms: Anytime/Anyplace/Anywhere

The following icon will be used throughout this program.



NSTA Press sessions



—Photo courtesy of Southern California Marine Institute

Students examine a grab-sample of mud-dwelling creatures caught onboard a Southern California Marine Institute's oceanographic research vessel. See page 39 for field trip: F-2: Wet and Wild Adventures with the Southern California Marine Institute.

8:00–8:30 AM Presentations

Incorporating Complex Text into the Science Classroom
(Grades 9–12) *International 1, Hilton*

Science Focus: GEN, NGSS

Sabina Giakoumis (*sabina_howard@hotmail.com*) and **Beverly Berekian** (*berekian_b@auhsd.us*), Magnolia High School, Anaheim, Calif.

Join us as we review three instructional strategies: reading and writing processes, student-to-peer communication, and argumentation. Promote inquiry among your high school students using references, explanation, field guides, biographies, and journal articles.

Lessons Learned in Lesson Study

(General)

Harbor C, Hyatt

Science Focus: GEN, SEP8

Tom Lau (*@hollandtlau*; *halfclueless@yahoo.com*), **William Nelson** (*wtnamd@mac.com*), and **Adriana Ghomeshi** (*aghomeshi040@bpusd.net*), Holland Middle School, Baldwin Park, Calif.

Robert De Groot (*degroot@usc.edu*), USC Dana and David Dornsife College of Letters, Arts and Sciences, Los Angeles, Calif.

An educational panel will discuss the successes and lessons learned through a data-driven lesson study model focusing on “students conducting careful investigations.”

8:00–9:00 AM Presentations

Experiences in Writing and Implementing a District-wide Common Core Chemistry Unit

(Grades 7–12)

International 4, Hilton

Science Focus: PS

Sandra Hightower (*sandra.hightower@sausd.us*), Century High School, Santa Ana, Calif.

Lynn Chuang (*lynn.chuang@sausd.us*), Godinez Fundamental High School, Santa Ana, Calif.

Join teachers from the *Common Core* Curriculum committee for Santa Ana Unified School District as they share experiences writing a three-week chemistry unit on NGSS standard HS-PS1-3 (Matter and Its interactions), training all the teachers in the district on the teaching strategies contained in the unit, and the lessons learned.

ecosystems. Join me as I highlight a variety of free NOAA resources, including demos, labs, activities, and multimedia.



Dinner with a Scientist

(General)

Regency Ballroom B, Hyatt

Science Focus: GEN, INF, SEP

Caleb Cheung (*caleb.cheung@ousd.k12.ca.us*), Oakland (Calif.) Unified School District

Plan an amazing Dinner with a Scientist event where students engage in science activities and great conversations with local scientists—includes detailed notes and variations.

NASA: The Latest SOFIA Science

(Grades 6–College)

Pacific 1, Hilton

Science Focus: ESS1.A, ESS1.B, PS4.B, SEP3, SEP7

Dana Backman (*dbackman@sofia.usra.edu*), SOFIA Outreach, Mountain View, Calif.

Expand your students’ understanding of the evolution of the universe. Join me for the latest findings from NASA’s airborne observatory—images and spectroscopy of the galactic center and star-forming regions. Take home free lessons and resources.

2016 Revision of the Science Framework for California’s Public Schools: K–12

(General)

Regency Ballroom F, Hyatt

Science Focus: GEN, NGSS

Bryan Boyd (*bboyd@cde.ca.gov*), California Dept. of Education, Sacramento

Maria Simani (*maria.simani@ucr.edu*), California Science Project, Riverside

Kirk Brown (*@jkirkbrown*; *kbrown@sjcoe.net*), San Joaquin County Office of Education, Stockton, Calif.

This session will focus on the development of the *Science Framework for California Public Schools: Kindergarten Through Grade Twelve*. This framework marks a major shift in science education and will provide guidance to teachers, administrators, and other science stakeholders to implement *California’s Next Generation Science Standards*. The session will also engage participants in a discussion about various aspects of the new framework related to curriculum, instruction, assessment, professional learning, and universal access. Participants will learn about how the framework is progressing, as well as how they can participate in the framework development process.

Engage Your Students with NOAA’s Ocean Acidification and Coral Reef Resources

(Grades K–12)

Beacon A, Hyatt

Science Focus: ESS, LS, CCC2, CCC4

June Teisan, Einstein Fellow, NOAA, Washington, D.C.
Learn about ocean acidification through the context of coral

Using NSTA Resources for Professional Development
(General) *Seaview Ballroom A, Hyatt*

Science Focus: GEN, NGSS

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

Responsible for professional learning for science teachers? Discover which NSTA books, authors, and web resources will help you with the NGSS, CCSS, and science literacy.

Taking the Voice of the STEM Educator to Washington
(Grades K–12) *Seaview Ballroom B, Hyatt*

Science Focus: GEN

Anthonette Pena, Triangle Coalition for STEM Education, Arlington, Va.

Too often, the voice of the classroom teacher is absent from national conversations around education policy. A team of STEM educators will share how they are influencing national initiatives, federal programs, and education policies this school year while serving as Albert Einstein Distinguished Educator Fellows in Washington, D.C. Fellows serve at federal agencies, including DOE, NASA, NOAA, NSF, and in congressional offices.

Road Map to Stoichiometry

(Grades 8–College)

Shoreline B, Hyatt

Science Focus: GEN, INF, NGSS

Brian Miller (@smarterteacher; smarterteacher@gmail.com) and **Anthony Fernandes** (afernandes@lasallehs.org), La Salle High School, Pasadena, Calif.

Simplify the concepts of stoichiometry by using a “Stoichiometry Road Map” to encourage critical thinking and collaboration, while increasing opportunities for differentiation and informal assessment. Connections to NGSS explored.

Evaluate Your Sessions Online!

This year, we’re giving away a Kindle Fire HD 7" 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 page 14 for details.)



Next Gen in the Dirt: 10,000 Sunflowers Garden Project

(Grades 6–8)

Verona, Renaissance

Science Focus: INF, ESS2.C, ESS2.D, ESS3.A, ESS3.C, ETS1.A, ETS1.B, ETS2.B, LS1, LS2.A, LS2.B, LS2.C, LS3, CCC1, CCC2, CCC5, CCC6, SEP1, SEP4, SEP5, SEP6, SEP8

Roger Gray (gray.roger@pusd.us), Eliot Middle School, Altadena, Calif.

Whether you have a garden or want a reason to have a garden, there’s nothing like science in the dirt. Provide roots for Earth and life science learning via sunflower seeds and cover NGSS performance-based assessments with a dose of CCSS to boot.

First-Timer Conference Attendees Orientation: Is This Your First NSTA Conference?

(General)

Centennial Salon B, Westin

Science Focus: GEN

NSTA Board and Council

Feeling overwhelmed by all there is to see and do at an NSTA conference? Join us for an interactive walk through the conference program.

8:00–9:00 AM Hands-On Workshops

NSTA Press® Session: *Picture-Perfect Science Lessons: Using Children’s Books to Guide Inquiry*

(Grades K–5) 204, Convention Center

Science Focus: GEN, SEP8

Emily Morgan (@EmilyMorganNTYS; emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio

Karen Ansberry (karen@pictureperfectscience.com), Mason (Ohio) City Schools

Join NSTA Press authors Emily Morgan and Karen Ansberry as they share how to use science-related picture books to integrate the NGSS and CCSS.

Revealing Student Thinking: Teacher Tools for Assessing Student Understanding in the NGSS Classroom

(Grades 6–12) International 2, Hilton

Science Focus: GEN, NGSS

Sara Dozier (sdozier@acoe.org), Integrated Middle School Science Partnership, Hayward, Calif.

Dawn O’Connor (dawno@acoe.org), Alameda County Office of Education, Hayward, Calif.

Learn how to measure student progress toward multi-dimensional mastery of the NGSS, starting where your students are now. Leave with sample assessments and tools to create your own.



Need help navigating?

So this is your first NSTA/CSTA conference and you want to make the most of the experience. Join other first-time attendees for a walk through the conference program, presented by the NSTA Board and Council.

Learn all the opportunities that the conference can offer! Door prizes!

- **First-Timer Attendee Session • Thursday, December 4, 8:00–9:00 AM Centennial Salon B, The Westin Long Beach**



Citizen Science: Project Based Learning at the Museum and in the Classroom

(Grades 7–12) *International 3, Hilton*

Science Focus: ESS3.C, LS4, INF

Richard Smart (*rsmart@nhm.org*), **Dean Pentcheff** (*dpentche@nhm.org*), and **Molly Porter** (*mollyporter@nhm.org*), Natural History Museum of Los Angeles County, Los Angeles, Calif.

Scientists and educators from the Natural History Museum of Los Angeles County will discuss Citizen Science projects your students can take part in. Free classroom resources!

NASA in Your Pocket: Mobile Apps to Increase STEM Engagement

(Grades K–12) *Harbor A/B, Hyatt*

Science Focus: ESS, ETS, CCC1, CCC2, SEP1, SEP4, SEP7, SEP8

Lyle Tavernier (*@lyletav*; *lyle.tavernier@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Chat with NASA specialists through video conferencing apps! Use augmented reality, scientific data/visualizations, 3-D models, and videos available through NASA mobile apps!

NGSS Exploration Questions: A Simple Way to Foster Student Engagement in the NGSS Practices of Science

(Grades 5–11) *Regency Ballroom A, Hyatt*

Science Focus: PS1.A, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8

Katherine Nielsen (*katherine.nielsen@ucsf.edu*) and **Jean MacCormack** (*jean.maccormack@ucsf.edu*), Science & Health Education Partnership, San Francisco, Calif.

Engage your students in the NGSS practices of science using simple, easy-to-implement student-designed experiments that develop conceptual understanding of basic physical science concepts. We'll cover "exploration questions," student-driven investigations that don't require a lot of time or materials.

CCSS Scientific Explanations Using Claims, Evidence, and Reasoning: Connecting CCSS and NGSS

(Grades K–12) *Regency Ballroom C, Hyatt*

Science Focus: GEN, SEP6, SEP8

John Edward Estoesta (*jee4761@lausd.net*), **Kristi Hayes** (*kah8699@lausd.net*), **Macky Lasmarias** (*mackylasmarias@gmail.com*), and **Yanira Vera**, Henry T. Gage Middle School, Huntington Park, Calif.

Joele Hodgson (*msgardener@gmail.com*), Mark Twain Middle School, Los Angeles, Calif.

Join us as we share with fellow educators our findings through action research and lesson study treatments on how

to use the Claims, Evidence, and Reasoning graphic organizer to increase student reasoning and writing skills.

Bionic Hand Engineering Using CCSS and NGSS

(Grades 5–12) *Regency Ballroom D, Hyatt*

Science Focus: ETS, SEP

Jan Lenon (*jan.lenon@sausd.us*), Villa Fundamental Intermediate School, Santa Ana, Calif.

Lizette Cabrera, Mendez Fundamental Intermediate School, Santa Ana, Calif.

You don't need anything close to \$6 million dollars. Join us and build your own low-cost "Bionic Hand" from an exemplar CCSS unit of study that supports the NGSS emphasizing engineering design, creativity, and collaboration.

Sky Events in 2015

(Grades 3–College) *Regency Ballroom E, Hyatt*

Science Focus: ESS, INF

Robert Victor (*rvictormi@earthlink.net*), Abrams Planetarium, Michigan State University, East Lansing

Add celestial bodies to your lesson plan. Details and related activities for students will be provided on the many beautiful close gatherings of the Moon and planets in 2015, as well as two lunar eclipses visible from California. Leave with an observing guide and desktop activities.

The Far Side of Science 2014

(General) *Seaview Ballroom C, Hyatt*

Science Focus: GEN

David Hanley (*davidrealdave@mac.com*), Buena Vista Museum of Natural History & Science, Bakersfield, Calif.

Integrating all sciences and generating high interest, join me for discrepant events and weird science demos for use in your classroom. Take home a DVD.

Supporting Literacy in Science Education

(Grades 4–12) *Shoreline A, Hyatt*

Science Focus: ESS, ETS, LS, PS, SEP1, SEP2, SEP6, SEP7, SEP8

Jonathan Osborne (*osbornej@stanford.edu*), Stanford Graduate School of Education, Stanford, Calif.

Brian Donovan (*briand79@stanford.edu*), Stanford University, Stanford, Calif.

Science is about ideas. Talking, reading, and writing science are used to communicate those ideas. How can students be supported to develop fluency with the language of science?

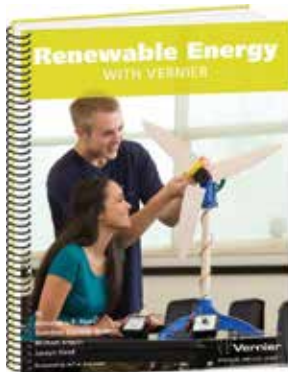
Data Collection Meets Renewable Energy

Vernier provides the ideal solution for teaching students about renewable energy.

KidWind Advanced Wind Experiment Kit

Ideal for grades 7–12, this kit allows students to discover advanced wind turbine technology concepts. Students can test different blade designs, gear ratios, generators, and devices to measure electrical and weightlifting power. All they need is their own wind source, basic tools, and imagination!

www.vernier.com/kw-awx



Renewable Energy with Vernier Lab Book

Written for and aligned to NGSS, this lab book contains a wide range of high school level experiments that address objectives in integrated sciences, physical science, physics, and environmental science. The lab book features 26 experiments in wind and solar energy and contains a combination of explorations, traditional experiments, inquiry investigations, engineering projects, and more.

www.vernier.com/rev



Vernier Energy Sensor

Looking for an easy way for students to quantify voltage, current, power, and energy output? Look no further! When connected to a source and a load, the sensor measures both the potential and current from a renewable energy system. Students can then use data collection and analysis software to calculate the power and energy output. www.vernier.com/ves-bta

Vernier Variable Load

The Vernier Variable Load provides a perfect complement to the Vernier Energy Sensor, allowing students to test a range of resistive loads for wind turbine or solar panel projects. Students can adjust the potentiometer to provide resistances between 6 and 255 Ω to determine the optimal load on a system.

www.vernier.com/ves-vl



Deep Science Learning with Sims

(Grades 5–9)

Capri, Renaissance

Science Focus: LS1.A, LS1.C, PS1.A, PS3.D, CCC2, CCC4, CCC5, SEP2, SEP3, SEP7

Carissa Romano (cromano@berkeley.edu), **Rebecca Abbott** (rebabbott@berkeley.edu), and **Traci Wierman**, The Lawrence Hall of Science, University of California, Berkeley

Incorporate interactive simulations effectively with hands-on investigations and argumentation into your middle school classroom. Learn how to design learning experiences that integrate digital simulations into a rich science learning sequence that includes hands-on investigations, reading, writing, and scientific argumentation.

AMSE Session: Creating and Implementing Effective Watershed Lessons for All Students: Use of Next Generation Science Standards Appendix D and Case Studies

(Grades K–8)

Naples I, Renaissance

Science Focus: ESS, ETS

Cherry Brewton (cbrewton@georgiasouthern.edu), Science Education Consultant, Statesboro, Ga.

Explore ways to proceed with implementing the NGSS according to equity and diversity principles that are research based to enhance learning of all students, including ELLs, economically disadvantaged, girls, etc. How can we use case studies as resources in this process? Join me as I present activities and teaching strategies focused on watersheds.

Write Like a Scientist!

(Grades 1–5)

Casablanca, Westin

Science Focus: GEN, SEP

Joey Lehnhard ([@joeyelle](https://twitter.com/joeyelle); jlehnhard@mbayaq.org), Monterey Bay Aquarium, Monterey, Calif.

Explore the biodiversity of California's rocky shores and use your data and observations to motivate students to write authentically about science.

Project Based Learning: Three Easy Steps to Classroom Implementation

(Grades K–12)

Centennial Salon A, Westin

Science Focus: GEN, SEP

Heather Glanz (hehujel4711@cox.net), Rio Seco School, Santee, Calif.

Want to try Project Based Learning in your classroom? Discover three tools to make it fun and engaging for your students and easy for you while still maintaining rigor.

CESI Session: Integrating Science and Literacy: Proven Strategies Developed from Evidence-based Practices

(Grades 1–5)

Centennial Salon C, Westin

Science Focus: GEN, SEP

Jim McDonald ([@jimscienceguy](https://twitter.com/jimscienceguy); jim.mcdonald@cmich.edu), Central Michigan University, Mount Pleasant

Find out how to integrate science with literacy and walk away with 33 proven instructional strategies to use in your classroom right away.

Ocean Challenge: 21st-Century Skills in Action

(Grades 1–7)

Centennial Salon D, Westin

Science Focus: ESS, INF

Wendy Marshall (wmarshall@explorocean.org), Explor-ocean, Newport Beach, Calif.

Experience the benefits of teaching through challenges as you participate in ocean-based problem-solving activities. Receive your missions and then dive into tasks that teach, challenge, entertain, engage, and enlighten!



8:00–9:15 AM Exhibitor Workshops**Science, the Literacy Connection, and the CCSS ELA***(Grades K–6)* 101A, Convention Center

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Learn how your students can experience the enjoyment of learning science using Delta Science Modules, and make the literacy connection with Delta Science literacy resources that support the *CCSS ELA*. Receive a workshop packet containing *Common Core* strategy templates and other related Delta literacy materials.

Engineering Design in the FOSS Next Generation Program*(Grades 3–5)* 101B, Convention Center

Science Focus: ETS, PS

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, and **Linda De Lucchi**, The Lawrence Hall of Science, University of California, Berkeley

FOSS Next Generation modules provide students with opportunities to engage in engineering experiences to develop solutions to problems, construct and evaluate models, and use systems thinking. We'll describe and display the engineering opportunities with the new grade 3 module, Motion and Matter.

A STEM Approach to Teaching Electricity and Magnetism*(Grades 5–12)* 102 A/B, Convention Center

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

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

The new CPO Science Link™ Wind Turbine learning module lets students learn in a tablet-based and hands-on learning environment while engineering a wind turbine. Students build, test, and revise their designs. Link uses STEM activities and an *NGSS* approach, giving students an understanding of how to apply the engineering cycle.

Investigating Gas Exchange*(Grades 6–8)* 102C, Convention Center

Science Focus: LS1

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Teachers know their students have many misconceptions about respiration. In this activity, participants use an acid-base indicator to determine the amount of carbon dioxide

gas in a sample of their exhaled breath. They will consider differences in individual responses, explore qualitative vs. quantitative measures, and examine the structure of the lungs and their role in respiration.

Using the Polymerase Chain Reaction to Identify Genetically Modified Foods*(Grades 8–College)*

103A, Convention Center

Science Focus: LS3.A

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

For centuries, selective breeding and conventional hybridization were used to produce desirable qualities in crops. Today, genetic engineering directly manipulates the DNA, quickly producing these traits. Due to controversy, some companies removed GM ingredients from their foods. We will extract snack food DNA and analyze it using PCR and electrophoresis. Free flash drive/T-shirt drawing.

Bring Visual Science into Grades K–5 Classrooms—It's a Game Changer!*(Grades K–5)*

103B, 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 video and activities to support blended learning. Learn how to integrate compelling visuals and video and receive a one-year subscription to Carolina's Tigttag online video-based learning program!

Making Failure Fun: Amplify Science Games*(Grades 6–8)*

103C, Convention Center

Science Focus: GEN

Sponsor: Amplify

Alan Dang, Amplify, Brooklyn, N.Y.

Experience Amplify's unique approach and process in developing science games. At Amplify, we view games as a voluntary activity for learning in a student's free time. Find out what we have learned through trial and error in the design process. Gain insight into the power of Amplify science games through a firsthand experience of SimCell.

8:30–9:00 AM Presentations

An Alternative Approach to Literacy

(Grades 9–12) *International 1, Hilton*
Science Focus: GEN, SEP4, SEP6, SEP7, SEP8

Walter O'Brien (walter.obrien@wuhsd.org), Santa Fe High School, Santa Fe Springs, Calif.

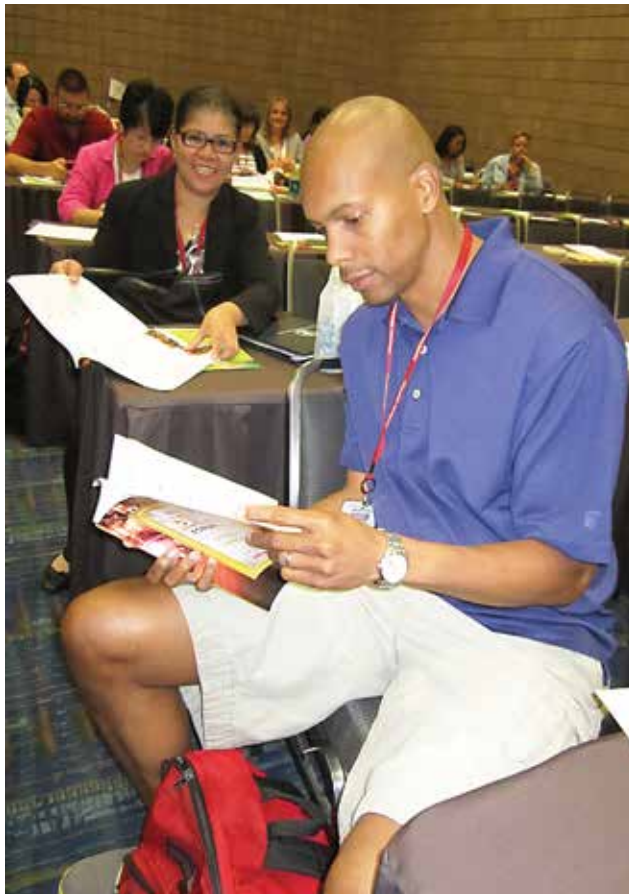
Want an idea to incorporate literacy into the science curriculum? Use movies. Media literacy is an innovative and alternative way for students to communicate comprehension.

Ecospheres! Engaging Students in Energy and Matter Dynamics in Ecosystems

(Grades 9–College) *Harbor C, Hyatt*
Science Focus: LS2.A, LS2.B, LS2.C, CCC5, SEP1, SEP4, SEP7

Joshua White (joshuaswhite@hotmail.com), Vista Murrieta High School, Murrieta, Calif.

Use research-based curricula along with Ecospheres (small, closed, fully functioning ecosystems) to engage students in learning about respiration, photosynthesis, matter/energy, and decomposition within ecosystems.



9:15–10:30 AM General Session

The Balancing Act of Environmental Education: Removing the Fear But Keeping Reality

(General) *Grand Ballroom, Convention Center*
Science Focus: ESS



Julie Scardina, @juliescardina, SeaWorld and Busch Gardens, San Diego, Calif.

Presider and Introduction: Juliana Texley, NSTA President, Boca Raton, Fla.

Platform Guests: Julie Scardina; Juliana Texley; Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Math and Science Partnership, Cleveland, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; Tim Williamson, NSTA Director, District XVI, and California State University at Long Beach; Laura Henriques, Chairperson, NSTA Long Beach Area Conference, CSTA President, and California State University at Long Beach; Dean Gilbert, Program Coordinator, NSTA Long Beach Area Conference, and Orange County Dept. of Education, Costa Mesa, Calif.; Jo Topps, Local Arrangements Coordinator, NSTA Long Beach Area Conference, and K–12 Alliance/WestEd, Los Alamitos, Calif.; David L. Evans, NSTA Executive Director, Arlington, Va.

We all know that kids are no longer connecting with nature in ways we used to 30 or 40 years ago. Kids are both fearful and idealistic about animals and nature. The fearful component, if not replaced with positive experiences, will not bode well for a future conservation ethic. The idealism also emanates from decreased exposure to wilderness, species, and their interrelatedness, as most kids have no idea how animals survive in nature—nor what it takes to conserve them. Using a variety of animal ambassadors, Julie will demonstrate that it takes a more sophisticated understanding of ecology, biology, and environmental science to save our planet’s biodiversity.

Having begun her career working together with species ranging from sea lions and dolphins to killer whales, Julie Scardina currently serves many roles with SeaWorld, Busch Gardens, and Discovery Cove—from zoological corporate curator of animal ambassador programs and training, to the most high profile, Animal Ambassador. In this role, Julie discusses all aspects of animals and wildlife issues in appearances both in and outside the parks, and monthly on NBC’s Today Show. She also appeared for many years on animal personality Jack Hanna’s show Animal Adventures.

10:00–11:15 AM Exhibitor Workshops

Solving the Mystery of STEM Using Forensic Science
(Grades 5–12) *101A, Convention Center*

Science Focus: ETS, 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 the integration of virtual labs and investigative activities, and the preparation of web-based content and individualized assessment.

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

(Grades 1–6)

101B, Convention Center

Science Focus: GEN, SEP

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 the science practices within the context of student investigations. You will experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson.

Help us with your feedback...and get a chance for a free Kindle Fire HD 7"

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

When you log on to www.nsta.org/longbeachbrowser 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 a Kindle Fire HD 7" *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 A NEW KINDLE FIRE HD 7", 8 GB**



• CONFERENCE APP



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



Exploring Genetics and Heredity with Crazy Traits

(Grades 5–12) 102 A/B, Convention Center

Science Focus: ETS, LS

Sponsor: CPO Science/School Specialty Science

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

The CPO Science Link™ Crazy Traits learning module uses STEM and NGSS strategies in a real-time tablet-based and hands-on learning environment to explore genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create “crazy creatures” with a unique kit, and study probability, dominance, and recession.

Chemical Formula and Amino Acids

(Grades 9–12) 102C, Convention Center

Science Focus: PS1

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

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.

Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 8–College) 103A, Convention Center

Science Focus: LS

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

More than 380 million people worldwide have 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. We will diagnose diabetes using simulated urinalysis and ELISA tests. Free flash drive/T-shirt drawing.

Vroom, Vroom, Beep, Beep...Connecting CCSS ELA and STEM

(Grades K–8) 103B, Convention Center

Science Focus: ETS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Find out how to foster elementary students’ literacy growth through practical strategies for implementing the *Common Core* and strengthening their mathematical knowledge. This

session will focus on *CCSS ELA* in reading informational text and writing centered around STEM education.

Learn How to Integrate the NGSS and CCSS ELA from The Lawrence Hall of Science

(Grades K–5) 103C, Convention Center

Science Focus: GEN, NGSS

Sponsor: Amplify

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

Looking to jump-start your NGSS transition? Explore how Seeds of Science/Roots of Reading® implements the three dimensions of the NGSS. With the program’s unique science and literacy integration, students access, learn, and express science concepts through practice with core ideas integrated with explicit disciplinary literacy instruction. Free materials provided.

Flinn Favorite Biology Lab Activities and Games

(Grades 6–12) 104A, Convention Center

Science Focus: LS

Sponsor: Flinn Scientific, Inc.

Jennifer Von Schnase (jvon@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Students learn better and faster when they are actively involved in hands-on activities that are not only fun, but that create learning opportunities along the way. We’ll share some inquiry-based labs, interactive demonstrations, and collaborative games you can use to motivate your students. We’ll focus on core topics like cell biology, genetics, ecology, and more—you’re sure to find a Flinn Favorite that works for you! Handouts provided for all activities.

Dive In with Magnetic Water Molecules

(Grades 5–College) 201B, Convention Center

Science Focus: PS

Sponsor: 3D Molecular Designs

Tim Herman (herman@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

Engaging water molecules enable you to use an inquiry approach to explore why water is essential for life. Discover the physical and chemical properties of water, states of matter, evaporation, condensation, transpiration, erosion, and more using interactive water molecules with embedded magnets that mimic the polar interactions in real water.



“Hard” Doesn’t Mean “Bad”: Helping Students Understand That Facing Challenges Is a Good Thing

(Grades 6–9)

202 A/B, Convention Center

Science Focus: ETS

Sponsor: eCYBERMISSION

Chris Campbell (ccampbell@ecybermission.com), eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

Don’t let your grades 6–9 students say, “I’m no good at science” if they don’t succeed immediately. Challenges are part of the scientific discovery process and students should embrace that. Join us as we “do” science and provide lesson plans and resources along with information about eCYBERMISSION, a competition that can provide both rigor and relevance to your classroom.

Molecular-Level Visualization and the NGSS: Engaging Your Students

(Grades 6–College)

202C, Convention Center

Science Focus: PS

Sponsor: Wavefunction, Inc

Jurgen Schnitker (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.

Do you notice persistent misconceptions in your students’ understanding of molecular phenomena? Would your classroom benefit from molecular models and simulations that are scientifically sound? Bring your laptop (Windows or Mac OS X) and learn how to improve student comprehension with *ODYSSEY® Molecular Explorer*—an interactive and content-rich tool for introductory chemistry.

Biology for NGSS: A New Approach for a New Program

(Grades 9–12)

203 A/B, Convention Center

Science Focus: LS, CCC, SEP

Sponsor: BIOZONE International

Richard Allan (richard@biozone.co.nz), BIOZONE International, Hamilton, New Zealand

Find the tools you need to successfully implement the high school life science component of the NGSS program in BIOZONE’s newest student workbook. This carefully constructed new resource is strongly focused on student inquiry and written from first principles to address all aspects of the NGSS system architecture. Attendees receive free books that support the NGSS.

MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started

(Grades 5–8)

203C, Convention Center

Science Focus: ETS

Sponsor: LEGO Education

David Calkins, LEGO Education, Mill Valley, Calif.

Learn firsthand how LEGO® Education MINDSTORMS EV3 can get your students excited as they model real-life mechanisms and solve real-world challenges, all while building the critical-thinking and creative problem-solving skills that will serve them well for a lifetime.

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

Exhibits Entrance, Hall B, Convention Center

Presider: Juliana Texley, NSTA President, Boca Raton, Fla.

Welcoming Remarks: Laura Henriques, Chairperson, NSTA Long Beach Area Conference; CSTA President; and California State University at Long Beach

Special Guests: Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Mathematics and Science Partnership, Cleveland, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; Tim Williamson, NSTA Director, District XVI, and California State University at Long Beach; Dean Gilbert, Program Coordinator, NSTA Long Beach Area Conference, and Orange County Dept. of Education, Costa Mesa, Calif.; Jo Topps, Local Arrangements Coordinator, NSTA Long Beach Area Conference, and K–12 Alliance/WestEd, Los Alamitos, Calif.; David L. Evans, NSTA Executive Director, Arlington, Va.; Jason Sheldrake, Assistant Executive Director, Sales, NSTA, Arlington, Va.

Musical Entertainment: Long Beach Polytechnic High School Jazz Combo

11:05 AM–5:00 PM Exhibits

Hall B, 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 will offer materials for sale throughout the conference.

11:10 AM–12:10 PM Special Session

Meet the Presidents and Board/Council

NSTA Exhibits entrance in Hall B, Convention 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!

12:30–1:00 PM Presentations

Using Journals to Incorporate *Common Core* into Your Science Instruction

(Grades 6–12)

International 2, Hilton

Science Focus: GEN

Mary Newell (mary.newell@alvord.k12.ca.us), Alvord Unified School District, Riverside, Calif.

Hear about a classroom management and planning format that incorporates daily writing and critical thinking, including logistical implementation and integration of the *Common Core State Standards*, in English language arts and mathematics.

Partnering to Create Ocean Stewards

(Grades 6–12)

Pacific 1, Hilton

Science Focus: ESS, INF, SEP1, SEP5

Linda Chilton (lchilton@usc.edu), University of Southern California, Los Angeles

Hear how ocean scientists have worked closely with the University of Southern California Sea Grant to share their research findings and create outreach experiences for high school students.

I Have an Idea! Physics and Social Justice by Design

(Grades 8–12)

Pacific 2, Hilton

Science Focus: PS, SEP

Eric Walters (@EWaltersScience; ewalters@marymountnyc.org), Marymount School of New York, N.Y.

Empathize. Define. Ideate. Prototype. Test. Learn how design thinking and computing can enhance the study of physics and social justice!

Open-Source Statistics Examples for Student Engagement

(Grades 9–College)

Harbor A/B, Hyatt

Science Focus: GEN, CCC, SEP3, SEP7, SEP8

Ashley Carter (ashley.carter@csulb.edu), California State University, Long Beach

Student engagement with statistics can be increased with appropriate examples. Join me as I describe and provide information for downloading a set of specially selected research articles in which statistics are used by professional scientists.

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8:00 am-9:15 am	Achievable Inquiry in Biology – Transform data collection in your lab.
10:00 am-11:15 am	Incorporate Science and Engineering Practices into your Chemistry Lab.
12:00 am-1:15 am	Enhance your Physics classroom demonstrations with PASCO equipment, sensors, and new Capstone software.

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AMS DataStreme Project and the NGSS

(Grades K–12)

Harbor C, Hyatt

Science Focus: ESS, NGSS

James Brey (@AMSeducation; brey@ametsoc.org), American Meteorological Society, Washington, D.C.

President: Elizabeth Mills, American Meteorological Society, Washington, D.C.

Come learn about American Meteorological Society DataStreme courses with content and lessons that support the NGSS and can be easily adapted for use in your classroom.

Inquiry Teaching and Learning Opportunities: ES-SEA Lesson Modules

(Grades 7–College)

Regency Ballroom D, Hyatt

Science Focus: ETS2.A, LS2.C, CCC1, CCC4, SEP1, SEP3
Stan Schmidt (sschmidt@wgu.edu), Western Governors University, Salt Lake City, Utah

ESSEA stands for Earth System Science Education Alliance. Hear how to use ESSEA curriculum modules and applications to engage students in inquiry learning and problem solving using real-time data from NASA and NOAA.

12:30–1:30 PM Presentations



Students' Cloud Observations On-Line: A World-wide STEM Classroom

(Grades K–8)

Regency Ballroom B, Hyatt

Science Focus: ESS2.D, INF, CCC1, SEP3

Tina Harte (tina.r.harte@nasa.gov), NASA Langley Research Center, Hampton, Va.

Students' Cloud Observations On-Line (S'COOL) is a hands-on learning project that supports NASA research of Earth's climate. Hear how S'COOL incorporates science, technology, engineering, and mathematics into a data-driven learning experience for the classroom and around the world.

Time Will Tell: Using Time-lapse Photography and Digital Storytelling to Observe Change

(Grades 4–12)

Regency Ballroom F, Hyatt

Science Focus: INF, NGSS

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'll explore methods, equipment, and applications. Resources and samples provided.

Magical Illusions and Scintillating Simulations for Science: It's Showtime!

(Grades 3–College)

Seaview Ballroom A, Hyatt

Science Focus: LS, PS, INF, NGSS

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

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

The NGSS@NSTA Hub

(Grades K–12)

Seaview Ballroom B, Hyatt

Science Focus: GEN, NGSS

Ted Willard (@Ted_NSTA; twillard@nsta.org), Program Director, COMPASS, 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.

NGSS and Assessment of Student Notebooks

(Grades 6–12)

104C, Convention Center

Science Focus: GEN, SEP1, SEP4, SEP5, SEP7, SEP8

Yamileth Shimojyo (@RCOE; yshimojyo@rcoe.us), Riverside County Office of Education, Murrieta, Calif.

Emphasis will be placed on the holistic approach of assessing a science notebook as an artifact of student learning, allowing teachers to map student growth. Connections to the NGSS explored.

Integrating Writing Standards and Project Based Learning in Life Science

(Grades 6–8)

Naples III, Renaissance

Science Focus: LS, NGSS

Pamela Bluestein (pbluestein@conejouisd.org) and **Jill Mag-nante**, Sycamore Canyon School, Newbury Park, Calif.

Combine a creative, collaborative science project with a writing component that can provide an authentic, low-stress assessment of individual student learning. This project on bird adaptation emphasizes the value of investigation and problem solving.

Questions That Lead Students to “Get It” at the “Get Go”*(Grades 6–12)**Verona, Renaissance*

Science Focus: LS, CCC, SEP

Michal Danin-Kreiselman (michalkreiselman@gmail.com), Kennedy High School, Granada Hills, Calif.

Writing good questions is an art that needs to be practiced and refined. Practice designing questions that address students’ intuition, misconceptions, and/or past experiences—leading students to learn even before the lesson had begun!

Turning STEM into STEAM*(Grades 6–8)**Centennial Salon A, Westin*

Science Focus: GEN, NGSS

Jeanine Wulfenstein, Erle Stanley Gardner Middle School, Temecula, Calif.

Find out how to incorporate the arts into a STEM classroom as a means for emphasizing and supporting science and math-

ematic principles. We will explore a STEAM instructional unit on right and left brain neuroscience.

The Development of Context-based, Integrated STEM Units*(Grades K–9)**Centennial Salon B, Westin*

Science Focus: ETS, NGSS

Xinying Yin, California State University, San Bernardino
Join us as we present context-based, integrated STEM units for elementary classrooms and discuss the development of these model units.

12:30–1:30 PM Hands-On Workshops**Integrating ELA/ELD Strategies with the NGSS for the English Language Learner in Your Classroom***(Grades 6–8)**104B, Convention Center*

Science Focus: GEN, SEP5, SEP8

Sarah Aguinaga, Belvedere Middle School, Los Angeles, Calif.

Experience and learn different English language arts and English language development strategies that can support and enhance learning of the NGSS. Implementation materials will be distributed. *Note:* Hands-on activities available to the first 50 participants.

Using Google Docs in the Classroom*(Grades 5–12)**Atlantic 2, Hilton*

Science Focus: GEN

Andrea Carothers (amscarothers@gmail.com), St. Anthony High School, Long Beach, Calif.

Discover how Google Docs can make assessment, collaboration, and grading easier. Participants should have a Google Drive account that they can access during the workshop.

99 Cent Science*(Grades 5–10)**International 3, Hilton*

Science Focus: GEN, INF, SEP2, SEP4, SEP5, SEP6

Melanie Brown (melaniebrown2004@hotmail.com), Sweetwater Union High School District, Chula Vista, Calif.**Shannon Chamberlin** (shannon.chamberlin@sweetwater-schools.org), Castle Park Middle School, Chula Vista, Calif.

99 Cent Science will demonstrate activities created inexpensively (think 99 Cent store!). These activities relate to the NGSS science and engineering practices—developing and using models, and planning and carrying out investigations. Activities include edible faults, gumdrop atoms, and cutting paper to protons. *Note:* Hands-on activities available to the first 60 participants.

Infect Your Biology Classroom with Math!*(Grades 7–12)**Beacon B, Hyatt*

Science Focus: LS, SEP2, SEP3, SEP4, SEP5

Jeff Lukens (jeffrey.lukens@k12.sd.us), Roosevelt High School, Sioux Falls, S.Dak.

Integrating biology and mathematics shouldn’t just be a good idea—it should be the law! Come learn how easy, important, and fun it is to collect and analyze data as a part of good, solid, responsible science education.

NGSS Collaborative Design of Fair Tests: Involving Students in Planning and Carrying Out Investigations

(Grades 2–6)

Regency Ballroom A, Hyatt

Science Focus: GEN, SEP2

Clea Matson (cmatson@calacademy.org) and **Shumit Das-Gupta**, California Academy of Sciences, San Francisco

Join us as we explore pedagogical strategies that support student engagement and collaborative discussion in planning and carrying out investigations in the elementary science classroom.

CCSS Forensics Science: Using Math and Science to Solve Crimes

(Grades 8–12)

Regency Ballroom C, Hyatt

Science Focus: GEN, SEP

Jacklyn Bonneau (bonneau@wpi.edu), Massachusetts Academy of Math & Science at WPI, Worcester

Observing patterns is the backbone of science and mathematics. When those patterns solve a crime, students enjoy doing mathematics and science without even knowing it.

Tuning Protocol: How to Work with Others to Tune Up a Lesson

(General)

Regency Ballroom E, Hyatt

Science Focus: GEN, INF

Sarah Crompton (scrompton@palihigh.org), Palisades Charter High School, Pacific Palisades, Calif.

Tune up a lesson by using a structured protocol that ensures meaningful, productive feedback. Protocols are valuable to all who participate—not just the presenter!

Trying It On: A Year of Implementing Integrated NGSS in Middle School

(Grades 6–8)

Shoreline A, Hyatt

Science Focus: GEN, NGSS

Cristina Trecha (ctrecha@ccsdsd.org), University of California, Berkeley

Hear one district's adventure in implementing the NGSS and then join other participants for a debriefing on your own NGSS implementation efforts. This session is aimed at educators/administrators already trying pieces of NGSS in the classroom.

Engage Students in Marine Debris Efforts Using an Integrated Science, Technology, Engineering, Arts, Mathematics, and Social Studies Curriculum

(Grades 4–12)

Shoreline B, Hyatt

Science Focus: ESS, ETS, INF, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP8

Tracy Crews (tracy.crews@oregonstate.edu), OSU Hatfield Marine Center, Newport, Ore.

Join me for Problem-Based Learning and Citizen Science activities using data collection and analysis, engineering design, and technology to address an important community and global issue—marine debris. I'll share hands-on activities, online resources, and student projects from a NOAA-funded integrated curriculum for grades 4–12 students.



NSTA Press® Session: Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12

(Grades 9–12)

204, Convention Center

Science Focus: GEN, CCC

Victor Sampson (@drvictorsampson; victor.sampson@gmail.com), The University of Texas at Austin

Argument-driven inquiry gives students an opportunity to learn how to participate in the practices of science and use the core ideas and crosscutting concepts of science to make sense of natural phenomena. Receive a brief overview of this innovative approach to laboratory instruction.

Human Body Systems—Building a Foundation for Complex Thinking and Success

(Grades 9–College)

Capri, Renaissance

Science Focus: LS

Teri Fleming, Educational Consultant, Houston, Tex.

See how building and “creating” the human systems can give students a powerful, unforgettable learning experience. Building anatomy in clay and connecting the systems to an accurate skeleton model gives students the confidence to not only “know” anatomy but deduce its functions and understand how disease and injury are consequences of anatomical and physiological changes.

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Thursday	7:00 AM–5:00 PM
Friday	7:00 AM–5:00 PM
Saturday	7:30 AM–1:00 PM

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CSSS Session: Mastering the Science Practices and the CCSS: Using Hands-On Performance Assessment with K–5 Students

(Grades K–5)

Naples I, Renaissance

Science Focus: GEN, NGSS

Deborah Tucker (*deborahlt@aol.com*), Independent Science Education Consultant, Napa, Calif.

Grant Gardner (*@Assessmentserv*; *grantmgardner@msn.com*), Assessment Services, Inc., Pepperell, Mass.

Hands-on performance tasks assess both CCSS and science practices. Engage in a hands-on performance task and explore the advantages of this form of formative assessment. Score your own responses, tally results, and examine student work samples.

Modeling Activities for Human Body Systems

(Grades 4–7)

Centennial Salon C, Westin

Science Focus: LS1.A, SEP4

Michelle Varnau, St. Lawrence Elementary and Middle School, Santa Clara, Calif.

Teach your middle school students about cells and the respiratory, skeletal, muscle, and digestive systems of the human body with inexpensive activities. Participants will try out an esophagus modeling lab by using a balloon, marble, and their fingers to begin peristalsis.

Hands-On Tornadoes, Hurricanes, and Lightning Strikes—Oh My!

(Grades 3–8)

Centennial Salon D, Westin

Science Focus: ESS, INF, SEP

Joanne Michael (*@jmsciencegal*; *jmichael@mbusd.org*), Meadows Elementary School, Manhattan Beach, Calif.

In this fast-paced workshop, we will be making hands-on tornadoes and hurricanes, and working with lightning strikes. Take home lessons to do in class on Monday!

Let's Get Physical: Water, Wind, and Weather

(Grades P–4)

Ocean Ballroom, Westin

Science Focus: PS

Ruth Ruud (*ruth.ruud@yahoo.com*), Cleveland State University, Cleveland, Ohio

Juliana Texley (*@JulianaTexley*; *juliana.texley@nsta.org*), NSTA President, Boca Raton, Fla.

Don't look now—but 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!

12:30–1:45 PM Exhibitor Workshops

How Do They Use FOSS in Their School District?

(Grades P–8)

101A, Convention Center

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Claudio Vargas, Oakland (Calif.) Unified School District
Looking for ideas on how to use and implement FOSS in your school district? Staff from the Oakland Unified School District will share what they have done to make learning and doing science in their schools successful. Walk away with great ideas.

Crosscutting Concepts: What Do They Look Like in an Elementary Classroom?

(Grades 1–6)

101B, Convention Center

Science Focus: GEN, CCC

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 use crosscutting concepts to deepen their understanding of science content. Engage in experiences exposing cause and effect, patterns, and structure and function. We'll share different ways for students to progress in their understanding of crosscutting concepts.

Fun with Atom Building Games and the Periodic Table

(Grades 5–12)

102 A/B, Convention Center

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

Erik Benton, CPO Science/School Specialty Science, Nashua, NH

The CPO Science Link™ Chemistry Models module is a STEM- and NGSS-based approach that lets students experience innovative activities to learn atomic structure and the periodic table. Students work in a real-time tablet-based learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, and periodicity.

Using the Engineering Design Process to Understand Heat*(Grades 9–12)**102C, Convention Center*

Science Focus: ETS1, PS1

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

A central theme of chemistry is heat transfer. Using LAB-AIDS' *A Natural Approach to Chemistry* program, explore thermal equilibrium and design experiments to compare the thermal equilibrium point of water mixtures. Construct and test a simple calorimeter to predict the equilibrium temperatures of water samples using the engineering design process.

Biotechnology Basics*(Grades 6–College)**103A, Convention Center*

Science Focus: LS

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Feeling overwhelmed by the complicated experiments performed in biotechnology laboratories? If so, join us for this hands-on workshop that explores biotechnology techniques commonly used in research labs (DNA isolation, PCR, and electrophoresis). These experiments will help students understand how techniques like genetic engineering work in a real-world context. Free flash drive/T-shirt drawing.

Introduction to Wisconsin Fast Plants®*(Grades K–12)**103B, Convention Center*

Science Focus: LS

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 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!

Immerse Students into the World of Scientists and Engineers by Putting Sims at the Center of Learning*(Grades 6–8)**103C, Convention Center*

Science Focus: ETS, NGSS

Sponsor: Amplify

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

Experience how you can engage students in rich argumentation involving hands-on investigations, immersive digital simulations, engaging text and media, and unique engineering internships. Join us to learn how this complete program—created in collaboration by The Lawrence Hall of Science and Amplify—provides comprehensive instruction for both *CCSS ELA* and *NGSS*.

Advanced Inquiry Labs for AP Chemistry from Flinn Scientific*(Grades 9–12)**104A, Convention Center*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Frazier (mfrazier@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Join Flinn Scientific as we present two new guided inquiry chemistry experiments that support the integrated learning objectives and applied science practice skills your students will need for success. Pre-lab preparation and preliminary activities for each investigation have been optimized so teachers can effectively guide students and provide maximum opportunities for inquiry. Handouts!

New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits*(Grades 8–College)**201B, Convention Center*

Science Focus: LS

Sponsor: 3D Molecular Designs

Tim Herman (herman@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

3D Molecular Designs is releasing two kits this school year and the Center for BioMolecular Modeling continues to develop new materials such as the Synapse Construction Kit, new gene maps, and molecular stories. Test new kits and learn about Modeling the Molecular World, and other professional development opportunities for next year.

Stellar Evolution Made Easy

(Grades 6–12) 202 A/B, Convention Center

Science Focus: ESS1.A

Sponsor: Simulation Curriculum Corp

Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.

Where do stars come from? What happens during their life-time? How do we know a star is dying? Where are the stellar graveyards? Join us as we answer these and other questions using Simulation Curriculum’s award-winning *Starry Night* lessons and learn how to access a free classroom-ready lesson.

Blending the CCSS and NGSS in Your K–5 Science Classroom

(Grades P–5) 202C, Convention Center

Science Focus: GEN, NGSS

Sponsor: Activate Learning

LeeAnn Sutherland, The University of Michigan, Ann Arbor

By using Activate Learning’s Active Science K–5 curriculum, see how you can integrate both the CCSS and NGSS into your elementary classroom. Join us and engage in activities and get pedagogies and practices to take back to your classroom.

Free AP Environmental Science Resources from BioInteractive

(Grades 9–College) 203 A/B, Convention Center

Science Focus: ESS, SEP

Sponsor: Howard Hughes Medical Institute

David Hong, Diamond Bar High School, Diamond Bar, Calif.

Enrich your AP Environmental Science course with HHMI’s free resources. Short films, video clips, animations, and classroom-ready activities that address the NGSS science practices at the core of the AP course redesign will be highlighted. Take home free DVDs, virtual labs, posters, and more!

It’s Elementary—Light and Optics for Kids

(Grades 2–6) 203C, Convention Center

Science Focus: PS

Sponsor: SPIE, the international society for optics and photonics

Colette DeHarpporte (colette@laserclassroom.com), Laser Classroom, Minneapolis, Minn.

With a simple, yet powerful kit, you can introduce light and optics to kids ages 5–16. Engage and excite young scientists with 10 fun activities that lay the foundation for understanding the fundamentals of light and optics: reflection, refraction, color, shadows, and more. Complimentary kits will be supplied to workshop participants.

1:00–1:30 PM Presentations

Classroom Procedures to Support Science Notebooks

(Grades 6–12) International 2, Hilton

Science Focus: GEN, NGSS

Mary Newell (mary.newell@alvord.k12.ca.us), Alvord Unified School District, Riverside, Calif.

Add science notebooks to your classroom toolkit. Topics will include notebook set-up, maintenance, and assessment. Leave with a range of effective ideas to streamline the note-taking process and increase students’ responsibility for their learning.

Introduction into Geographical Information Systems and Remote Sensing

(Grades 10–12) Pacific 1, Hilton

Science Focus: ESS, ETS, CCC1, CCC2, CCC3, SEP1

Pia van Benthem (pvanbenthem@ucdavis.edu), University of California, Davis

Receive an introduction to Geographical Information Systems (GIS) and remote sensing focusing on applications in STEM. Lesson plans cover land cover type and land cover changes. Demonstration of free spatial software included.



Building a Community Classroom: Encouraging Students to Think Globally and Act Locally

(Grades 9–12) *Pacific 2, Hilton*

Science Focus: LS, PS, SEP1, SEP3, SEP4, SEP7, SEP8

Melissa Morlok and **Leigh Fauber**, Milken Community Schools, Los Angeles, Calif.

Extend the walls of your classroom, connect to your community, and help students become informed problem-solving citizens through long-term projects, inquiry-based activities, and scenario-based learning.

Using Google Earth in the Classroom

(Grades 7–College) *Harbor A/B, Hyatt*

Science Focus: ESS, SEP4

Wendy E. Van Norden (*wvannorden@hw.com*), Harvard-Westlake School, Studio City, Calif.

Gain an introduction to the basic uses of Google Earth, demonstrating techniques such as adding placemarks, pictures, overlays, profiles, and creating lessons. We will highlight Google Earth exercises focused on Earth science.

Global Science Inquiry: The World MOON Project

(Grades 4–10) *Harbor C, Hyatt*

Science Focus: ESS1.B, CCC1, SEP2, SEP4, SEP6, SEP7, SEP8

Holly Steele (*@bwscisteele*; *holly_steele@fullertonsd.org*), Fullerton (Calif.) School District

Observations of the Moon provide an avenue for inquiry, exploring patterns, and developing mental models of the Sun/Earth/Moon system. As a bonus, work with other students around the world! Join me and wax new learning in your science classroom.

1:00–2:30 PM Exhibitor Workshop

Identify Patient Zero of a Zombie Apocalypse

(Grades 9–College) *201A, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Explore how a zombie virus could spread through the population with this hands-on classroom lab using the power of an ELISA assay. The highly specific nature of antibodies allows researchers to develop tests for almost any biological molecule that elicits an immune response. Learn how to use an ELISA to monitor transmission and track the spread of the disease!

2:00–2:30 PM Presentation

Developing an Honors Geology Dual-Enrollment Class in Cooperation with California State University, Bakersfield

(Grades 9–College) *Harbor C, Hyatt*

Science Focus: ESS, SEP

Karen Blount, Highland High School, Bakersfield, Calif.

Stephan Kiouses (*@stephankiouses*; *stephen_kiouses@khsd.k12.ca.us*), Ridgeview High School, Bakersfield, Calif.

Chris Carrisalez (*chris_carrisalez@khsd.k12.ca.us*), Arvin High School, Arvin, Calif.

With the cooperation of California State University at Bakersfield (CSUB) and support from the National Science Foundation and Chevron, the Kern High School District has instituted an Honors Geology dual-enrollment course. Students in the class receive credit for a University of California–approved honors “D-laboratory science” and Geology 201 (5 quarter units) at CSUB. Join us and leave with a template for establishing a class on your campus.

2:00–3:00 PM Presentations

Performance-based Assessment in Chemistry

(Grades 10–12)

Atlantic 2, Hilton

Science Focus: PS

Sophia Liarakos, Lake Community High School, Lake Villa, Ill.

Learn about a chemistry assessment that requires a student to display understanding of the scientific inquiry process via a hands-on task. I'll show the learning objectives and performance tasks created for each chemistry unit we have completed. Handouts!

NGSS, Close Reading, and Classroom Notebooking Practices

(Grades 6–12)

International 2, Hilton

Science Focus: GEN, CCC6, SEP8

Henry Shimojo (*logosedsys@gmail.com*), Lake Elsinore (Calif.) Unified School District

Yamileth Shimojo (*yshimojo@rcoe.us*), Riverside County Office of Education, Murrieta, Calif.

Participants will leave with connections to the NGSS and pedagogical strategies of the Cornell Note-taking system and Close Reading as evidence in science notebooks.

Teach Engineering Principles on the Cheap with Concrete

(Grades 9–12)

International 3, Hilton

Science Focus: ETS

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

Andrew Nydam (*andrewnydam@hotmail.com*), ASM International Foundation, Materials Park, Ohio

Teach STEM using concrete and other construction materials. Discover inexpensive STEM projects that engage students using the #1 building material in the world.

NARST Session: Strategies for Being a Great Mentor—Moving Beyond Classroom Management to Focus on Student Learning

(Grades 7–12)

Pacific 1, Hilton

Science Focus: GEN

Ellen Barnett (*eb4nd@mail.missouri.edu*), University of Missouri, Columbia

Carol Robertson (*crobertson@fulton58.org*), Fulton High School, Fulton, Mo.

Mentoring? Considering mentoring? Then this session is for you! Join us as we discuss recent mentoring research and classroom-ready strategies for mentoring preservice science teachers.

Edible Chemistry

(Grades 9–12)

Pacific 2, Hilton

Science Focus: PS1.B, CCC1, SEP3

Cheryl Ann Park (*cherylann.park@sausd.us*), Century High School, Santa Ana, Calif.

Break the rules for once; allow food in the lab! No need to struggle to interest your students when they get to eat these lessons.

Using Case Studies to Promote Technical Literacy in an Anatomy and Physiology Class

(Grades 10–College)

Beacon A, Hyatt

Science Focus: LS1

Shari Weaver (*sweaver@wpi.edu*), Massachusetts Academy of Math & Science at WPI, Worcester

Participate in an immunology case study to explore how this pedagogical method engages students in real-world medical scenarios while strengthening their technical literacy.

NGSS Engineering Practices and the NGSS: Don't Be Scared

(Grades K–12)

Regency Ballroom A, Hyatt

Science Focus: ETS

Ota Lutz (*@NASAJPL_Edu; ota.l.lutz@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

The inclusion of engineering practices in science teaching is uncharted territory for many. Incorporate engineering into everyday teaching and trade your fear for fun!

Where Are the Women? What Educators Should Think and Do About the Underrepresentation of Women in Science

(Grades 6–College)

Regency Ballroom E, Hyatt

Science Focus: GEN, INF

Natalie Todd, Aloha High School, Beaverton, Ore.

The goal of this presentation is to ask the question, what can we, as educators, do to combat the negative stereotypes so prevalent in our society? The stereotypes themselves, our own perceptions of women in science, popular culture, and role models are all discussed in an effort to think critically about the problem and explore solutions.

Marine Debris: It’s Everywhere!

(Grades 3–12) *Regency Ballroom F, Hyatt*

Science Focus: GEN, INF, NGSS

Annie Frankel (@TheCACoast; *annie.frankel@coastal.ca.gov*), California Coastal Commission, San Francisco

Investigate the impacts of trash in our environment. Learn how to integrate a shoreline or schoolyard cleanup into your program and analyze real Coastal Cleanup Day data. Free curriculum!

Dazzling Deceptions: Discrepant Events That Delight and Mystify!

(Grades 3–College) *Seaview Ballroom A, Hyatt*

Science Focus: GEN, INF, NGSS

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 inquiry and concept development.

Integrating the NGSS Practices Through Online Collaboration with Google

(General) *Seaview Ballroom C, Hyatt*

Science Focus: GEN, SEP

Robert Hoffman (@mrhoffmanslab; *robert_hoffman@pvusd.net*), Pajaro Valley Unified School District, Watsonville, Calif.

Redefine your science classroom! Go on a whirlwind tour of Google apps that integrate science and engineering practices through local and global collaboration.

Captivate Your Students Using Data Visualizations and Learn How to Integrate Global Environmental Data into Your Classroom

(Grades K–12) *Shoreline A, Hyatt*

Science Focus: ESS, LS, CCC1, CCC4, CCC5, SEP4

June Teisan, Einstein Fellow, NOAA, Washington, D.C. Learn how data visualizations from NOAA can enhance your Earth system science content with stunning animated and still images.

The Apps That Launched STEAM Classrooms

(Grades K–12) *Shoreline B, Hyatt*

Science Focus: GEN, NGSS

Shannon Chamberlin (*shannon.chamberlin@sweetwater-schools.org*), Castle Park Middle School, Chula Vista, Calif.

Melanie Brown (*melaniebrown2004@hotmail.com*), Sweetwater Union High School District, Chula Vista, Calif.

Hear how the largest secondary district in California used just a couple of apps to launch their districtwide 1:1 iPad initiative with 7,000+ students.

NMLSTA Session: Using Problem-Based Learning to Address CCSS and NGSS

(Grades 5–8) *Naples I, Renaissance*

Science Focus: ETS

Diana Cost (*diana_cost@yahoo.com*) and **Susan Cipoletti**, Global Learning Charter Public School, New Bedford, Mass.

Find out how to use Rube Goldberg devices to engage all learners in using engineering, language arts, math, and science to solve real-world problems.

Designing a Middle School Integrated NGSS Curriculum

(Grades 6–8) *Naples III, Renaissance*

Science Focus: GEN, NGSS

Phil Cotty (*phil.cotty@ousdk12.ca.us*), Oakland (Calif.) Unified School District

Learn to design courses based on the new California integrated grades 6–8 NGSS learning progression. Session includes a toolkit with examples from a district-level curriculum project.

“Please, Can I Write...?” High-Interest Science Topics Motivate Beginning Writers

(Grades P–2) *Casablanca, Westin*

Science Focus: GEN, SEP8

Karen McDonough (*kmcdonougheducator@gmail.com*), Retired Educator, Anaheim, Calif.

Discover structured and creative techniques to help students write easily and enthusiastically. Motivate and facilitate diverse learners to be successful and confident beginning writers.

2:00–3:00 PM Hands-On Workshops

Engineering in the Elementary

(Grades K–6)

Beacon B, Hyatt

Science Focus: ETS, CCC, SEP

John Gaines, South Whittier School District, Whittier, Calif.

Explore the engineering design process in the form of Problem-Based Learning within the context of the elementary classroom. Discussion includes strategies for addressing the CCSS and the framework for 21st-century learning.

Chemical Change and Stability: Kinetics and Equilibrium

(Grades 7–College)

Harbor A/B, Hyatt

Science Focus: GEN, SEP3, SEP4, SEP7, SEP8

Jodye Selco (jiselco@csupomona.edu), Cal Poly Pomona, Calif.

Learn how kinetics and equilibrium are related, and how you can model these phenomena with students—both with manipulatives and graphically.



Water, Water, Everywhere—But What Will It Support?

(Grades 9–12)

Regency Ballroom B, Hyatt

Science Focus: ESS, SEP

Jacklyn Bonneau (bonneau@wpi.edu), Massachusetts Academy of Math & Science at WPI, Worcester

Water is the backbone of our environment. Its ability to support life is key to survival. Come test local waters and see what life they support.

CCSS Composing Science: Strategies for Writing to Learn in the Inquiry Classroom

(Grades 6–College)

Regency Ballroom C, Hyatt

Science Focus: PS4.B, SEP2, SEP6, SEP7, SEP8

Irene Salter (irene@chrysalischarter.org), California State University, Chico, Palo Cedro

Discover how to use writing to engage students in authentic scientific discourse. Experience several strategies yourself as we explore the physics of light and lenses!

We're All in This Together—Watersheds and You!

(Grades 2–12)

Regency Ballroom D, Hyatt

Science Focus: ESS3, ESS2.C, INF, SEP1, SEP4

Carl Carranza (carl.carranza@lacity.org), Cabrillo Marine Aquarium, San Pedro, Calif.

Whether inland or on the coast, we all live in watersheds. Come learn some easy and fun activities that you can use to help your students understand and care about how their choices can affect the environment.

Let's Talk About Sex

(Grades 4–College)

Seaview Ballroom B, Hyatt

Science Focus: GEN

Julia Feldman, Oakland (Calif.) Unified School District
From establishing norms to answering difficult questions, learn the skills, knowledge, activities, and resources to confidently teach a comprehensive sex education unit.

Informal/Formal: Let's Attack NGSS Together!

(Grades K–8)

104C, Convention Center

Science Focus: INF, NGSS

Gretchen Bazela (gbazela@cscmail.org), California Science Center, Los Angeles

Paul Pooler (ppooler@discoverycube.org), Discovery Science Center, Santa Ana, Calif.

Milena Acosta (macosta@lbaop.org), Aquarium of the Pacific, Long Beach, Calif.

Charina Cain Layman (ccain@ucsd.net), Birch Aquarium at Scripps Institution of Oceanography, La Jolla, Calif.

President: Gretchen Bazela

This informative session will showcase resources informal science institutions—aquariums, zoos, and science centers—can provide to support teachers and students in the implementation of *Next Generation Science Standards*. Take away tips for connecting with your own local learning institutions.



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

(Grades P–5)

204, Convention Center

Science Focus: GEN, INF, NGSS

Emily Morgan (@EmilyMorganNTYS; emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio

The author of the “Next Time You See” picture books from NSTA Press will share books and classroom activities that integrate science and reading...and inspire a sense of wonder.

Vital Signs of the Planet: Understanding the Terrestrial Planets by Learning to Read Earth's Vital Signs

(Grades 6–12)

Capri, Renaissance

Science Focus: ESS1.C, ESS2.A, ESS2.B, CCC4, CCC5, SEP2, SEP4, SEP5, SEP7, SEP1

Bernadette Vargas (@duddins; bernadette_vargas@cjuhsd.net), Etiwanda High School, Etiwanda, Calif.

Engage students in modeling and interpreting data on geologic processes being recorded here on Earth that will soon be available from Mars! This interactive session includes a briefing on the InSight geologic mission to Mars, participation in two research lessons focusing on using GPS to study earthquakes, and an overview of the Vital Signs of the Planet Professional Development Program.

Chemical Nomenclature Rummy: Naming Compounds and Ion Combination Rules

(Grades 6–9) *Sicilian Ballroom, Renaissance*
 Science Focus: PS

Mark Greenman, Boston University Research Fellow, Swampscott, Mass.

Grab your students' attention with a Rummy-like card game to teach basic rules for ion combinations and naming ionic compounds. Handouts!

Science as a Context for Common Core Writing: A Win-Win for Both

(Grades 1–12) *Centennial Salon A, Westin*
 Science Focus: GEN, NGSS

Karen Cerwin, K–12 Alliance/WestEd, Huntington Beach, Calif.

Science is the perfect context for writing an evidenced-based argument or information/explanatory text. Use writing prompts/score guides to evaluate student science and writing understanding.

Teaching STEM with Project Learning Tree

(Grades K–8) *Centennial Salon D, Westin*
 Science Focus: ESS, INF

Jackie Stallard (jstallard@plt.org), Project Learning Tree, Washington, D.C.

Sandra Derby (stderby@uanr.edu), California State 4-H Office, Davis, Calif.

In addition to hitting STEM benchmarks, learn how Project Learning Tree activities can enhance students' knowledge of trees, forests, and the environment around them.

Engineering: Build a Better Kaleidoscope!

(Grades 3–8) *Ocean Ballroom, Westin*
 Science Focus: ETS, CCC, SEP

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

Build a better kaleidoscope by using an engineering design process integrating the NGSS three Ds: (1) science and engineering practices, (2) disciplinary core ideas, and (3) crosscutting concepts.

2:00–5:00 PM Short Courses

Ocean Plastic Pollution: Issues and Solutions (SC-1)

(Grades 6–8) *International 1, Hilton*

Tickets Required; \$40

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

For description, see page 36.

How to Make STEM Learning Fun Through NGSS Science and Engineering Practices (SC-2)

(Grades 3–11) *International 4, Hilton*

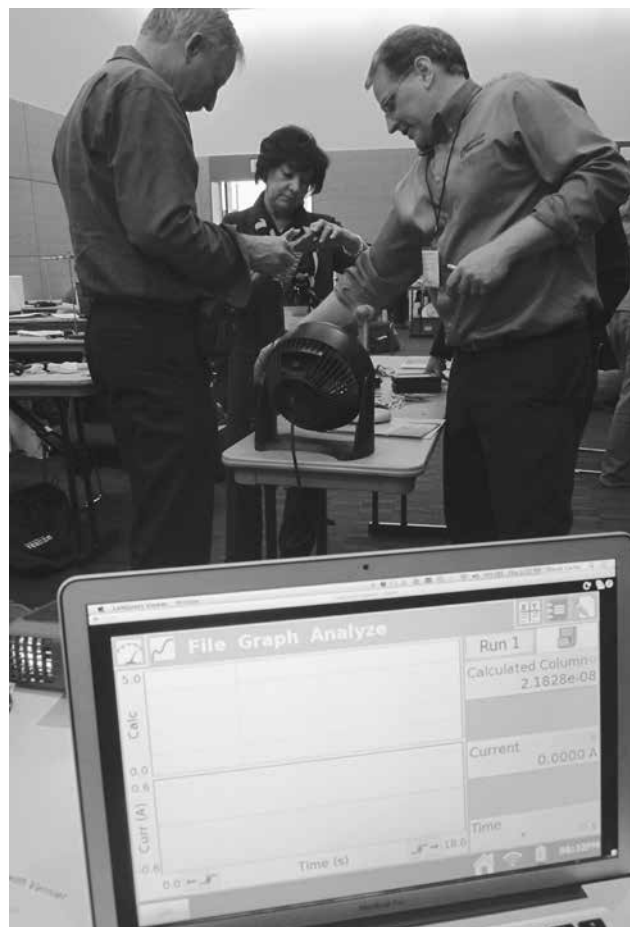
Tickets Required; \$40

Jerry D. Valadez (jdvscience@cvsamacademy.org), SAM Academy, Inc., Fresno, Calif.

Ana G. Lopez (anaglopez4@gmail.com), Central Valley Science Project, Sanger, Calif.

Lisa Ernst (lae121@aol.com), Alice Fong Yu Alternative School, San Francisco, Calif.

For description, see page 36.



2:15–3:30 PM Exhibitor Workshops

Teaching Argumentation for Our Next Generation

(Grades K–6) 101A, Convention Center

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Argumentation is an important component of the science reform movement and the *CCSS ELA*. Learn how to help students conduct investigations using claims and defend them with evidence, and to construct explanations using scientific principles. Join us as we share Delta products and resources.

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

(Grades 5–8) 101B, Convention Center

Science Focus: ESS, SEP

Sponsor: Delta Education/School Specialty Science—FOSS

Virginia Reid, 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 the *NGSS* science and engineering practices. New program features will be shown.

Exploring Genetics and Heredity with Crazy Traits

(Grades 5–12) 102 A/B, Convention Center

Science Focus: ETS, LS

Sponsor: CPO Science/School Specialty Science

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

The CPO Science Link™ Crazy Traits learning module uses STEM and *NGSS* strategies in a real-time tablet-based and hands-on learning environment to explore genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create “crazy creatures” with a unique kit, and study probability, dominance, and recession.

Using Climate Proxies to Learn About Earth’s Climate History

(Grades 9–12) 102C, Convention Center

Science Focus: ESS1.C, ESS2, ETS2

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

How can scientists tell what Earth’s climate was like thousands of years before human measurements? This NSF-supported unit simulates the use of fossil ocean foraminifera,

tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph replica samples of these organisms to determine warm and cold periods in the past 200,000 years.

Case of the Missing Records

(Grades 8–College)

103A, Convention Center

Science Focus: LS

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Explore genetic diversity using forensic science! 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. Free flash drive/T-shirt drawing.

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

(Grades 9–12)

103B, Convention Center

Science Focus: PS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Hate it when a lab activity fizzles? Explore easy, engaging, safe chemistry activities that work every time—so they’re sure to produce a reaction from 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!

Making Science Notebooks FOLD-tastic via Notebook Foldables®

(General)

104A, Convention Center

Science Focus: GEN

Sponsor: Dinah-Might Adventures

Nancy Wisker (nancy@dinah.com), Dinah Zike Academy, Columbia, Tenn.

Cut, fold, and more in this hands-on workshop as you construct Notebook Foldables that are sure to make your students’ science notebooks FOLD-tastic. Use basic classroom materials and depart with a mini-composition book made on-site that is filled with immediately usable ideas.

The Many Jobs of Proteins: Modeling Proteins and Enzymes

(Grades 8–College)

201B, Convention Center

Science Focus: PS

Sponsor: MSOE Center for BioMolecular Modeling

Tim Herman (herman@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

By folding their own proteins following basic principles of chemistry with the engaging Amino Acid Starter Kit, your students will understand the core structure–function concept. Then they will be ready to explore enzymes with the new Enzymes In Action Kit, leading to a new appreciation of the biomolecular world.

Plate Tectonics: Continents on the Move

(Grades 6–12)

202 A/B, Convention Center

Science Focus: ESS2.B

Sponsor: Simulation Curriculum Corp

Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.

Join us as we use Simulation Curriculum’s *The Layered Earth* to investigate continental drift and the theory of plate tectonics. Classroom-ready STEM lessons engage students with interactive learning activities, thought-provoking exercises, and historical links while displaying a contextual and interactive model of Earth.

Ride the Wave with Bring Science Alive!

(Grades K–5)

202C, Convention Center

Science Focus: PS

Sponsor: TCI

Bert Bower (bbower@teachtci.com), TCI, Mountain View, Calif.

Unveiling the NGSS has left K–5 teachers wondering how their lessons should change. In this session, we’ll use a powerful online learning system to develop a model of waves to describe patterns in terms of amplitude and wavelength. Experience learning from a student’s perspective.

Teaching Cell Signaling with BioInteractive

(Grades 9–College)

203 A/B, Convention Center

Science Focus: LS1.C, LS1.D

Sponsor: Howard Hughes Medical Institute

Mary Wuerth, Tamalpais High School, Mill Valley, Calif. HHMI’s BioInteractive presents exciting free resources for teaching cell communication, including activities, animations, and video clips that tell compelling stories, such as how a mutation in a signaling protein affects mouse coat color (and mouse survival), the interaction of cells in the immune system, and quorum sensing in bacteria.

Implementing the NGSS and CCSS Just Got a Whole Lot Easier!

(Grades K–12)

203C, Convention Center

Science Focus: ETS

Sponsor: Klein Educational Systems

Mark Weiss (mweiss@ljcreate.com), LJ Create, Orlando, Fla.

Explore how to implement the NGSS and CCSS ELA through the application of science principles in real-world science, engineering, and technology challenges. We have developed an English and Spanish cloud-based blended learning platform for teaching science. All who attend will receive free access to this powerful science resource.



2:30–3:00 PM Presentation

Personalized Medicine in Our Near Futures

(College)

Harbor C, Hyatt

Science Focus: LS, INF

Diana Ivankovic, Anderson University, Anderson, S.C.
Gene sequencing prices have drastically dropped. We can now predict our futures. How will these new practices affect the world of medicine and health care in general?

3:00–4:30 PM Exhibitor Workshop

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

(Grades 9–College)

201A, Convention Center

Science Focus: LS, SEP

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? Learn new ways to advance inquiry—from guided to open—by establishing a strategy that integrates essential and real-world science practices. From generating scientifically reasonable questions to developing the procedure to interpreting the data, the glowing bacteria from pGLO™ leads the way.



3:15–4:30 PM CSTA Featured Presentation

Using the Tools of the NGSS to Support Quality Science Instruction

(Grades P–12)

Grand Ballroom A, Convention Center

Science Focus: GEN, NGSS



Stephen Pruitt, @DrSPruitt, Achieve Inc., Washington, D.C.

President: Laura Henriques, Chairperson, NSTA Long Beach Area Conference; CSTA President; and California State University, Long Beach

Join CSTA for the annual meeting of members! CSTA President Laura Henriques will deliver an update on the state of the association and the state of science education in California. Following the annual meeting of members, CSTA will present the awards for the 2014 Future Science Teacher (Laurie Gillis), Margaret Nicholson Distinguished Service Award (Herb Brunkhorst), and Distinguished Contributions Award (Chevron and Water Education Foundation/California Project WET). CSTA and the California Department of Education (CDE) will together honor this year's California State Finalists for the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) (Kirsten Johnson, Julie McGough, Stefanie Pechan, and Erica Rood) and the Awardee of the 2012 PAEMST (Alma Suney Park).

Following the presentation of awards, Stephen Pruitt will provide updates on the various NGSS tools under development and how to use them with teachers to provide a deeper understanding of the NGSS.

Stephen L. Pruitt is senior vice president at Achieve. For the past several years, he has been leading the development of the Next Generation Science Standards. Stephen began his career as a high school chemistry teacher in Georgia. In 2003, he joined the Georgia Department of Education as program manager for Science. Until 2010, he held various roles in the agency culminating with him being named Chief of Staff to State School Superintendent, coordinating the work of the agency.

In addition to his state-level work, Stephen also served as a member of the writing team for the College Board Standards for College Success science standards. He also served on the National Academies of Science's Committee on Conceptual Framework for New Science Education Standards, which developed the Framework for K–12 Science Education.

3:30–4:00 PM Presentations

Create a Student-publishing Project Using Double Star Measurements Designed to Complement the CCSS

(Grades 7–College)

Harbor C, Hyatt

Science Focus: ESS1.A, CCC3, SEP1, SEP2, SEP3, SEP4, SEP7, SEP8

Sean Gillette (sean_gillette@avusd.org), Vanguard Preparatory School, Apple Valley, Calif.

Hear how students worked alongside astronomers to measure double stars. The data was included in a scientific journal article and submitted to a science journal for publication.

Common Core State Standards: Five Critical Process Skills

(General)

Shoreline A, Hyatt

Science Focus: GEN

Donna Walker Tileston (dwtileston@gmail.com), Strategic Teaching and Learning, Dallas, Tex.

With the passage of the CCSS comes a new way of assessing what students know. Process skills help us to determine what students can do with the knowledge they have acquired. This session includes a demonstration of the five critical process skills within the CCSS with specific examples for the science classroom.



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Phone: (319) 273-2083 Fax: (319) 273-6998
E-mail: overseas.placement@uni.edu
Web site: www.uni.edu/placement/overseas

3:30–4:30 PM Presentations

Water, Water, Everywhere, Not a Drop to Spare: A Chemistry Unit Using the Science and Engineering Practices

(Grades 9–12)

Atlantic 2, Hilton

Science Focus: PS, SEP

Cara Hale-Hanes (*chemexplorer@aol.com*), McBride High School, Long Beach, Calif.

One of the greatest engineering challenges facing our civilization in the near future is providing potable water to our growing population. Using nanotechnology and probe technology, students will perform a series of investigations that lead to the final design of a filtration system that will be used in a village in India. The curriculum supports the NGSS science and engineering practices. Take home a digital version of the resources in the unit.

A Story of Adoption, Implementation, and Evaluation...and the Need for More Action Research

(Grades 9–12)

Pacific 1, Hilton

Science Focus: PS, SEP

Craig Bouma (*@mrbouma*; *cbouma@loyolahs.edu*), Loyola High School of Los Angeles, Calif.

Join the presenter as he shares his story of implementing an inquiry- and project-based Physics First curriculum, evaluating it along the way, and the need for more teachers to do curricular research and share their results.

CCSS Science Seminars: How Argumentation Helps You Meet the NGSS and CCSS at the Same Time

(Grades 5–9)

Regency Ballroom C, Hyatt

Science Focus: GEN, SEP

Rebecca Abbott (*rebabbott@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

Learn how to create your own Science Seminar, an instructional sequence that engages students in argumentation in a lively, rigorous way.

Using Technology to Connect Neuroscience with Teaching and Learning

(Grades 3–College)

Regency Ballroom E, Hyatt

Science Focus: LS, INF

Timothy O'Mahony (*tko2@uw.edu*), University of Washington, Seattle

We bring neuroscience principles of learning to middle school teachers using a blended model that engages teachers and students through an iterative challenge-based hands-on approach.

Performance Assessments: Features and Models of Quality Performance Tasks for the NGSS

(Grades K–12)

Regency Ballroom F, Hyatt

Science Focus: GEN, NGSS

Karen Whisler (*whisler.karen@measuredprogress.org*) and **Susan Tierney** (*stierney@measuredprogress.org*), Measured Progress, Dover, N.H.

Learn how to use performance assessment examples to develop task models that can integrate practices, core ideas, and crosscutting concepts to evaluate student learning of the NGSS.

Finding Treasure in Trade Books: NSTA Resources

(Grades P–12)

Seaview Ballroom A, Hyatt

Science Focus: GEN

Juliana Texley (*@JulianaTexley*; *juliana.texley@nsta.org*), NSTA President, Boca Raton, Fla.

Suzanne Flynn (*suzannemflynn@earthlink.net*), Lesley University and Cambridge College, Cambridge, Mass.

NSTA has an online searchable database of more than 10,000 teacher-to-teacher reviews of trade books and classroom materials for you to use. We've also partnered with the Children's Book Council for the past 45 years to identify the best-of-the-best. Come see how to use these resources in the classroom and discover this year's winners.

Before and After Retirement: Practicalities and Possibilities

(General)

Seaview Ballroom B, Hyatt

Science Focus: GEN

Teshia Birts (*tbirts@nsta.org*), Senior Director of Membership Development and Chapter Relations, NSTA, Arlington, Va.

The NSTA Retired Advisory Board invites you to a vibrant and useful information sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

UFOs, Crime Scenes, Mysteries, and More! Family Science Night in Action!

(General)

Seaview Ballroom C, Hyatt

Science Focus: GEN, INF, SEP

Caleb Cheung (*calebcheung1@gmail.com*), Oakland (Calif.) Unified School District

Get inspired! Design your own Family Science Night from start to finish. Involve hundreds of students, family members, and teachers. Session includes detailed notes and variations.

The Success of Implementing an Evidence-based Sexual Health Education Curriculum in Middle School Science

(Grades 7–8) *104B, Convention Center*
 Science Focus: LS, INF, SEP8

Larissa Karan (*larissa.k@mac.com*), Pio Pico Middle School, Los Angeles, Calif.

Emily Chung (*echung@ph.lacounty.gov*), Los Angeles County Dept. of Public Health, Los Angeles, Calif.

Discover how implementing an engaging, comprehensive sexual health education program (It’s Your Game...Keep It Real), that meets standards can benefit students and teachers at your school/district.

Use NASA Airborne Science Aircraft and Missions to Bring Real-Time Science to Your Classroom

(Grades 6–12) *104C, Convention Center*
 Science Focus: ESS2.C, ESS2.D, ETS1, LS2.B, PS2.A, PS3.C, CCC4, CCC5, SEP

Julie Bookman (*@jbookman76; jbookman76@gmail.com*), Palmdale High School, Palmdale, Calif.

Take learning to new heights using NASA Airborne Science Missions. Create your own lessons as you connect to pilots and scientists on aircraft or in mission control during science flights. Lessons include hurricane formation; demonstrating convection; collecting, graphing, and analyzing dropsonde data; and tracking hurricanes real time via a NASA Mission tools website.



Writing for Literacy with the DuPont Challenge

(Grades 7–12) *Naples I, Renaissance*

Science Focus: ETS

Barbara Pietrucha, Earth/Environmental Science Educator, Point Pleasant Beach, N.J.

Motivate students to excel in creative thinking and communicating ideas in science, technology, and engineering. By integrating research and writing into your curriculum, students develop literacy skills necessary for success in STEM.

Implementing and Assessing NGSS Science Practices with MY NASA DATA

(Grades K–12) *Verona, Renaissance*

Science Focus: ESS2.A, ESS2.D, ESS3.D, CCC1, CCC2, CCC4, CCC5, SEP1, SEP2, SEP3, SEP6, SEP8

Tina Harte (*tina.r.harte@nasa.gov*), NASA Langley Research Center, Hampton, Va.

Discover 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.

Surfing into the NGSS: Remote Sensing and Engineering on the California Coast

(Grades 7–10) *Centennial Salon B, Westin*

Science Focus: GEN, SEP

Kurt Holland (*kurt.holland@gmail.com*), Environmental Education Leader, Pacific Palisades, Calif.

Beaches are physics labs where “forces are made visible.” Learn about an investigation of Malibu’s Surfriider Beach using freely available tools. Leave with resources and a mental map for developing investigations that celebrate the integrative intent of the NGSS.

3:30–4:30 PM Panel

Embedding Research into Classroom Practice: Perspectives from a Panel of Teacher Researchers

(Grades 6–12) *Pacific 2, Hilton*

Science Focus: GEN, SEP

Lauren Swanson (*lswanson@whittier.edu*), Whittier College, Whittier, Calif.

Brian Paavo (*@STAR_Program; star@calpoly.edu*), California Polytechnic State University, San Luis Obispo
 Hear about field-tested classroom activities that engage students in research-like experiences that model the mathematical practices of the CCSS and the science and engineering practices of the NGSS.

3:30–4:30 PM Hands-On Workshops

Engineering: The Missing Piece of the Puzzle!

(Grades 6–12) *International 3, Hilton*

Science Focus: ETS, PS, SEP6

Greg Dodd (gbdodd@gmail.com), George Washington High School, Charleston, W.Va.

Join me as I cover NGSS science and engineering practice #6 by designing a solution to minimize thermal energy loss. Technology will be used to gather and analyze data. Handouts!

Rocking Around the Rock Cycle

(Grades 4–12) *Beacon A, Hyatt*

Science Focus: ESS

Debra Bereki, Retired Science Educator, Fillmore, Calif. Do you have a small set of rocks? Don't know how to use them? Learn a simple activity that helps students understand the rock cycle.

Mars Bound! Mission to the Red Planet

(Grades 4–College) *Beacon B, Hyatt*

Science Focus: ESS, ETS, INF

Sandra Kaszynski (sandra.d.kaszynski@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Mars Bound! Mission to the Red Planet is a mat and card activity easily downloadable from the internet. Practice basic math skills and work in collaborative groups just as real engineers do. Begin with a \$250,000,000 budget and see what you can achieve!

The Biology and Chemistry of the Digestive System

(Grades 9–College) *Harbor A/B, Hyatt*

Science Focus: PS, SEP

Jeffrey Orlinsky (jorlinsky@cox.net), Warren High School, Downey, Calif.

Jeff Bradbury (jbradbury@cerritos.edu), Cerritos College, Norwalk, Calif.

Get a fresh perspective on the digestive system. This workshop will show you how to introduce and incorporate the NGSS science practices into your classroom. Topics covered include the chemistry of catalysts and acid/base reactions.

NGSS Practices Made Perfect: Simple Activities to Teach Every NGSS Practice

(Grades 3–8) *Regency Ballroom A, Hyatt*

Science Focus: GEN, INF, SEP

Greg Brown (@gregbrafft; greg@raft.net), RAFT Bay Area, San Jose, Calif.

Leave this workshop with real samples of easy-to-teach

hands-on projects that support the science and engineering practices in the NGSS. Specific tips from RAFT will be given to adjust each activity to suit grades 3–5 and grades 6–8.

Free Apps That Bring Real-World Science into the Classroom!

(Grades 5–12) *Regency Ballroom B, Hyatt*

Science Focus: ESS, LS

Donna Markey, Vista Visions Academy, Vista, Calif.

Explore seismographs, measure decibels, observe the International Space Station in real-time, travel the universe, identify plant life, view 3-D cells, and more through free apps!

Using the Next Generation Science Standards in Chemistry Classes

(Grades 9–College) *Regency Ballroom D, Hyatt*

Science Focus: PS

Michael Mury (m_mury@acs.org), American Chemical Society, Washington, D.C.

With the development of the NGSS, including connections among the sciences is even more vital. Attend this workshop for suggestions on including aspects of the standards in your chemistry class. A chemistry course can definitely integrate physics, environmental science, Earth and space science, and life sciences.

Using Hubble Deep Field Data

(General) *Shoreline B, Hyatt*

Science Focus: ESS, SEP3, SEP8

Rick Pomeroy (jrpomeroy@ucdavis.edu), University of California, Davis

Soar into distant galaxies via unique space content. Use Hubble Ultra-Deep Field images to develop skills of data analysis, collaboration, modeling, and writing evidence-based conclusions. Handouts!

CESI Session: Elementary Science Share-a-Thon

(Grades P–8) *Grand Ballroom B, Convention Center*

Science Focus: GEN

Jim McDonald (@jimsciencguy; jim.mcdonald@cmich.edu), Central Michigan University, Mount Pleasant

Join CESI members as they present a variety of elementary science ideas that can be integrated with other subjects. Walk away with handouts to implement in your classroom.

Who’s Your Daddy?*(Grades 7–12)**Capri, Renaissance*

Science Focus: LS3, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

William Nelson (wtnamd@mac.com) and **Tom Lau** (@hollandtlau; halfclueless@yahoo.com), Holland Middle School, Baldwin Park, Calif.

“Who’s Your Daddy?” provides a fun and engaging way to help students cement their understanding of heredity through hands-on research-based lessons.

Let’s Talk Science: Seeding Argumentation About Cells and Growth*(Grades 5–9)**Naples III, Renaissance*

Science Focus: LS

Deena Gould (DNAmartin@cox.net), Arizona State University, Tempe

How do you begin scientific argumentation in a classroom? Join me as I share a framework for seeding collaborative discourse around concepts of living and growing.

Creating “Wows” in Biology to Increase Student Engagement*(Grades 5–9)**Sicilian Ballroom, Renaissance*

Science Focus: LS, INF, SEP1, SEP4

Emily Williams (@science_WOW; ewilliams@spusd.net), South Pasadena Middle School, South Pasadena, Calif.

Learn about the power of creating “WOW” moments for students by developing experiences that are memorable and meaningful. Sample activities will include cell structure and function, genetics, evolution projects, natural selection, ecosystems, and incorporating student-made movies. Handouts!

Accessing Complex Science Text Through Close Reading Strategies*(Grades K–8)**Casablanca, Westin*

Science Focus: GEN, SEP8

Elizabeth Woodward (elizabeth.woodward@ousd.k12.ca.us), Oakland (Calif.) Unified School District

The ability to interact with complex texts is critical for college and career. Close reading involves multiple readings of a short piece of complex text and text-based questions and discussion that helps students analyze and comprehend the text. Close reading strategies provide access to language and learning for all students.

Energy Here, Energy There, Energy Everywhere!*(Grades 4–8)**Centennial Salon A, Westin*

Science Focus: ESS2.A, PS3.B, CCC5, SEP4, SEP5, SEP8

Kim Castagna (kcastagna@cusd.net) and **Jennifer Foster** (jfoster@cusd.net), Carpinteria Middle School, Carpinteria, Calif.

Energy is neither created nor destroyed; so how does it get from one place to another? Come explore energy transfer and transformation with engaging activities. *Note:* Hands-on activities available to the first 80 participants.

NASA’s “Reading, Writing, Rings, and More”*(Grades 1–6)**Centennial Salon C, Westin*

Science Focus: ESS

Rachel Zimmerman Brachman (rachel.zimmerman-brachman@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Explore NASA’s science and language arts curriculum that uses biographies, science notebooks, hands-on science activities, and demonstrations. Learn about ice, volcanoes, moons, canyons, and more.

Teaching the NGSS Through Water Science*(Grades K–6)**Centennial Salon D, Westin*

Science Focus: ESS2, ESS3, LS2, CCC4, SEP4

Maia Kolbeck (maia@bay.org), Aquarium of the Bay, San Francisco, Calif.

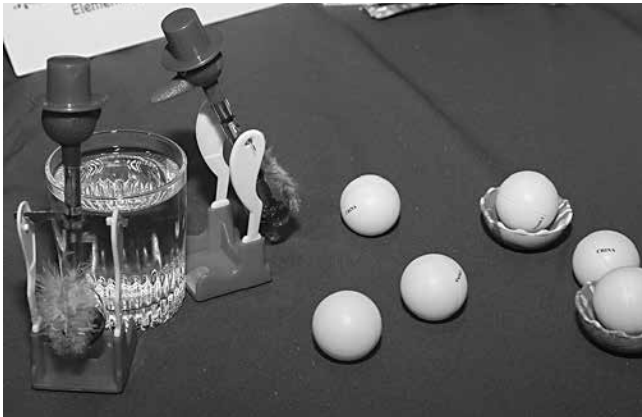
Water science—from watersheds to oceanography—offers many opportunities to teach the NGSS. Discover how to build meaningful curriculum around this most essential of resources.

Scientific Sketching as a Tool for Scientific Practices*(Grades 2–6)**Ocean Ballroom, Westin*

Science Focus: GEN, SEP1, SEP6

Amelia Rosenman (arosenman@calacademy.org), California Academy of Sciences, San Francisco

Scientific sketching is a naturally engaging and motivating activity for students to develop science practices. Join us as we draw on sketching strategies that enhance observation and critical-thinking skills.



3:30–5:00 PM Hands-On Workshop



NSTA Press® Session: Planning for Hard-to-Teach Biology Concepts Included in the NGSS

(Grades 9–College) 204, Convention Center

Science Focus: GEN, NGSS

Susan Koba (skoba@cox.net), Science Education Consultant, Omaha, Neb.

Anne Tweed (atweed@mcrel.org), 2004–2005 NSTA President, and McREL International, Denver, Colo.

Participate with the authors in a model lesson that exemplifies the framework and tools in *Hard-to-Teach Biology Concepts: Designing Instruction Aligned to the NGSS*.

4:00–4:30 PM Presentations

The Classroom “Without” Walls

(General) Harbor C, Hyatt

Science Focus: ESS2.C, ESS2.D, ESS3, ETS1.B, LS1.A, LS1.B, LS1.C, LS2, LS4.B, PS3.B, INF, CCC1, CCC4, CCC5, CCC7, SEP1, SEP3, SEP4, SEP7, SEP8

Darrell Walker (@dwalker_1; 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.

Supporting Academic Language Learners (ALL) in Science Conversations

(General) Shoreline A, Hyatt

Science Focus: GEN, SEP6

Sarah Ferris (sarah.ferris@wwu.edu), Western Washington University, Bellingham

Hear how to incorporate strategic talk moves into your science lessons to boost your students’ academic language development and meet the new standards.

4:00–5:15 PM Exhibitor Workshops

STEM, Science Fairs, and Other Student Projects

(Grades K–6) 101A, Convention Center

Science Focus: ETS

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Having trouble helping students conceptualize Science Fair projects, STEM performances, and other competitions? Learn an effective method for teaching students to design experiments from simple investigations. The same process can help students crystallize engineering design ideas into products. Join us as we share Delta products and resources.

Evidence for Plate Movement with FOSS Earth History for Middle School

(Grades 5–8) 101B, Convention Center

Science Focus: ESS, SEP

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

What evidence from rocks informs us about the history of our planet? Explore Earth History concepts with hands-on activities and multimedia, and identify connections to the NGSS science and engineering practices. Experience the recently released *FOSS Earth History Course*, 2nd edition, focusing on new features, strategies, content, and materials.

Building an Electric Motor the STEM Way

(Grades 5–12) 102 A/B, Convention Center

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

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

The new CPO Science Link™ Electric Motor learning module is a STEM- and NGSS-based 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.

Investigating Stem Cell Differentiation

(Grades 9–12) 102C, Convention Center

Science Focus: LS3

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

The human body is made of more than 200 types of cells, yet they all arise from a single fertilized egg cell. In this hands-on high school biology activity from SEPUP's *Science and Global Issues: Biology* program, experience how your students could investigate the development of specialized stems cells and consider bioethical issues in stem cell research.

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

(Grades 8–College) 103A, Convention Center

Science Focus: LS

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Model organisms allow us to study fundamental questions in biology that are difficult to study in humans. Learn how to culture the nematode *C. elegans* in your classroom. Explore how mutations affect alcohol metabolism using a simple locomotion assay. Data are collected and analyzed using statistics. Free flash drive/T-shirt drawing entry.

AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs

(Grades 6–12) 103B, Convention Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Considering the popularity of today's forensic science-based TV shows, this "real" classroom autopsy is sure to be a hit with your students. Participants learn about mammalian structure and function by dissecting a Carolina's Perfect Solution pig—while modeling the protocols of a forensic pathologist. Free materials and door prizes!

Take a Swipe at Microbes!

(Grades 5–10) 201B, Convention Center

Science Focus: ETS, LS

Sponsor: LaMotte Co.

Ken Rainis, Cottonwood, Ariz.

Excite students with fun and safe ways to become scientific explorers of microbes in air, water, food, and on surfaces. As scientists, students use technology to identify the microbes that they find. As engineers, they design methods to collect

data using BioPaddles®. As mathematicians, they quantify microbes in CFU/cm² units. Engage students in thinking about real-world connection of microbes and life. Come microbe hunting with us!

Ignite the NGSS with Today's Cutting-Edge Technology

(Grades K–8) 202C, Convention Center

Science Focus: GEN, NGSS

Sponsor: TCI

Bert Bower (bbower@teachtci.com), TCI, Mountain View, Calif.

See how powerful HTML5 web tools can inspire your students with cutting-edge presentations, assessments, interactive tutorials, and online notebooks. You'll experience the power of TCI's Bring Science Alive in this workshop appropriate for grades K–8.

Free Resources from HHMI for the NGSS Disciplinary Core Idea on Evolution

(Grades 6–12) 203 A/B, Convention Center

Science Focus: LS4

Sponsor: Howard Hughes Medical Institute

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.

Pitch Hands-On Anatomy Education for a Home Run in Student Success

(Grades 6–College) 203C, Convention Center

Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

Kelly Canino, ANATOMY IN CLAY Learning System, Loveland, Colo.

Teri Fleming, Educational Consultant, Houston, Tex.

Implement hands-on anatomy education in your classroom. We will build muscles of the rotator cuff and arm in clay, and talk about function/injury relating to sports and everyday activity. This pedagogy creates a deep knowledge of anatomy—giving students a successful path into continuing education and health careers. Come Build with Us: ANATOMY IN CLAY Learning System!

5:00–5:30 PM Presentations

Marine Restoration, from the Classroom to the Wild
(Grades 5–College) *Beacon A, Hyatt*

Science Focus: ESS3, ETS1, LS2, LS3, LS4, CCC1, CCC2, CCC4, CCC6, SEP1, SEP3, SEP5, SEP6, SEP8

Travis Garwick (*tgarwick@wsdk8.us*), Warner Middle School, Westminster, Calif.

Pool resources together to effectively deliver environmental science education. Hear how partnerships among classrooms and nonprofits resulted in a successful marine restoration through a service learning, project-based program led by students.

Waffles! A Tasty Look at Protein Synthesis

(Grades 7–12) *Harbor C, Hyatt*
Science Focus: LS1.A, CCC4, CCC6, SEP2

Paul Oyler (*oyler.pc@gmail.com*), George H. Flamson Middle School, Paso Robles, Calif.

Dano Costello (*descostello@gmail.com*), Student Teacher, Arroyo Grande High School, Arroyo Grande, Calif.

Serve up new learning in your classroom as students investigate the role each organelle plays in protein synthesis by making waffles. The detailed analogy supports secondary students as they engage this concept.

5:00–6:00 PM Presentations

The 50 Best Physics Demos to Do Before You Die...
(Grades 7–12) *International 3, Hilton*

Science Focus: PS

Peter Hopkinson (*phopkinson@shaw.ca*), Retired Instructor, Burnaby, B.C., Canada

Well, maybe not quite 50, but as many as we can fit into our time, and they really are the best!

Don't Just Punt It, Punnett! An Interactive Model on What the Punnett Square Really Represents

(Grades 7–10) *Pacific 1, Hilton*

Science Focus: LS3.A, SEP4, SEP6, SEP7

Julie Allender, De Anza Middle School, Ontario, Calif.

Mary Timassy-Nelson (*@MaryTimassy; mary.timassy@omsd.net*), Vineyard STEM School, Ontario, Calif.

Paul Beardley (*pmbearley@csupomona.edu*), California Polytechnic State University, San Luis Obispo

Do students know what the Punnett square represents? Are they connecting the major concepts in biology to the use of the Punnett square? Join us and find out how to help your students develop an explanation for genetic patterns, while incorporating writing and math.

Lotions, Potions, and Scrubs: Polymer Science in Cosmetics

(Grades 6–12) *Pacific 2, Hilton*

Science Focus: PS, INF

Sherri Rukes (*scrukes@comcast.net*), Libertyville High School, Libertyville, Ill.

Examine the various chemicals and chemistry behind some of the most common cosmetic products. Learn how to make various cosmetics as well as the polymer science behind them. Handouts and samples provided.

New Teachers and the New Standards

(Grades K–12) *Harbor A/B, Hyatt*

Science Focus: GEN, NGSS

Deanna Mack (*demack@dusd.net*), Downey (Calif.) Unified School District

Find out how beginning teachers can be a part of the process as the nation transitions to the next generation of science education. Lesson ideas, planning strategies, and resources that can help inform and drive the planning process will be shared.

NGSS Tiny Science to Teach Big Ideas

(Grades 7–12) *Regency Ballroom A, Hyatt*

Science Focus: PS, CCC3, CCC4, SEP

Cara Hale-Hanes, McBride High School, Long Beach, Calif.

Nanoscience experiments and activities can excite students about current research, as well as help them build stronger mental models about atoms. I'll cover successful nanoscience labs, as well as the nanoscience behind them. We'll tackle the crosscutting concepts of size and proportion and systems and system models using nanoscience. Handouts!



Engage Students in Technology, Teach Forensic Science, and Encourage STEM Careers with CSI Web Adventures

(Grades 6–College) *Regency Ballroom B, Hyatt*

Science Focus: ETS, INF

Lynn Lauterbach (*@lynncantweet; lynnlauterbach@gmail.com*), Retired Teacher, Loveland, Colo.

Add some excitement to your classroom by using these free online resources that engage students in accurate, up-to-date forensic science and encourage STEM careers.

Teacher Communities Collaborating to Implement NGSS Practices

(Grades 6–College) *Regency Ballroom F, Hyatt*
 Science Focus: GEN, NGSS

Thomas Reinhardt (*reinhardt.biology@gmail.com*), Oakland (Calif.) Unified School District

Plan teacher collaboration for NGSS implementation by reflecting on experiences of urban teacher teams in secondary schools. Take home strategies to design and sustain collaborative teams.

Don’t Introduce a Nonnative Invasive Species into Your Neighborhood

(Grades P–12) *104B, Convention Center*
 Science Focus: GEN, INF

Russell Brown (*russell.brown@lacity.org*), Los Angeles City Park Rangers, Los Angeles, Calif.

Many nonnative organisms have been introduced to habitats via discharges of ballast from ships and cargo shipments, while some have been introduced from lab escapes. Learn how to order, use, and dispose of organisms after you have completed your labs.

Science Notebooks: A Tool for Thinking in the Age of CCSS and NGSS

(Grades K–12) *Centennial Salon A, Westin*
 Science Focus: GEN, NGSS

Dave Tupper (*dtupper@lsusd.net*), Tierra Del Sol Middle School, Lakeside, Calif.

Participants will stretch their own thinking as they move along the path from teacher-driven notebooks as a place to store stuff to student-driven “thinking” notebooks that help kids make sense of and understand science concepts.

Table-Top Aquaponics: \$40 Simple STEM Project Makes Engineering Practical

(Grades K–8) *Centennial Salon D, Westin*
 Science Focus: GEN, NGSS

Doug Henderson (*@dhenderson_sci; dhenderson@valverde.edu*), Citrus Hill High School, Perris, Calif.

Hear how to build and use a classroom aquaponics system that makes NGSS achievable and raises student engagement. Take home lesson plans and a building guide.

Mastering Models Through Science Inquiry and Project Based Learning

(Grades 3–5) *Ocean Ballroom, Westin*
 Science Focus: GEN, SEP

Antoinette Pippin (*antoinettepippin@gmail.com*), Dr. Theodore T. Alexander, Jr., Science Center School, Los Angeles, Calif.

Brisa Rivas (*brivas@cscmail.org*), California Science Center, Los Angeles

Explore ways to help your students apply their knowledge through the creation of scientific models to enhance their arguments and project presentations. Walk away with a better understanding of how to incorporate model-based inquiry (MBI) into your science instruction.



5:00–6:00 PM Hands-On Workshops

Cool Is Hot: The Electromagnetic Spectrum, IR Radiation, and IR Astronomy

(Grades 6–12)

Atlantic 2, Hilton

Science Focus: ESS1.A, ESS1.B, PS4.B, SEP3, SEP4

Dana Backman (dbackman@sofia.usra.edu), SOFIA Outreach, Mountain View, Calif.

Explore a potpourri of activities and resources to support teaching infrared radiation (heat), the electromagnetic spectrum, and the unseen universe. Handouts!

What Does It Really Look Like? Asking Questions and Designing Investigations in the Middle School and High School Classroom

(Grades 6–12)

International 2, Hilton

Science Focus: GEN, SEP4

Meredith Vaughn (mhoule@mail.sdsu.edu), San Diego State University, San Diego, Calif.

Explore the NGSS science and engineering practice of modeling using video clips and student work from Noyce Master Teacher's classrooms.

NGSS: Make Your Lessons 3-D

(Grades 1–5)

Beacon B, Hyatt

Science Focus: GEN, NGSS

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

Experience model lessons designed to integrate the three dimensions in the NGSS: science and engineering practices, disciplinary core ideas, and crosscutting concepts.

CCSS Earthquake! Integrating CCSS and NGSS Practices in the K–5 Science Classroom

(Grades K–5)

Regency Ballroom C, Hyatt

Science Focus: ESS3.B, ETS1, CCC2, CCC4, CCC6, SEP4, SEP5, SEP8

Rosita Young (rosita.young@ousd.k12.ca.us), Oakland (Calif.) Unified School District

Engage in an engineering challenge that addresses a California problem while incorporating the NGSS practices and CCSS in English language arts and mathematics. All teaching materials included.

Born to Run: An Inquiry-based Evolution Project

(Grades 7–College)

Regency Ballroom D, Hyatt

Science Focus: LS

Theodore Garland Jr. (tgarland@ucr.edu), University of California, Riverside

Tricia Radojcic (tradojcic@tvusd.k12.ca.us), Bella Vista Middle School, Murrieta, Calif.

Bring investigation and active learning into your evolution unit! Engage in an experimental evolution lesson in which students formulate hypotheses about mice bred for voluntary exercise on a running wheel and test them by measurements of bone photographs.

Learning Science as Science Is Done: Science Practices and Student-centered Investigation

(Grades 5–9)

Regency Ballroom E, Hyatt

Science Focus: GEN, INF, SEP1, SEP2, SEP3, SEP6

James Kisiel (j.kisiel@csulb.edu), California State University, Long Beach

Science is more than definitions and formulas—it's questioning, planning, explaining, and using evidence. See how use of these science practices can encourage student-centered learning. Handouts!

Black Holes Suck

(Grades 6–College)

Seaview Ballroom B, Hyatt

Science Focus: ESS1, PS, CCC7, SEP2, SEP6

Jeffery Adkins (@astronomyteacher; 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.

Noodling It Out: The Modeling Project

(Grades 2–12)

Seaview Ballroom C, Hyatt

Science Focus: GEN, SEP4

Steve Veit (sveit@ccebos.org), Center for Collaborative Education, Boston, Mass.

Experience a fun, engaging, hands-on way to develop and assess the NGSS practice of modeling using pasta. Create your own models, assessments, and rubrics.

Integrated Place-based STEM: Local Context for STEM Content

(Grades K–12) *Shoreline B, Hyatt*
 Science Focus: ETS SEP

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

Learning and teaching STEM is more effective and more purposeful when local STEM contexts are leveraged for teaching STEM content. Through hands-on/minds-on activities, we will explore how the STEM in your place can be used to enhance your STEM curriculum and instruction.

Inquiry in Action: Investigating Matter Through Inquiry

(Grades 3–8) *Capri, Renaissance*
 Science Focus: PS1.A, PS1.B, CCC6, SEP1, SEP2, SEP3, SEP5, SEP6

Patti Galvan (*p_galvan@acs.org*), American Chemical Society, Washington, D.C.

Conduct simple tests on four identical-looking household liquids to tell them apart. Molecular model animations show why each liquid behaves as it does. Everything is at *www.inquiryinaction.org*.

Food Science from STEM to Plate

(Grades 5–7) *Naples I, Renaissance*
 Science Focus: GEN, INF, SEP

Stephanie Etcheverria (*@learnaboutag; setcheverria@cfbf.com*), California Foundation for Agriculture in the Classroom, Sacramento

Teach STEM and food safety! Experience hands-on activities and take home a unit that supports the CCSS and NGSS. Food Safety from STEM to Plate highlights careers in food production and the STEM connections.

Modeling Modeling

(Grades 5–8) *Naples III, Renaissance*
 Science Focus: GEN, CCC, SEP

Steve Williams (*STEMswill@gmail.com*), Santa Rosa Accelerated Charter School, Santa Rosa, Calif.

Linn Briner (*linn.briner@sbcglobal.net*), Rincon Valley Middle School, Santa Rosa, Calif.

NGSS is setting the stage for modeling—taking a key role in the student experience. Come explore how modeling can be used in an active way to describe, test, and make predictions about abstract ideas. Leave with examples, graphic organizers, and lessons.

The 5Es (Engage, Explore, Explain, Elaborate, and Evaluate) and the NGSS for Middle School

(Grades 7–8) *Sicilian Ballroom, Renaissance*
 Science Focus: PS2.A, SEP5

Paula Benta (*pbentalausd@gmail.com*), **Iliana Baltazar**, and **Ulises Dumas** (*ued1617@lausd.net*), Thomas Alva Edison Middle School, Los Angeles, Calif.

Song Hwang (*smh0200@lausd.net*), Foshay Learning Center, Los Angeles, Calif.

The goal of this session is to enhance and improve student critical thinking and innovation through the use of common recycled materials. Participants will create a model that demonstrates the effect of Newton’s First and Third Laws of Motion as well as the Egg Armor Challenge.

Science and Engineering Notebooking for the Primary Classroom

(Grades K–3) *Casablanca, Westin*
 Science Focus: ETS, INF

Marsha Johnson (*makjohnson@capousd.org*), Kinoshita Elementary School, San Juan Capistrano, Calif.

Teresa Acero (*tmacero@capousd.org*), Viejo Elementary School, Mission Viejo, Calif.

In this fun make-and-take workshop, you will complete a hands-on STEM project and create a sample science/engineering notebook for use in a primary classroom.

Using Children’s Literature to Discover and Explore the Engineering Design Process Through Storytelling and Making

(Grades P–3) *Centennial Salon B, Westin*
 Science Focus: ETS, INF

Dijanna Figueroa (*@dijannafigueroa; dijanna@gmail.com*), St. Matthew’s Parish School and Make It Education, Pacific Palisades, Calif.

Introduce the engineering design process to your young students by bringing children’s literature to life through making, play, and storytelling. Join me for a demonstration.

5:30–6:00 PM Presentations

Keeping Science in the Classroom and Nonscience Out

(Grades 6–12)

Beacon A, Hyatt

Science Focus: ESS2, ESS3, LS2, LS4

Eric Meikle and **Minda Berbeco** (@MindaBerbeco; berbeco@ncse.com), National Center for Science Education, Oakland, Calif.

What should you do when evolution or climate change are challenged by students, parents, or even colleagues? The National Center for Science Education has resources for you.

Restoration Projects Leading from Service Learning to Doing Research

(Grades 7–College)

Harbor C, Hyatt

Science Focus: GEN, INF, NGSS

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

Many of our local high schools have a graduation requirement that their students must complete community service or service learning projects. Hear how many students opt to complete service learning projects involving field research, such as removing invasive species, growing native species, making compost, and planting trees.

7:00–10:00 PM CSTA Night at the Aquarium of the Pacific

Tickets Through CSTA Required

Aquarium of the Pacific

Join your CSTA colleagues for an amazing evening at the Aquarium of the Pacific. The evening promises to be fun and offer a relaxed environment for science teachers from across California to network, learn, and share.

This will not be an ordinary visit to the aquarium. The Great Hall will feature demonstrations and information tables featuring STEM programs and projects that teachers can and are doing at their schools! Learn about all of the exciting options available to teachers to support science, STEM, and NGSS in your school. There will also be several guest lecturers in the auditorium presenting on sharks and ocean science.

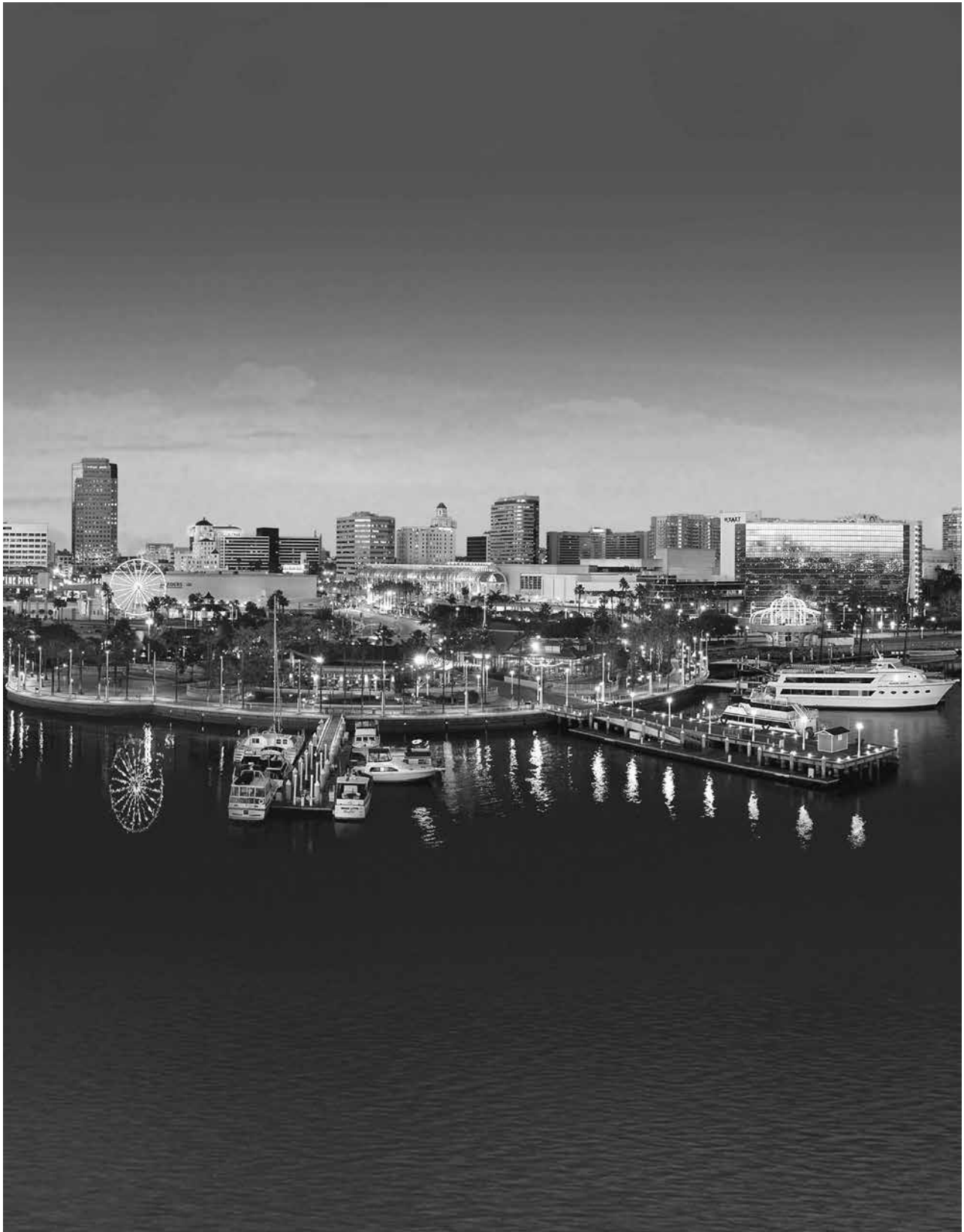
Participants will be able to access the demonstrations, lectures, and the aquarium. Light appetizers will be served and a cash bar will be available.

Tickets available for purchase at the CSTA booth. CSTA members can purchase a ticket for \$10; conference registrants who are not members of CSTA may purchase a ticket for \$25. Ticket includes admission plus one drink coupon. Space is limited to the first 500 registrants!

Hosted by CSTA and the Aquarium of the Pacific and sponsored by Chevron.



—Photo courtesy of Aquarium of the Pacific



—Photo courtesy of Long Beach Convention & Visitors Bureau

8:00–8:30 AM Presentations

Developing the Reluctant Preservice Teacher's Confidence in Facilitating Science Lessons

(Grades P–6, College) *Regency Ballroom D, Hyatt*
Science Focus: GEN

Kathy Spillman (kspillman@pittstate.edu) and **Pamela Sells** (psells@pittstate.edu), Pittsburg State University, Pittsburg, Kans.

Hear how an elementary science professor and a university supervisor collaborated to connect a science methods course to the student teaching experience. Discussion centers on connections between science, CCSS, lesson planning, and the relationship of science across the curriculum.

STEM-ing the Gap in Outdoor Education to Increase Student Achievement

(Grades P–12) *Shoreline A, Hyatt*
Science Focus: GEN, INF, CCC, SEP

Robyn Young, Boojum Institute for Experiential Education, Anza, Calif.

Let's connect the next generation of students to the wonders of STEM—experientially engaging youth to think critically, and grow into active citizens and environmental stewards.

8:00–9:00 AM Presentations

What! We Have to Teach English, Too?

(Grades 9–12) *Atlantic 2, Hilton*
Science Focus: GEN

Laurie Hayes (lhayes@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.

Fabulous Physics (with Cheap Stuff)!

(Grades 8–12) *International 2, Hilton*
Science Focus: PS

Al Guenther, Retired Science Teacher, Palos Verdes Peninsula, Calif.

Experience an exciting hour of attention-grabbing, often discrepant, demonstrations about forces, sound, electromagnetism, and weightlessness. Designed to stimulate inquiry and enhance concept construction. Illustrated handouts!

NARST Session: Efficacy of Two Types of Multiple-Choice Items to Diagnose Student Understanding in the Classroom

(Grades 7–8) *Pacific 1, Hilton*
Science Focus: PS

Chu Hye-Eun (hyeeun.chu@gmail.com), National Institute of Education, Singapore

Join me as I discuss findings from a study investigating the efficacy of instruments to assess grade 8 students' conceptual understanding of heat and temperature before and after their instruction. Two different types of instruments were used in

this study: Type 1, consisting of multiple-choice items with open-ended justifications and Type 2, consisting of two-tier multiple-choice items.

Tsunami! Understanding the Generation, Propagation, and Hazards of Tsunamis

(Grades 6–12) *Pacific 2, Hilton*
Science Focus: ESS2.B, ESS3.B, PS4.A

Lawrence Braile (braile@purdue.edu), Purdue University, West Lafayette, Ind.

Explore recent tsunamis (Indonesia and Japan), and a hands-on activity using a simple, inexpensive wave tank to understand tsunami generation, propagation, and hazards.

AMSE Session: The Promise of the NGSS and America's Forgotten Children

(General) *Beacon A, Hyatt*
Science Focus: GEN, INF, NGSS

Jerry Valadez (jdvscience@yahoo.com), SAM Academy, Inc., Fresno, Calif.

James Marshall (jamesm@csufresno.edu), California State University, Fresno

Ana Lopez (anaglopez4@att.net), Central Valley Science Project, Sanger, Calif.

How can the NGSS improve science education and increase opportunity for all children? What about the minority children of rural America? Hear how the project-based programs Sanger Community Science Workshop and Young Makers can build a community of like-minded young people, adult mentors, and organizations to support high-quality STEM learning.

Using the NGSS Practices in Middle School Classrooms

(Grades 6–9)

Beacon B, Hyatt

Science Focus: GEN, SEP

Matthew Hartman (@ecybermission; *mhartman@nsta.org*), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

Join me as I discuss classroom activities for middle school students that make use of the science and engineering practices from the *Next Generation Science Standards*. We'll also share information about the eCYBERMISSION competition.

Space Exploration in the Next 20 Years: It's Not Going to Be Like the Last 50

(Grades 3–College)

Regency Ballroom F, Hyatt

Science Focus: GEN, INF

David Seidel (*david.m.seidel@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Put classroom learning on a far-out trajectory. Space exploration is now being shaped by international and commercial endeavors. See what's ahead from Pluto flybys, Chinese on the Moon, and vacations in orbit.

AAPT Session: Problem-Solving with Think-Alouds

(Grades 6–College)

Seaview Ballroom A, Hyatt

Science Focus: PS, INF

Jeff Phillips (*jphillips@lmu.edu*), Loyola Marymount University, Los Angeles, Calif.

Problem solving is widely considered one of the most important sets of skills for success in physics courses, yet many students struggle to solve real-world problems. In this session, improve student feedback via “think-aloud” lecture techniques and discover how to incorporate these components into your classes.

Authors Wanted! Learn How to Submit an Article for Publication in an NSTA Journal

(General)

Seaview Ballroom B, Hyatt

Science Focus: GEN

Linda Froschauer (*fro2@me.com*), 2006–2007 NSTA President, and Field Editor, *Science & Children*, Pasadena, Calif.

Inez Liftig (*iliftig@gmail.com*), Field Editor, *Science Scope*, Westport, Conn.

Meet with editors to learn how to successfully prepare and submit an article for publication in an NSTA journal.

NABT Session: Do You See What I See?

(Grades 9–12)

Seaview Ballroom C, Hyatt

Science Focus: GEN, SEP2

James Clark (*jclark@slzusd.org*), Arroyo High School, San Lorenzo, Calif.

When student thinking is made visible, students are engaged in the lesson and teachers can adjust their teaching to address student misconceptions and preconceptions. This session will focus on activities, labs, and interactive discussion techniques designed to make student thinking visible.



NSTA Press® Session: Uncovering Students' Ideas in the STEM Disciplines

(Grades 3–12)

204, Convention Center

Science Focus: ETS

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

Joyce Tugel (*jtugel@mmsa.org*), Maine Mathematics and Science Alliance, Augusta

Learn how to use formative assessment probes and strategies to uncover student thinking that links science to mathematics, technology, and/or engineering. Try out new probes in the forthcoming book, *Uncovering Student Ideas in Science, 25 STEM Formative Assessment Probes*.

NMLSTA Session: Making Global Connections on a Budget for Middle School STEM

(Grades 5–12)

Naples I, Renaissance

Science Focus: GEN, NGSS

Diana Cost (*diana_cost@yahoo.com*), Global Learning Charter Public School, New Bedford, Mass.

Nealyn Dunlop, Roosevelt Middle School, New Bedford, Mass.

Tricia Radojcic (*tradojcic@tvusd.k12.ca.us*), Bella Vista Middle School, Murrieta, Calif.

Hear how the National Middle Level Science Teachers Association uses real-world connections to create networks of partnerships that bring a wealth of resources to engage students in STEM.

From Designing Nanobots to Modeling Redwoods: Spotlight on STEM Careers

(Grades 6–College)

Naples III, Renaissance

Science Focus: GEN, SEP1, SEP2, SEP4, SEP5, SEP6

Andrea Aust (@KQEDaust), KQED, San Francisco, Calif.

Eric Lewis (@SFUSD_Science; *ericscottlewis@aol.com*), San Francisco (Calif.) Unified School District

Working in STEM fields can include anything from designing kites to building nanodevices. Perk students' interest in STEM careers through an exploration of multimedia resources.

Science Update: Energize Student-based Research with Real-World Science

(Grades 3–7)

Verona, Renaissance

Science Focus: GEN, INF, SEP

Michelle Rodriguez, Nicole Duran (nduran@nhm.org), **Marisol Rojas**, and **Lindsay Ash** (lindsay_ash@hotmail.com), Natural History Museum of Los Angeles County, Los Angeles, Calif.

Bring real-world science into the 21st-century classroom. The Natural History Museum of Los Angeles County's Earthmobile serves as an exemplary model for bringing real-world science into the classroom. Learn how lessons from informal education can spark your students' curiosity, inspire questioning, and guide research.

San Francisco as a Case Study for NGSS-readiness in California Public Schools

(Grades K–12)

Ocean Ballroom, Westin

Science Focus: GEN, INF, NGSS

Maia Kolbeck (maia@bay.org), Aquarium of the Bay, San Francisco, Calif.

Hear about Aquarium of the Bay's research on NGSS-readiness in San Francisco and gain insight into how to support teachers in transitioning to the NGSS.



8:00–9:00 AM Hands-On Workshops

Stretch Your Legs for Science!

(Grades 3–8)

Regency Ballroom B, Hyatt

Science Focus: GEN, INF, NGSS

Jennifer Fee, The Cornell Lab of Ornithology, Ithaca, N.Y. Care for a little more exercise than running between sessions? Join me to explore citizen science via a mini bird walk! After a tutorial on bird identification, we'll head outside so you can experience just how engaging and easy it is!

Working the NGSS into Your Curriculum Through Ocean Exploration

(Grades 5–12)

Regency Ballroom E, Hyatt

Science Focus: ETS1, PS2, PS4, SEP

Judith Coats (@oceanexplorer; judithacoats@gmail.com), NOAA OE Facilitator, Del Mar, Calif.

Deepen student understanding of oceans with lessons that integrate science and engineering practices focusing on how the ocean is explored and the state-of-the-art technology involved.

How Weird Can It Get? Developing Weather and Climate Literacy

(Grades 6–12)

Grand Ballroom B, Convention Center

Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

Explore the scientific foundations of what we know about weather, climate, and climate change through effective hands-on and data-rich classroom activities from NESTA.

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

(Grades 6–8)

104C, Convention Center

Science Focus: PS1.A, CCC2, CCC4, SEP2, SEP3

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

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

Breathing Peas

(Grades 9–12)

Sicilian Ballroom, Renaissance

Science Focus: LS

Leann Iacuone (@liacuone; liacuone@gmail.com), John W. North High School, Riverside, Calif.

Come learn about the production of carbon dioxide from peas to help students understand cellular respiration using the TI-Nspire™ and Vernier ProBeware.

Into the Volcano—Inner Workings and Eruption Types

(Grades 6–8)

Centennial Salon A, Westin

Science Focus: ESS2.A, ESS3.B, CCC2, CCC4, SEP2, SEP3

Tracy Schiffers, McKinley Elementary School, Santa Barbara, Calif.

Meagan Pasternak, Peabody Charter School, Santa Barbara, Calif.

Explore movement inside a volcano and model volcanic eruptions. Receive a middle level Earth science unit applicable to an integrated or discipline-specific model that supports the NGSS.

ASEE Session: Introducing Engineering to Elementary School

(Grades K–5)

Centennial Salon C, Westin

Science Focus: ETS

David Heil (dheil@davidheil.com), David Heil & Associates, Inc., Portland, Ore.

Engineering is natural in elementary. Learn about tools such as the Engineering is Elementary® program and other ways to introduce engineering in K–5.

Hands-On STEM

(Grades K–8)

Centennial Salon D, Westin

Science Focus: ETS, PS

Greg Brown (@gregbrafft; greg@raft.net), RAFT Bay Area, San Jose, Calif.

Find out how to create and integrate easy hands-on STEM opportunities with your students. Concepts explored include motion, momentum, and friction as well as light and optics. Walk away with several sample activities.

8:00–9:15 AM Exhibitor Workshops

Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab!

(Grades 8–12)

101A, Convention Center

Science Focus: LS

Sponsor: PASCO scientific

Ronn Fieldhouse, PASCO scientific, Roseville, Calif.

Get hands on with biology experiments, including Enzyme Activity and Cellular Respiration, for accurate and fast results. See the latest in PASCO technology including the Optical Dissolved Oxygen Sensor, Wireless Spectrometer, and data sharing in SPARKvue®—compatible with iPad, Windows, Mac OS, Android, and Chromebooks. Free sensor set for five attendees!

Using Problem-Based Learning to Up Your NGSS Game

(Grades K–11)

102 A/B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Pearson

Michael Padilla, 2005–2006 NSTA President, and Clemson University, Clemson, S.C.

The NGSS seeks to incorporate more scenario-based and Problem-Based Learning. To help prepare students in 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.

DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life!

(Grades 6–12)

102C, Convention Center

Science Focus: ETS2, LS2

Sponsor: LAB-AIDS®, Inc.

Jessica Jones, Chatham Middle School, Chatham, Va.

Help students sprout and grow with a different approach to teaching photosynthesis, cellular respiration, and plant food storage that connects to the carbon cycle. Challenge and excite your students with inquiry activities, such as dissecting a plant seed and treating it with reagents differentiating between plant food stored as a simple sugar or as a starch.

Biotechnology Basics*(Grades 6–College)**103A, Convention Center*

Science Focus: LS, INF

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Feeling overwhelmed by the complicated experiments performed in biotechnology laboratories? If so, join us for this hands-on workshop that explores biotechnology techniques commonly used in research labs (DNA isolation, PCR, and electrophoresis). These experiments can help students understand how techniques like genetic engineering work in a real-world context. Free flash drive/T-shirt drawing!

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens*(Grades 6–12)**103B, Convention Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Animals look different, but are they really that different on the inside? Students find out firsthand with this hands-on dissection of a pig, rat, shark, and frog. It's a fascinating comparative dissection activity that features our very best Carolina's Perfect Solution vertebrate specimens. Free dissection supplies and great door prizes.

Envelope Graphic Organizers—UnFOLDing the Possibilities*(General)**104A, Convention Center*

Science Focus: GEN

Sponsor: Dinah-Might Adventures

Nancy Wisker (nancy@dinah.com), Dinah Zike Academy, Columbia, Tenn.

In this fast-paced, interactive session, discover how to transform basic classroom materials and manila envelopes into 3-D graphic organizers, also known as Foldables®. See the possibilities unFOLD before you and depart with ideas ready to use on Monday that are evidence based, kinesthetic, and integrative.

Active Chemistry and Active Physics: Project-Based Inquiry Science™ That Engages Students*(Grades 9–12)**104B, Convention Center*

Science Focus: PS

Sponsor: It's About Time

Presenter to be announced

Active Chemistry and Active Physics are NSF research-based curricula that make chemistry and physics accessible to ALL high school students. Find out how Active Chemistry and

Active Physics can enhance your instruction. Watch what will happen to the quality of students' work when they take ownership of real-world scientific challenges that matter to them.

A Revolutionary Way to Address All Your Standards with National Geographic*(Grades K–5)**201B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: National Geographic Learning

Tom Hinojosa, National Geographic Learning, Littleton, Colo.

We'll discuss exciting ways to address the NGSS and literacy concerns relating to CCSS—all within engaging themes of science! A STEM approach using National Geographic Emerging Explorers will be featured. Learn how your elementary science program infused with engaging, streamlined NGSS science materials can provide access and understanding for all your students!

Hurricanes and Typhoons: Nature on the Rampage*(Grades 6–12)**202 A/B, Convention Center*

Science Focus: ESS2.D

Sponsor: Simulation Curriculum Corp.

Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.

Join us as we use Simulation Curriculum's *The Layered Earth Meteorology* to investigate two of the most destructive storms of recent times—Hurricane Sandy and Typhoon Haiyan. With the help of classroom-ready lessons, we will trace the causes, paths, and destructive effects of these superstorms, as well as learn how to track future storms.

Implementing the Eight NGSS Practices with Research-based Curriculum*(Grades 6–8)**202C, Convention Center*

Science Focus: GEN, SEP

Sponsor: Activate Learning

Joe Krajcik, Michigan State University, East Lansing**Marilyn Schmidt**, Retired Educator, Aurora, Colo.

IQWST stands for Investigating and Questioning our World through Science and Technology. Find out how to integrate the NGSS into the middle school science classroom using IQWST, the latest researched-based curriculum developed for grades 6–8. Leave with strategies to implement pedagogy that can increase student achievement.

Experience 21st-Century STEM Integration with Technology

(Grades 4–12)

203 A/B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Ward's Science

Sara Holmblad, VWR International, Los Angeles, Calif.

This interactive workshop showcases Ward's Science probe-aware options for every grade level and lesson need and shows how to incorporate them into existing hands-on science lessons. Participants will conduct NGSS-based experiments in general science concepts, biology, chemistry, physics, and environmental science that can help prepare for college and career. Lesson ideas and giveaways!

Implementing the NGSS and CCSS Just Got a Whole Lot Easier!

(Grades K–12)

203C, Convention Center

Science Focus: ETS, NGSS

Sponsor: Klein Educational Systems

Mark Weiss (mweiss@ljcreate.com), LJ Create, Orlando, Fla.

Explore how to implement the NGSS and CCSS ELA through the application of scientific principles in real-world science, engineering, and technology challenges. We have developed an English and Spanish cloud-based blended learning platform for teaching science. All who attend will receive free access to this powerful science resource.

8:00–9:30 AM Exhibitor Workshop

Chemistry and Biology with Vernier

(Grades 7–College)

103C, Convention Center

Science Focus: LS, PS

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 our new wireless sensors, to conduct experiments from our popular chemistry and biology lab books. Use LabQuest Mini with a computer, or LabQuest 2 as a standalone device, with a computer, or wirelessly with iPad, Chromebook, and BYOD environments.

8:00–10:00 AM Roundtable

NSTA's Exemplary Science Programs (ESP) Meeting Current Reform Efforts

(General)

Capri, Renaissance

Science Focus: GEN, SEP1, SEP8

ESP Coordinators:

Bonnie Brunkhorst, 1990–1991 NSTA President, and California State University, San Bernardino

Herb Brunkhorst, California State University, San Bernardino

Presenters

Lisa Martin-Hansen ([@Lmartinhansen](https://twitter.com/Lmartinhansen); l.martinhansen@csulb.edu), California State University Long Beach

Anton Puvirajah (apuvirajah@gsu.edu), Georgia State University, Atlanta

Geeta Verma ([@gverma116](https://twitter.com/gverma116); geeta.verma@ucdenver.edu), University of Colorado Denver

Pradeep Dass (pradeep.dass@nau.edu), Northern Arizona University, Flagstaff

Eric Walters ([@EWaltersScience](https://twitter.com/EWaltersScience); ewalters@marymountnyc.org), Marymount School of New York, N.Y.

Karl Spencer ([@diimsa](https://twitter.com/diimsa); karl.spencer@visualrealization.com), Visualrealization.com, Houston, Tex.

The Four Goals/Justifications for Science were used by the National Science Education Standards (NSES)—first offered by Project Synthesis in 1981 in K–16 settings. The NSES, in turn, was used as a guide in the development of the recent *Next Generation Science Standards (NGSS)*. The goals indicate what students should experience while: 1) Doing Science; 2) Solving Personal Problems; 3) Solving Societal Problems; and 4) Making Career Choices.

The ESP series identifies people and places where the reforms recommended have emerged. The exemplars include: 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; 7) Exemplary Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching.

The series was conceived by Robert E. Yager (1982–1983 NSTA President), who continues ESP searches and ways of recognizing classroom successes while also encouraging more to try!

8:00–10:00 AM Hands-On Workshops**ACS Session: Energy in Chemistry: A Macroscopic View***(Grades 9–12)**International 4/5, Hilton*

Science Focus: PS

Marta Gmurczyk (*m_gmurczyk@acs.org*), American Chemical Society, Washington, D.C.

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.

Crystals and the Structure of Matter*(Grades K–12)**Shoreline B, Hyatt*

Science Focus: PS1.A, PS4.A, CCC1, CCC6

Martha Teeter (*teeter@ucdavis.edu*), American Crystallographic Association, Buffalo, N.Y.

President: Manal Swairjo, Western University of Health Sciences, Pomona, Calif.

Use crystals, structure, and light diffraction in this International Year of Crystallography 2014. Leave with an appreciation of structure as we illuminate basic crystallographic principles and how they relate to structural pictures used in science classes. Topics covered include crystal packing, crystal growth, diffraction gratings and lasers, repeating motifs and symmetry, and for high school level, Bragg’s law with simple trigonometry.

**8:30–9:00 AM Presentations****Identifying, Describing, and Developing Interdisciplinary Links Among Common Core, Elementary Science Education, English, 5Es, Gardner, and Universal Design for Learning***(General)**Regency Ballroom D, Hyatt*

Science Focus: GEN

Kathy Spillman (*kspillman@pittstate.edu*) and **John Franklin** (*jfranklin@pittstate.edu*), Pittsburg State University, Pittsburg, Kans.

An elementary science professor and an English professor discover and create connections among UDL, the 5Es (Engage, Explore, Explain, Elaborate, and Evaluate), Gardner’s Multiple Intelligences, and the CCSS.

Ocean Stewardship: Bringing Marine Protected Areas into the Classroom*(General)**Shoreline A, Hyatt*

Science Focus: ESS, INF

Lori Walsh (*lori.walsh@sealifeus.com*), SEA LIFE Aquarium at LEGOLAND California Resort, Carlsbad

Mike Schaadt (*mike.schaadt@lacity.org*), Cabrillo Marine Aquarium, San Pedro, Calif.

Everyone has a role in the ocean environment. Marine protected areas connect students with science and action while implementing core content standards. The Southern California Aquarium Collaborative has developed educational tools and lessons ready for classroom integration.

8:30–10:00 AM Exhibitor Workshop**What Fish Is That? Have Fun with PCR, Fish Flash Cards, and Jeopardy! to Perform DNA-based Identification***(Grades 9–College)**201A, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Use games to explore barcoding of fish. Learn how to extract DNA, amplify it with PCR, and classify species using sequencing/bioinformatics to determine if that fish you bought is really what’s on the label. Hear how students can contribute to the International Barcode of Life, a global genetic repository for barcodes of all species.

8:30–11:30 AM Short Course

NGSS Engineering is Elementary®: Putting the “T” and “E” in STEM (SC-3)

(Grades 1–8) *International 1, Hilton*
Tickets Required; \$35

Jody Sherriff (jskidmo@wested.org), K–12 Alliance/WestEd, Santa Ana, Calif.

For description, see page 36.

9:00 AM–5:00 PM Exhibits

Hall B, 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 will offer materials for sale throughout the conference.



9:30–10:30 AM Featured Presentation

STEM the New Normal! Really When Did That Happen?

(General)
Science Focus: ETS

Grand Ballroom A, Convention Center



Nancy Taylor (ntaylor@mail.sdsu.edu), Principal Investigator, Exploring STEM Careers Initiative, San Diego State University, San Diego, Calif.

President: Dave Tupper, CaMSP Project Director/Teacher, Tierra del Sol Middle School, Lakeside, Calif.

Join Nancy for a frank conversation about how this acronym “STEM” has flooded all channels of education reform and for a status report from the field—K–12 classrooms and extended learning time. It’s a transformational time in U.S. education! Society has an insatiable demand for STEM integration and programming while the NGSS and CCSS are driving the redesign of learning progressions. How quickly is this transformation of the school day expected to spring into action and what are the implications? Integrated STEM experiences are building capacity and quality; let’s explore the practices, the partnerships, and possibilities for the new normal.

In her role as principal investigator for NSF-funded Exploring STEM Careers initiative at San Diego State University, Nancy Taylor has connected a large network of professional educators, education researchers, and STEM professionals who actively collaborate to improve science education in San Diego County K–12 schools.

Recently, Nancy served on the California NGSS Science Expert Panel, the California Department of Education’s STEM Taskforce, and she retired after a 30-year career in science education leadership. Nancy was instrumental in working with STEM community partners to develop the San Diego Science Alliance, a nonprofit organization where she serves as a founding honorary board member.

In 2012, Nancy was recognized as one of California’s 12 Women in STEM Leaders. Her innovations and program development have gained recognition from the California School Boards Association with two Golden Bell Awards for demonstrated gains in student achievement and STEM awareness, specifically for women in science. A bilingual educator and former elementary principal, she is passionate about parental involvement in public education.

9:30–10:30 AM Presentations**Environmental Science Labs, Projects, and Field Investigations***(Grades 10–12) International 2, Hilton*

Science Focus: ESS

Ben Smith (*ben.smith@alumni.duke.edu*), Palos Verdes Peninsula High School, Rolling Hills Estates, Calif.

Explore a wide range of environmental science labs, field investigations, and projects to enhance student environmental science learning and literacy.

Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain Dew Viar*(Grades 5–12) International 3, Hilton*

Science Focus: GEN, INF, NGSS

Sherri Rukes (*scrukes@comcast.net*), Libertyville High School, Libertyville, Ill.

Serve up new learning in your classroom with connections to food science and basic chemistry. Polymers are found all around us. This presentation will give a better understanding of the polymers used in cooking—what polymers are found in food as well as in the tools we use to cook with. Take home a CD of activities and information.

NSELA Session: Tools for Science Leaders, Part 1*(General) Beacon A, Hyatt*

Science Focus: GEN

Craig Gabler, Educational Service District 113, Tumwater, Wash.

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.

Add a Wellness Thread to Your Anatomy Curriculum*(Grades 9–College) Regency Ballroom D, Hyatt*

Science Focus: GEN, INF, NGSS

Brian Miller (*@smarterteacher; smarterteacher@gmail.com*), La Salle High School, Pasadena, Calif.

Develop an understanding of wellness vs. health care to teach students to make healthy lifestyle choices to promote wellness of mind, body, and spirit.

Leadership, Capacity, and Change: What It Takes to Implement the Convergence of the NGSS and CCSS*(Grades K–12) Regency Ballroom E, Hyatt*

Science Focus: GEN, NGSS

Vanessa Lujan (*vlujan@berkeley.edu*), The Lawrence Hall of Science, University of California, Berkeley

Attention will be paid to developing capacities for connecting, communicating, and leading the convergence of the NGSS and CCSS within districts and schools.

Wood-to-Wheels: Engineering Better Biofuels*(Grades 6–College) Regency Ballroom F, Hyatt*

Science Focus: GEN, SEP

Jenn Coury (*jcoury@lakeorion.k12.mi.us*), Lake Orion High School, Lake Orion, Mich.**Eric Engel** (*engele.slcs.us*), South Lyon East High School, South Lyon, Mich.

Wood-to-Wheels (W2W), a collaborative initiative at Michigan Technological University, is researching how to improve the process of converting woody biomass into a transportation fuel. Hear about the future of alternative energy from the teachers who developed and implemented engineering biofuel lessons that support the NGSS.

AAPT Session: Coming Soon to a Dwarf Planet in Your Solar System—NASA's Dawn Mission to the Asteroid Belt*(Grades 6–College) Seaview Ballroom A, Hyatt*

Science Focus: ESS1.B, ETS2, PS2.A, SEP1, SEP3

Marc Rayman (*marc.d.rayman@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Dawn is exploring two of the last uncharted worlds in the inner solar system. The chief engineer/mission director will give an overview of its exotic destinations and the remarkable technology that makes this unique and ambitious mission possible.

Gray Matter: Learning and Teaching Science with the Brain in Mind*(Grades K–12) Shoreline A, Hyatt*

Science Focus: LS

Carolyn Hayes (*caahayes@comcast.net*), NSTA President-Elect, and Indiana University, Indianapolis

Experience through science activities how discoveries in cognitive neuroscience are applied to NGSS teaching strategies and the principles of how students learn science.

Do You Need a New Science Lab?

(Grades 6–12)

Naples I, Renaissance

Science Focus: GEN

Ruth Ruud (ruth.ruud@yahoo.com), Cleveland State University, Cleveland, Ohio

Come learn how to win a Shell Science Lab Makeover (\$20,000 value) for your school. 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 United States and Canada (with special attention to urban and underrepresented groups) to illustrate replicable approaches to science lab instruction using limited school and laboratory resources.

Science Fair: Gateway to Implementing Project Based Learning

(Grades 7–12)

Verona, Renaissance

Science Focus: GEN, NGSS

Beverly Berekian (berekian_b@auhsd.us), Magnolia High School, Anaheim, Calif.

Use a schoolwide Science Fair model as a means for implementing the CCSS, NGSS, and 21st-century skills.

STEM: Science Teaching (with an) Environmental Mission

(Grades 4–8, College)

Casablanca, Westin

Science Focus: LS2.A, INF, CCC4, SEP3

Terri Hebert (thebert@iusb.edu), Indiana University South Bend

What is the connection between environmental outdoor education and an alarm clock? They both wake us up! Join me to learn more about STEM's impact.

Thinking Creatively to Collaborate Across Districts in STEM Education

(Grades P–6)

Centennial Salon B, Westin

Science Focus: GEN, INF, NGSS

Elisa Slee (ejslee@capousd.org), Capistrano Unified School District, San Juan Capistrano, Calif.

Julie Roney (jronney@orangeusd.org), Orange (Calif.) Unified School District

Acquire strategies for collaborating across districts to provide more hands-on STEM experiences for your scholars and fabulous teacher training opportunities.

Defining Science Learning and Teaching for Early Childhood

(Preschool)

Ocean Ballroom, Westin

Science Focus: GEN, INF

Beth Van Meeteren (beth.vanmeeteren@uni.edu), University of Northern Iowa, Cedar Falls

Linda Froschauer (fro2@me.com), 2006–2007 NSTA President, Pasadena, Calif.

Join a panel of early childhood educators for an in-depth look at the recently released NSTA Position Statement on Early Childhood Science, endorsed by NAEYC. The teacher's role will be explored through examples using photos, videos, and panel presentations.

9:30–10:30 AM Hands-On Workshops

From Genes to Jeans

(Grades 6–12)

Atlantic 2, Hilton

Science Focus: GEN

Shaney Emerson (@learnaboutag; shaney@learnaboutag.org), California Foundation for Agriculture in the Classroom, Sacramento

This newly updated unit introduces students to the latest genetic research and technology associated with agriculture. Unit lessons provide students with scientific principles and tools associated with genetics and encourages students to use their knowledge to think critically about current agricultural issues and possible solutions. Students will also be introduced to science-based careers in high-tech agriculture.

Proven Practices for Implementing Interactive Science Notebooks

(Grades 7–11)

Pacific 2, Hilton

Science Focus: GEN

Jennifer Weibert (jweibert@fcoe.org), Fresno County Office of Education, Fresno, Calif.

Nikki Luckin (nicole_luckin@sanger.k12.ca.us), Fairmont Elementary School, Sanger, Calif.

Join us for an introduction to notebooking focused on design and implementation strategies. Participants will build a notebook and view current examples. Notebooks are the perfect opportunity for students to collect evidence and successfully answer big ideas in science.

ASTE Session: The Fish Weir Engineering Challenge: A Culturally Relevant Activity*(Grades 4–7)**Beacon B, Hyatt*

Science Focus: GEN, SEP

Aimee Navickis-Brasch (navi7891@vandals.uidaho.edu), University of Idaho Coeur d'Alene

During the “Fish Weir Engineering Challenge,” students learn how American Indian technology used fish weirs (fish traps built from rocks or wooden posts) to direct the movement of fish so they could capture enough to feed the entire community. Join us for this inquiry-based, hands-on lesson in which students learn about tribal culture and history through engineering design.

NABT Session: Meeting in the Middle: Adapting Resources for Your Middle School Student*(Grades 6–8)**Seaview Ballroom C, Hyatt*

Science Focus: LS, SEP4

Jaclyn Reeves-Pepin (@jreevespepin; jreevespepin@nabt.org), NABT, Reston, Va.

Join leaders from NABT for this hands-on workshop. We will be adapting resources from *The American Biology Teacher* for use in your middle school classroom.

**NSTA Press® Session: Bringing Outdoor Science In***(Grades K–8)**204, Convention Center*

Science Focus: GEN, INF, CCC

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

Taking it outside or *Bringing Outdoor Science In*, explore school yard resources for crosscutting concepts, and how sticks and stems bring in STEM. Free seeds!

Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists*(Grades 6–12)**Grand Ballroom B, Convention Center*

Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

This NESTA workshop presents exemplary NGSS-supported activities for the geology classroom that bring fundamental concepts in Earth science to life for your students. Handouts!

Modeling and the Particle Nature of Matter*(Grades 4–9)**Naples III, Renaissance*

Science Focus: PS, CCC, SEP

Steve Williams (STEMswill@gmail.com), Santa Rosa Accelerated Charter School, Santa Rosa, Calif.

Experience how a simple investigation can lead to complex conversations and experimentation around the particle nature of matter while weaving the three dimensions of the NGSS.

NGSS Connect Science Content with the NGSS Crosscutting Concepts*(Grades K–12)**Regency Ballroom A, Hyatt*

Science Focus: GEN, INF, CCC

Peter A'Hearn, Palm Springs (Calif.) Unified School District

Explore the NGSS crosscutting concepts as they relate to a hands-on activity using critical questions and a set of symbols to help make the connections with students.

CCSS Finding the Hidden Opportunities: Identifying CCSS ELA in Your Science Lessons*(Grades K–8)**Regency Ballroom C, Hyatt*

Science Focus: PS2, CCC2, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

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

Engage in a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) science lesson on forces that integrates relevant listening, speaking, reading, writing, and language opportunities with links to the CCSS ELA.

Exploring the Science and Engineering Practices*(Grades K–12)**Seaview Ballroom B, Hyatt*

Science Focus: GEN, SEP

Ted Willard (@Ted_NSTA; twillard@nsta.org), Program Director, COMPASS, 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 NRC *Framework* and the NGSS.

ACS Middle Level Session: Changes of State—Evaporation and Condensation

(Grades 6–8) *104C, Convention Center*
Science Focus: PS1.A, CCC2, CCC4, SEP2, SEP3

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

Explore evaporation and condensation through hands-on activities and molecular animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *www.middleschoolchemistry.com*.

NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy

(Grades 6–12) *Sicilian Ballroom, Renaissance*
Science Focus: ESS, SEP

Pamela Harman, SETI Institute, Mountain View, Calif.
Coral Clark (*cclark@usra.edu*), SOFIA Education and Public Outreach, Mountain View, Calif.

Experience inquiry activities for learning about visible and invisible light using simple classroom technologies. Take home standards-based lessons, colorful posters, and spectroscopic glasses.



Get Eroded: Earth Science Erosion Models

(Grades 6–8) *Centennial Salon A, Westin*
Science Focus: ESS2.A, ESS2.C, ESS3.B, CCC2, CCC4, SEP2, SEP3

Meagan Pasternak, Peabody Charter School, Santa Barbara, Calif.

Tracy Schiffers, McKinley Elementary School, Santa Barbara, Calif.

Simulate erosion of California landforms using easily constructed hands-on models. Receive a complete middle level unit applicable to an integrated or discipline-specific model that supports the NGSS.

ASEE Session: ASEE’s K–12 Outreach Program, eGFI: Engineering, Go For It! and TeachEngineering.org

(Grades 5–12) *Centennial Salon C, Westin*
Science Focus: ETS

David Heil (*dheil@davidheil.com*), David Heil & Associates, Inc., Portland, Ore.

The American Society for Engineering Education (ASEE) and its K–12 division will introduce you to innovative ways to introduce engineering into K–12 classrooms.

Think and Build

(Grades K–8) *Centennial Salon D, Westin*
Science Focus: ETS1, PS2.A, PS3.A, PS3.B, PS3.C, SEP

DeeDee Mann (*mann_d@auhsd.us*) and **Phyllis Fukumoto** (*fukumoto_p@auhsd.us*), Dale Junior High School, Anaheim, Calif.

Join us as we introduce two student-tested activities—the Marble Roll Challenge and the Buoyancy Challenge—that introduce the engineering design process while using low-cost, easily accessible materials.

10:00 AM–11:15 AM Exhibitor Workshops**Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology***(Grades 9–12) 101A, Convention Center*

Science Focus: PS, SEP

Sponsor: PASCO scientific

Ronn Fieldhouse, PASCO scientific, Roseville, Calif.

Get hands on with PASCO technology that empowers students to construct meaning from easily collected, analyzed, and shared data! Use sensors to experiment with concepts like pH titrations. See the latest PASCO technology including the Advanced Chemistry Sensor, Wireless Spectrometer, and data sharing in SPARKvue®—compatible with iPad, Windows, Mac OS, Android, and Chromebooks. Free sensor set for five attendees!

Model Elementary Science Implementations*(Grades P–8) 101B, Convention Center*

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science–FOSS

Linda De Lucchi, The Lawrence Hall of Science, University of California, Berkeley

Hear from a panel of administrators and lead teachers about successful models for transforming instruction in elementary schools using science as the core. FOSS serves as the framework for the design of a science-centered curriculum with partnerships and professional development as part of the plan.

The Next Generation Science Standards: What They Mean for Earth and Space Science*(Grades K–12) 102 A/B, Convention Center*

Science Focus: ESS

Sponsor: Pearson

Michael Wysession, Washington University in St. Louis, Mo.

The NGSS represent a bold new direction for K–12 science in America, but also pose many challenges and questions. Join Michael Wysession, NGSS writing team leader, as he discusses the implications for teaching, assessment, and professional development in Earth and space science education.

Waves, Energy, and Color*(Grades 6–8) 102C, Convention Center*

Science Focus: ETS2, PS4

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Although we live an EM waves–enabled lifestyle, most of us have no idea how they work. Join LAB-AIDS for an NGSS-based waves activity from SEPUP’s *Issues and Physical Science* program. Explore light properties by investigating colors of the visible spectrum and their energy levels using phosphorescent material. SEPUP embeds research-based practices and real issues for powerful content learning.

Case of the Missing Records*(Grades 8–College) 103A, Convention Center*

Science Focus: LS, INF

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Explore genetic diversity using forensic science! 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. Free flash drive/T-shirt drawing!

Hands-On Science with Classroom Critters*(Grades K–12) 103B, 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 fun, simple hands-on activities you can use in your labs with pill/sow bugs, termites, bess bugs, and butterflies. Learn about care and handling, as well as easy ways to introduce inquiry. Free product samples and literature.

Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments

(Grades 9–12) 104A, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Frazier (mfrazier@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Join us as we showcase the features of our Exploring Chemistry line of kits! These best-of-the-best experiments, demonstrations, and POGIL activities ensure students really understand the concepts. Flinn's labs and activities take students on a virtual tour inside the test tube to see the world of chemistry where it begins—at the molecular level.

Project-Based Inquiry Science™: Blending Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms

(Grades 6–8) 104B, Convention Center

Science Focus: ETS, CCC, SEP

Sponsor: It's About Time

Mary Starr (mary@starrscience.com), Michigan Mathematics and Science Centers Network, Plymouth

Blending engineering practices, core ideas, and crosscutting concepts is made easy with *Project-Based Inquiry Science*. Experience how students collaborate to develop core ideas as they complete projects and science investigations that blend modeling, asking questions, and other science and engineering practices. Take home an activity idea and learn how *PBIS* makes learning science meaningful.

AP Environmental Water Quality Assessment Curriculum

(Grades 10–12) 201B, Convention Center

Science Focus: ESS

Sponsor: LaMotte Co.

Ken Rainis, Cottonwood, Ariz.

This complete curriculum explores the Water Quality Index to teach students STEM-based skills and covers water pollution for AP Environmental Science. Students study data from the Kansas River, then apply principles to a local water source. Curriculum includes PowerPoints and videos for watershed ecology, Water Quality Index, point/nonpoint source pollution, and more. Takeaways and door prize!

Magnify Your Mind!—with The Private Eye®

(Grades K–12) 202 A/B, Convention Center

Science Focus: GEN, INF

Sponsor: Educational Innovations, Inc.

Kerry Ruef, The Private Eye Project, Lyle, Wash.

Give your students a wallop of wonder and mystery—using

a jeweler's loupe, everyday objects, and a powerful inquiry process. Students investigate science topics with fresh perspective and surprise themselves as they write, draw, and theorize at sophisticated levels. Habits of close observation bloom. Take away this easy hands-on method—and magnify minds! Free starter kit.

Molecular-Level Visualization and the NGSS: Promoting Conceptual Understanding

(Grades 6–College) 202C, Convention Center

Science Focus: PS

Sponsor: Wavefunction, Inc

Jurgen Schnitker (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.

The new focus on conceptual understanding—prominent in the NGSS, the revised AP chemistry curriculum, and most state standards—makes molecular visualization a must-have tool for the classroom. Bring your laptop (Windows or Mac OS X) and learn how to teach chemistry more effectively with *ODYSSEY® Molecular Explorer*.

It's Alive! Using Live Materials in K–5 Lessons

(Grades K–5) 203 A/B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Ward's Science

Sandra Antalis, VWR International, San Diego, Calif.

Discover how easy and engaging it is to integrate live materials into your curriculum. Join us for hands-on stations with “take away” lessons incorporating disciplinary core ideas from the NGSS and CCSS. Free materials!

Do You Know How Many Lymph Nodes You Have? Hands-On Problem-solving Pedagogy

(Grades 6–College) 203C, Convention Center

Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

Kelly Canino, ANATOMY IN CLAY Learning System, Loveland, Colo.

Teri Fleming, Educational Consultant, Houston, Tex.

Come build your lymph system based on who you are and your environment. Discover how the lymph system works in your body using critical thinking and problem solving to build the system on a human skeleton! See how ANATOMY IN CLAY Learning System changes lives in the classroom every day.

10:00–11:30 AM Exhibitor Workshop**Integrate iPad, Chromebook, and BYOD with Vernier Technology***(Grades 3–College)**103C, Convention Center*

Science Focus: GEN, SEP4

Sponsor: Vernier Software & Technology

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will use Vernier's digital tools—including our new wireless sensors—to conduct investigations using Graphical Analysis for iOS and Android, or Vernier Data Share for Chromebooks and BYOD environments. These tools can help you address the NGSS, as well as many states' standards.

10:30 AM–12 Noon Exhibitor Workshop**DNA Detectives: Who Killed Jose?***(Grades 9–College)**201A, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

In this hands-on lab, solve a theatrical crime scene using biotechnology skills such as DNA gel electrophoresis, restriction digestion, and pipetting. Learn about the Innocence Project and how the wrongly accused can be exonerated.

12 Noon–1:00 PM Meetings**ASTE Far West-ASTE Business Meeting***Shoreline A, Hyatt*

ASTE members, and those interested, are encouraged to attend the business meeting of the Far West region. We will discuss current activities and future events.

ASTE Northwest-ASTE Business Meeting*Shoreline B, Hyatt*

ASTE members, and those interested, may attend the brown bag business meeting of the Northwest region. We will discuss current activities and future events.

12 Noon–1:15 PM Exhibitor Workshops**Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software!***(Grades 9–12)**101A, Convention Center*

Science Focus: PS

Sponsor: PASCO scientific

Jeffrey Plank, PASCO scientific, Roseville, Calif.

Learn how PASCO lab equipment makes your classroom demonstrations easy and reliable. During this workshop, we will present the top PASCO physics demos in rotation, induction, and waves. You'll also get hands-on experience with the newest in PASCO physics apparatus and Capstone video analysis. Free sensor set for five attendees!

Teaching Evolution in a Climate of Controversy: Even with NGSS, the Battles Continue*(Grades K–12)**102 A/B, Convention Center*

Science Focus: LS

Sponsor: Pearson

Kenneth Miller, Brown University, Providence, R.I.

Recent struggles over the content of science textbooks in Texas highlight the fact that 89 years after the Scopes Trial, evolution remains a controversial topic. Discussion centers on how educators can deal with it successfully, as well as identifying a series of resources to respond to challenges faced when teaching evolution.

DuPont Presents: The Science of Food Safety*(Grades 6–12)**102C, Convention Center*

Science Focus: ETS2, LS1

Sponsor: LAB-AIDS®, Inc.

Jessica Jones, Chatham Middle School, Chatham, Va.

We need to feed the world in a safe manner. Explore food safety issues such as food-borne illness, chemical additives, packaging to prevent microbial growth, fresh fruit oxidation, and enhanced nutrient content. Investigate the ability of chemicals to inhibit growth of a simulated microbe and determine how additives can be used to increase food supply safety.

Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 8–College) 103A, Convention Center
Science Focus: LS, INF
Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

More than 380 million people worldwide have 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. We will diagnose diabetes using simulated urinalysis and ELISA tests. Free flash drive/T-shirt drawing!

Engineer Excitement in Your Classroom with a Carolina STEM Challenge®

(Grades 6–12) 103B, Convention Center
Science Focus: ETS
Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Catapult, float, and race your way into hands-on activities that engage your middle school and high school students while fostering both critical thinking and creative problem-solving skills! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes!

Biology for NGSS: A New Approach for a New Program

(Grades 9–12) 104A, Convention Center
Science Focus: LS, CCC, SEP
Sponsor: BIOZONE International

Richard Allan (richard@biozone.co.nz), BIOZONE International, Hamilton, New Zealand

Find the tools you need to successfully implement the high school life science component of the NGSS program in BIOZONE's newest student workbook. This carefully constructed new resource is strongly focused on student inquiry and written from first principles to address all aspects of the NGSS system architecture. Attendees receive free books that support the NGSS.

Earth and Space Science—More Pertinent Today, More Important to Our Future

(Grades 9–12) 104B, Convention Center
Science Focus: ESS
Sponsor: It's About Time

Gary Curts, Dublin Coffman High School, Dublin, Ohio
Recent developments and the increasing societal importance of Earth-related issues have created a need for understanding

Earth's systems. Experience how the American Geosciences Institute's new edition of *EarthComm*® can help educators successfully deepen Earth science learning using a truly STEM project-based approach in their classrooms.

Protein Modeling: A Science Olympiad Event and the NGSS

(Grades 9–12) 201B, Convention Center
Science Focus: PS

Sponsor: MSOE Center for BioMolecular Modeling
Tim Herman (herman@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

Through modeling, an authentic practice of science, students learn by both using models and constructing models. By using these popular kits—the Water Kit, Amino Acid Starter Kit, and Insulin: mRNA to Protein Kit—you can prepare your students to compete in the Protein Modeling Event and meet the NGSS.

Access and Analyze LIVE Ocean Data in the Classroom

(Grades 6–College) 202 A/B, Convention Center
Science Focus: ESS2.C, ESS2.D, ETS2.B, LS2.C, CCC1, CCC7, SEP1, SEP4, SEP5, SEP8
Sponsor: Ocean Classrooms

Cynthia Long (cyndi@oceanclassrooms.com) and **Caine Delacy** (caine@oceanclassrooms.com), Ocean Classrooms, Boulder, Colo.

With more than 3,600 floats, the Argo Buoy Project provides an unprecedented amount of data on ocean temperature, salinity, and dissolved oxygen from the surface to depths of 2,000 meters. Explore how Ocean Classrooms' user-friendly data portal, online curriculum, and inquiry-based activities encourage learning about our most precious resource—our ocean.

Modeling the Earth, Sun, and Other Stars with *Bring Science Alive!*

(Grades 3–5) 202C, Convention Center
Science Focus: ESS, CCC, SEP
Sponsor: TCI

Bert Bower (bbower@teachtci.com), TCI, Mountain View, Calif.

In this session, we'll use a powerful online learning system to demonstrate a lesson that meets the NGSS—"How Do Stars Seem to Move During the Night and Year?" Participants will experience learning from a student's perspective.

It's Alive! (Or Once Was)...Using Live and Preserved Materials in Middle School and High School

(Grades 6–12) 203 A/B, Convention Center

Science Focus: LS

Sponsor: Ward's Science

Sam Limtao, VWR Education, LLC, San Luis Obispo, Calif.

Explore lessons using live and preserved materials that link real-world science with the concepts you are teaching. Participants will have hands-on interaction with live and preserved specimens and receive standards-based lessons and takeaways to enhance their teaching.

Nasco SciQuest® Kits for Your Classrooms

(Grades 4–8)

203C, Convention Center

Science Focus: PS

Sponsor: Nasco Modesto

Jordan Nelson (jnelson@enasco.com), Nasco, Fort Atkinson, Wis.

Let Nasco take you through hands-on investigations that can enhance your science curriculum. These STEM-based kits can help your students grasp the fundamentals of basic concepts. Join us as we focus on sound and current electricity.

Project Learning Tree

Use PLT and the environment to engage students in real world applications of STEM.

- Investigative, student-led learning
- Inquiry-based activities
- GreenSchools! investigations
- Grants for service-learning projects



Get free PLT materials at NSTA

- Visit Exhibit Booth 602
- Participate in a PLT session:

Teaching STEM with Project Learning Tree

December 4, 2014
2:00 PM - 3:00 PM
The Westin Long Beach
Centennial Salon D

Or, get PLT materials by attending a PLT workshop in your state. Contact your state's PLT Coordinator for details.

www.plt.org

12 Noon–1:30 PM Exhibitor Workshop

Integrate iPad, Chromebook, and BYOD with Vernier Technology

(Grades 3–College) 103C, Convention Center

Science Focus: GEN, SEP4

Sponsor: Vernier Software & Technology

David Carter (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will use Vernier’s digital tools—including our new wireless sensors—to conduct investigations using Graphical Analysis for iOS and Android, or Vernier Data Share for Chromebooks and BYOD environments. These tools can help you address the NGSS, as well as many states’ standards.

12:30–1:00 PM Presentation

AAPT Session: Physics in Literature

(Grades 6–College) Seaview Ballroom A, Hyatt

Science Focus: PS

Harry Manos, Los Angeles City College, Los Angeles, Calif.

Physics offers a cross-discipline perspective to understanding other subjects. Leave with examples of physics in literature that physics and astronomy teachers can use to give students an indication of the relevance of science as depicted in the humanities.

12:30–1:30 PM Featured Presentation

CCSS The Central Role of Dialogue in the Sense-making Classroom

(General)

Grand Ballroom A, Convention Center

Science Focus: GEN



Arthur Beauchamp (acbeauchamp@ucdavis.edu), Director, Sacramento Area Science Project (SASP), SASP/CRESS Center, University of California, Davis

President: April Diaz, Assistant Principal, Madison Middle School, Oceanside, Calif.

The NGSS and CCSS ask for a shift toward more sense making by students in STEM classrooms. Dialogue is one of our main methods of processing information, making sense of things, and advancing understanding. Dialogue is also an important support for student writing, and both neuroscience and psychology point to the importance of dialogue in learning. Join Arthur as he discusses how we might make better use of dialogue as a learning tool in our classrooms.

In his role at SASP, Arthur directs research efforts, develops professional learning programs, and works with teachers on innovative and effective approaches to teaching and learning.

Arthur has also authored Success in Science through Dialogue, Reading and Writing, a book that introduces the Science Literacy Framework and helps teachers of science access and use literacy techniques to further student understanding in science. For 21 years, he was a high school science teacher in urban and suburban schools.

Currently, Arthur directs an NSF-funded Discovery Research K–12 grant program that is developing an educational resource for model-based instruction in high school biology. He is also project director for the Innovations in STEM Teaching Achievement and Research (I-STAR) project, a program funded by the S.D. Bechtel Junior Foundation involving an examination of instructional shifts needed to teach the mathematical practices from the Common Core State Standards and the science and engineering practices from the Next Generation Science Standards in K–12 STEM classrooms.

In 2012, Arthur was honored with the California Exemplary Science Educator award.

12:30–1:30 PM Presentations**Earth's Changing Climate Program: A Model for the Development of a Collaboration Between Formal and Informal Education Institutions**

(Grades 9–12) *Atlantic 2, Hilton*
 Science Focus: ESS, INF

Jonathan Witt (*jwitt@ocean-institute.org*), Ocean Institute, Dana Point, Calif.

Beverly Berekian (*berekian_b@auhsd.us*), Magnolia High School, Anaheim, Calif.

Take your students from being passive learners to being empowered activists. Gain skills to build a successful collaborative that addresses the CCSS and NGSS, encouraging student learning and empowerment through scientific inquiry and authentic assessment.

Solids: The Neglected “State” of Chemistry

(Grades 9–12) *International 3, Hilton*
 Science Focus: PS

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

Andrew Nydam (*andrewnydam@hotmail.com*), ASM International Foundation, Materials Park, Ohio

Use solids to make chemistry more STEM friendly and relevant for students. Hands-on activities using solid materials (metals/polymers/ceramics) make concepts easier to teach/learn. Take home a CD of information.

Using POGIL Strategies to Help All Students Tackle Common Core

(Grades 9–12) *Pacific 1, Hilton*
 Science Focus: GEN, SEP3, SEP4, SEP5, SEP7

Sandra Hightower (*sandra.hightower@sausd.us*) and **Joaquin Alvarado** (*joaquin.alvarado@sausd.us*), Century High School, Santa Ana, Calif.

Attention will be paid to using POGIL (Process-Oriented Guided Inquiry Learning) with various populations to help students improve critical thinking, reasoning, and academic conversation skills in collaborative groups.

From STEM Role Models to STEM Mentors—High School Girls Benefit from Ongoing Relationships with Women in Industry

(Grades 6–12) *Regency Ballroom B, Hyatt*
 Science Focus: GEN, INF

Michelle Higgins (*@gsSTEM*; *mhiggins@girlscoutsoaz.org*), Girl Scouts of Southern Arizona, Tucson

Kari Warner (*@kwarner83*; *kari.warner@tusd1.org*), Pueblo Magnet High School, Tucson, Ariz.

Shalane Simmons (*@SedonaGirl*; *shalane.simmons@raytheon.com*), Raytheon Missile Systems, Tucson, Ariz.

Examine in-class and after-school STEM mentoring programs for girls and then design an action plan to bring ongoing mentoring opportunities to your school.

California Science Assessments—The Past, the Present, and the Future

(General) *Regency Ballroom D, Hyatt*
 Science Focus: GEN, INF, NGSS

Blessing Mupanduki (*blessten@yahoo.com*), California Dept. of Education, Sacramento

Join me for an overview of the California science assessment landscape. Discussion centers on the Assembly Bill 484 requirements, transition activities, and assessment best practices for the NGSS.

Let the iPad Tell a Science (Digital) Story!

(Grades 1–12) *Regency Ballroom E, Hyatt*
 Science Focus: GEN, NGSS

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

Learn to use the iPad for crafting science digital stories with popular video-editing apps while promoting science writing and visual literacy skills. Samples, a live demonstration, and resources provided.

Simulate STEM Online Through Virtual Clinical Trials

(Grades 8–College) *Regency Ballroom F, Hyatt*
 Science Focus: ETS, INF

Lynn Lauterbach (*@lynncantweet*; *lynnlauterbach@gmail.com*), Retired Teacher, Loveland, Colo.

Expose high school students to scientific and biomedical engineering practices using free online simulations that engage students in technology while designing authentic neuroscience-based clinical trials. Includes built-in assessment notebook.

Bridging the STEM Gap with Toshiba/NSTA ExploraVision

(Grades K–12)

Seaview Ballroom B, Hyatt

Science Focus: ETS

Barbara Pietrucha, Earth/Environmental Science Educator, Point Pleasant Beach, N.J.

Motivate students and challenge them to think creatively! Learn how the ExploraVision competition encourages developmental skills necessary for success in STEM and uses the natural curiosity of students to enhance their science achievement. ExploraVision activities illustrate standards-based connections between science and technology.



NSTA Press® Session: *Doing Good Science in Middle School*

(Grades 6–9)

204, Convention Center

Science Focus: GEN

Vicki Massey (vickimassey@cox.net), NSTA Director, District XIV, Mesa, Ariz.

Join the authors of *Doing Good Science in Middle School* as they highlight many of the new features of the book as well as discuss the challenges of teaching science in middle school in the 21st century. Attention will be paid on how to smoothly make the transition from current state standards to the NGSS.

Hosting Family Partnerships Through Classroom STEM Nights

(Grades 1–6)

Verona, Renaissance

Science Focus: INF

Valerie Baker and **Susan Roebber** (susan.roebber@lincoln.k12.or.us), Taft Elementary School, Lincoln City, Ore.

Hear how elementary teachers put on a series of Family Nights for parents and students to participate in STEM activities and survey attitudes about learning with their child.



12:30–1:30 PM Hands-On Workshops

Making Waves: Seismic Waves Activities and Demonstrations

(Grades 6–12)

International 2, Hilton

Science Focus: ESS2.B, ESS3.B, PS4.A

Lawrence Braile (braile@purdue.edu), Purdue University, West Lafayette, Ind.

Demonstrate and practice activities for teaching about seismic waves. Hands-on activities include using the Slinky®, human wave, online seismic wave animations, and free software.

ASTE Session: Poster Session for Far West and North-western Regional Units

(College)

Beacon B, Hyatt

Science Focus: GEN, NGSS

Wendy Ruchti (*ruchwend@isu.edu*), Idaho State University, Pocatello

Miriam Munck, Eastern Oregon University, La Grande
Donna Rainboth (*drainbot@eou.edu*), Wallowa ESD—Region 18, La Grane, Ore.

Lisa Martin-Hansen (*@Lmartinhansen*; *l.martinhansen@csulb.edu*), California State University Long Beach

William Straits (*w.straits@csulb.edu*), California State University, Long Beach

Patricia Morrell (*morrell@up.edu*), University of Portland, Ore.

Stephanie Salomone (*salomone@up.edu*), University of Portland, Ore.

Youngjin Song (*youngjin.song@unco.edu*) and **Teresa Higgins** (*teresa.higgins@unco.edu*), University of Northern Colorado, Greeley

Christine Ullerich (*marchris.ul@verizon.net*), **Marco Masoni** (*@gmmasoni*; *gmmasoni@yahoo.com*), and **Fredrick Freking** (*freking@rossier.usc.edu*), University of Southern California, Los Angeles

The Association for Science Teacher Education will showcase poster presentations on STEM programs, innovations in teaching teachers, and research in science education. Poster presentations include Wendy Ruchti, *Learning to Notice Student Understanding and Evidence of Learning*; Miriam Munck, *STEM Professional Development and Teacher Implementation*; Donna Rainboth, *STEM Curriculum*; Judith Morrison, *STEM High School Teachers' Implementation of NGSS Science and Engineering Practices*; Lisa Martin-Hansen and Miyoun Lim, *Reorganizing Elementary Science Content Courses in a Elementary Science Endorsement*; William Straits, Ramoncito Casillan, and William Ritz, *A Head Start on Science*; Patricia Morrell and Stephanie Salomone, *Encouraging STEM Majors to Consider a Career in Teaching*; Michael P. Mueller, *Socioecological Characteristics for Fostering Food Mindfulness with Teachers*; Youngjin Song and Teresa Higgins, *Using Multicultural Children's Books in Science Instruction*; Toutoule Ntoya, *Infusion of Engineering Design and Science Inquiry to Support the Learning of Science (USC)*; Christine Ullerich, *Integrating STEM Instruction Through Identifying Interest and Identity in STEM Teachers*; Marco Masoni, *Promoting STEM Interest and Identity Among Diverse Elementary School Students*; Rochelle Tawiah, *Teacher Preparation in an Inservice Program*; and Fred Freking, *Speedology as an Elementary Model Curriculum*.



NGSS Developing Models to Make Student Thinking Visible and Revisable

(Grades 3–8) *Regency Ballroom A, Hyatt*
Science Focus: PS1, CCC2, CCC4, SEP2, SEP4, SEP6, SEP7, SEP8

Claudio Vargas, Oakland (Calif.) Unified School District
Models are more than a record of observation—they support the development of explanations for phenomena. Join us for an exploration of strategies to create and discuss models.

Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts

(Grades 6–12) *Grand Ballroom B, Convention Center*
Science Focus: ESS, CCC, SEP

Michael Passow (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.

This NESTA hands-on workshop highlights lessons and strategies using NGSS crosscutting concepts to unite core ideas and science practices for classroom Earth system science.

Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 101)

(Grades 1–College) *Capri, Renaissance*
Science Focus: GEN

LaMoine Motz (*llmotz@comcast.net*), 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.

Juliana Texley (*@JulianaTexley*; *juliana.texley@nsta.org*), NSTA President, Boca Raton, FL

So you want new science facilities? Does your curriculum define your science teaching facility? With more than 15 years of conducting visits and presentations of new/renovated school science facilities, the author team for *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present the “basics” of science facility planning for safe, ergonomically designed, and sustainable facilities.

Eureka! Causal Thinking About Molecules and Matter

(Grades 6–9) *Naples III, Renaissance*
Science Focus: PS1.A, CCC2, SEP6

Deena Gould (*DNAmartin@cox.net*), Arizona State University, Tempe

Lynn Mitts (*lynnshuman@gmail.com*), Marana Middle School, Marana, Ariz.

Challenge persistent misconceptions with contrasting activities (one linear and one systemic) that pair cause-and-effect models and explanations with core concepts about the structure and properties of matter.

ACS Middle Level Session: Density—A Molecular View

(Grades 6–8) *104C, Convention Center*
Science Focus: PS1.A, CCC4, SEP2, SEP3, SEP5

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

Explore the density of different materials on the molecular level through hands-on activities and animations from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *www.middleschool-chemistry.com*.

NASA’s Space Forensics: Integrating Storytelling into STEM Education

(Grades 8–12) *Sicilian Ballroom, Renaissance*
Science Focus: ESS1.A, INF, SEP1, SEP4, SEP7, SEP8

Sara Mitchell (*sara.mitchell@nasa.gov*) and **Sarah Eyer-mann** (*sarah.e.eyermann@nasa.gov*), Syneren Technologies and NASA Goddard Space Flight Center, Greenbelt, Md.

Explosions, collisions, and deaths—the universe contains numerous cosmic “crime scenes.” Introduce students to scientific problem solving through narratives and hands-on activities.

What Is Life? A Biological Approach

(Grades K–8) *Casablanca, Westin*
Science Focus: LS

Katherine Nielsen (*katherine.nielsen@ucsf.edu*), Science & Health Education Partnership, San Francisco, Calif.

Enliven your science classroom as your students make a case for whether something is alive. This hands-on lesson pushes students to think critically and engage in argument from evidence.

A Problem of Scale

(Grades 3–12) *Centennial Salon A, Westin*
Science Focus: PS, INF, CCC3

Peter A’Hearn (*@casciencepete*; *pahearn@psusd.us*), Palm Springs (Calif.) Unified School District

Atoms and cells are the same thing, right? Help your students to understand the very big and the very small. Explore the NGSS crosscutting concept #3: scale, proportion, and quantity.

ASEE Session: Engaging Elementary-aged Children and Parents in Engineering*(Grades 1–6)**Centennial Salon C, Westin*

Science Focus: ETS

David Heil (*dheil@davidheil.com*), David Heil & Associates, Inc., Portland, Ore.

Hear how to host effective family events and facilitate hands-on engineering activities designed to engage the whole family in real-world challenges.

Shipping from STEM to Stern*(Grades K–8)**Centennial Salon D, Westin*

Science Focus: GEN, INF, SEP1, SEP2, SEP3, SEP5, SEP7, SEP8

Christine Geerer (*christine.geerer@gpschools.org*) and **Laura Mikesell** (*laura.mikesell@gpschools.org*), Grosse Pointe Public Schools, Grosse Pointe Woods, Mich.

Load math and engineering into your science classroom via the shipping industry—with this blueprint for adapting STEM activities to fit your local port.

12:30–2:30 PM Hands-On Workshop**ACS Session: Energy in Chemistry: A Particulate View***(Grades 9–12)**International 4/5, Hilton*

Science Focus: PS

Marta Gmurczyk (*m_gmurczyk@acs.org*), American Chemical Society, Washington, D.C.

Engage in “modeling activities” that can help students better understand 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 the 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.

12:30–4:30 PM Hands-On Workshop**NABT Session: Make Your Class a Story Worth Telling: Conceptual Flow Graphics for NGSS Planning***(Grades 6–12)**Seaview Ballroom C, Hyatt*

Science Focus: LS, CCC, SEP

Bethany Dixon (*@msbethdixon; bdixon@rocklinacademy.org*), Western Sierra Collegiate Academy, Rocklin, Calif.**Dana Grooms** (*dgrooms@conejousd.org*), Thousand Oaks High School, Thousand Oaks, Calif.

Experience building and evaluating a conceptual flow graphic. Conceptual flow graphics aid instructors in planning relevant curriculum that includes appropriate and effective sequencing, learning experiences, science practices, and content representations. Walk away with a greater understanding of the crosscutting concepts of the NGSS.

1:00–1:30 PM Presentation**AAPT Session: Historical Origins of Physics Symbols***(Grades 6–College)**Seaview Ballroom A, Hyatt*

Science Focus: GEN

James Lincoln, Tarbut V’Torah Community Day School, Irvine, Calif.

Come learn the origin and history of 15 of the most common physics symbols and the original meaning behind the choices. Find out how knowing the origin can improve student understanding.

1:30–2:30 PM Exhibitor Workshop**Are Worms Smarter than Your Students? (AP Big Ideas 1, 2, 3, 4)***(Grades 9–College)**201A, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

How do genes influence behavior? Using *C. elegans* (a nematode), compare normal and mutant worm behavior in a classical conditioned learning experiment (think Pavlov’s worms). Explore worm taste preferences in a simple chemotaxis assay and examine how our worm mutant links to human diseases. A great alternative to AP fruit fly behavior lab!

2:00–2:30 PM Presentation

AAPT Session: Social Homework

(Grades 6–College) *Seaview Ballroom A, Hyatt*
Science Focus: PS, INF

Galen Pickett, California State University, Long Beach
Discussion centers on a new style of online group-structured homework-assigning technique. Hear how this group structure has significantly improved physics student performance at CSU without appreciably affecting faculty workload.

2:00–3:00 PM Presentations

SCST Session: Using Bean Beetles to Encourage Inquiry and Critical Thinking

(Grades 12–College) *Pacific 1, Hilton*
Science Focus: GEN, SEP3, SEP4, SEP6, SEP8

Betsy Morgan, Lone STAR College–Kingwood, Tex.
Discussion centers on the implementation of a semester-long inquiry experiment using bean beetles with majors, non-majors, and early college high school students.

NSELA Session: Tools for Science Leaders, Part 2

(General) *Beacon A, Hyatt*
Science Focus: GEN

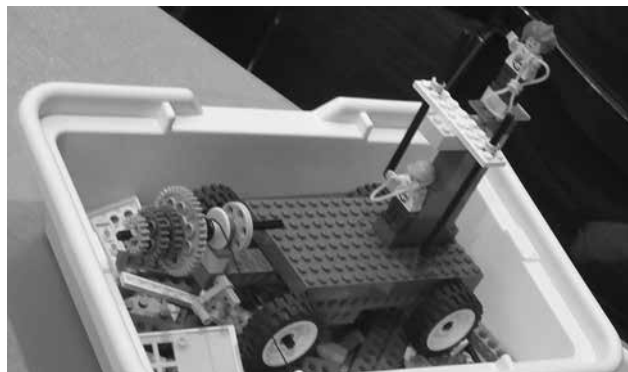
Craig Gabler (cgabler@esd113.org), Educational Service District 113, Tumwater, Wash.

President: 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.

STEM Professional Development and Teacher Implementation

(General) *Beacon B, Hyatt*
Science Focus: GEN, NGSS

Miriam Munck, Eastern Oregon University, La Grande
Emphasis will be placed on research from professors, school personnel, and graduate/undergraduate students pertaining to science/STEM teacher preparation and science/STEM student learning.



Diving Deeper into Science Practice and Crosscutting Concepts with NOAA

(Grades 6–College) *Regency Ballroom D, Hyatt*
Science Focus: ESS, CCC, SEP

Frank Niepold, NOAA Climate Program Office, Silver Spring, Md.

Discover how to develop students' skills to address the challenges and opportunities of the 21st century. Join NOAA educators as you explore NGSS and CCSS connections to climate, energy, and ocean literacy through the use of cutting-edge life and Earth systems science, data, and NOAA education products.

Research Experiences for Science Teachers

(Grades 7–College) *Regency Ballroom F, Hyatt*
Science Focus: GEN, SEP

Robert Hoffman (@mrhoffmanslab; robert_hoffman@pvusd.net), Pajaro Valley Unified School District, Watsonville, Calif.

Jill Madden (jill.madden@pvusd.net), Cesar Chavez Middle School and Monterey Bay Aquarium, Watsonville, Calif.

Join us as we showcase how university partnerships can create authentic NGSS professional development opportunities for science teachers. We will focus on our partnership Panama Canal Project: Partnerships for International Research and Education (PCP-PIREteach) as a model.

The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators

(Grades K–12) *Seaview Ballroom B, Hyatt*
Science Focus: GEN

John Putnam (jputnam@nsta.org), Assistant Executive Director, Services, NSTA, Arlington, Va.

Al Byers (abyers@nsta.org), Assistant Executive Director, Government Partnerships and e-Learning NSTA, Arlington, Va.

Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 11,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the Learning Center has the answers! Get free resources and ICE CREAM!

Tricks from an Old Dog

(Grades 6–College) *Shoreline A, Hyatt*
Science Focus: GEN

Chuck Downing (@CRDowningAuthor; chuckdowning4@gmail.com), Retired Educator, San Diego, Calif.

I will share grouping strategies, time-saving techniques, and management ideas gleaned and developed during the 40 years I have taught science. I LOVE new teachers!

Successful Science Screencasts

(Grades 6–12) *Naples I, Renaissance*
Science Focus: GEN

Achim Dangerfield, Berkeley Technology Academy (BTA), Berkeley, Calif.

Envious of those other science teachers' online lessons? Then this is the session for you! You'll not only learn how to make a screencast, but we'll make and post one!

A STEM Metamorphosis: The Lemelson STEM Academy

(Grades K–6) *Verona, Renaissance*
Science Focus: GEN, NGSS

David Crowther, University of Nevada, Reno

Hear about the partnership and transition of a struggling elementary school with a very diverse population into a successful STEM school—The Lemelson STEM Academy.

ASEE Session: Engineering Girls—It Takes a Village: A Unique Two- to Four-Year Institutional Collaboration Serving the Homeless Population

(Grades 4–7, College) *Centennial Salon C, Westin*
Science Focus: ETS

Lily Gossage (lggossage@csupomona.edu), Cal Poly Pomona, Calif.

This unique two- to four-year institutional collaboration served homeless girls/mothers via a summer residential program designed to spark early interest in engineering and college life.

Elementary Engineering—You Can Do It!

(Grades K–8) *Centennial Salon D, Westin*
Science Focus: ETS, SEP1, SEP2, SEP3, SEP5, SEP6

Christine Bouma (cbouma@losal.org), Weaver Elementary School, Los Alamitos, Calif.

Engineering can, and should be, in every elementary classroom. Learn how to implement the engineering practices of the NGSS into your classroom as we use engineering process to design a solution to real-world problems.

2:00–3:00 PM Hands-On Workshops**From Single Cells to Complex Systems—Biofuels from Algae in the Future?**

(Grades 7–12) *Atlantic 2, Hilton*
Science Focus: ETS, LS, INF

Tiffany Fleming, Boyce Thompson Institute for Plant Research, Ithaca, N.Y.

Algae quickly produce oil and nutrients on nonagricultural lands, and are promising sources of renewable biofuels. Integrated STEM thinkers will create this sustainable future. Come learn about algae biology and how to design simple classroom photobioreactors with water bottles and aquarium supplies. Engage your students in investigating how to make this viable.

Electricity Projects

(Grades 8–12) *International 2, Hilton*
Science Focus: PS

Kathryn Beck, Bolsa Grande High School, Garden Grove, Calif.

Projects are a great way to “spark” your students' interest in electricity. Build one and have the understanding flow as easily as the current. Go beyond the basic bulbs and wires.

Modeling: An Exploration of Tools and Approaches

(Grades 6–12)

International 3, Hilton

Science Focus: GEN, SEP

Kirk Brown, San Joaquin County Office of Education, Stockton, Calif.

Explore how modeling can be used to address the performance expectations in the NGSS. Add stop-motion animation and NetLogo to your educator toolkit.

Excite Your Students with Library of Congress Primary Sources!

(Grades 6–12)

Pacific 2, Hilton

Science Focus: GEN, NGSS

Kevin Tambara (arctict@cox.net), Albert Einstein Distinguished Educator Fellow, Rancho Palos Verdes, Calif.

Guide your students through NGSS inquiry and design by reliving historic scientific discoveries. Using their original journals, you'll learn how the great scientists did it.

Introduction to Aeronautics STEMinar

(Grades 1–2)

Regency Ballroom B, Hyatt

Science Focus: ETS

Maria Blue (txmblue@gmail.com), Emblem Academy, Santa Clarita, Calif.

Let your students take flight with this action-packed unit! You'll receive all presentations, lessons, models, and activities to use in your own classroom.

CCSS Stop Teaching in Silos! Science Opens the Door to Common Core!

(Grades 3–12)

Regency Ballroom C, Hyatt

Science Focus: GEN, SEP

Donald Whisman (dwhisman@sandi.net), San Diego (Calif.) Unified School District

Join me as I model a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) science lesson and strategies that support content understanding while reinforcing CCSS speaking and listening, writing, and nonfiction reading.

Evolution in the Cloud

(Grades 6–College)

Regency Ballroom E, Hyatt

Science Focus: LS4.B, LS4.C, CCC1, CCC6, SEP4

Virginia (Gini) Oberholzer Vandergon, California State University, Northridge

Taking a classic evolution lab, we will integrate cloud technology and address data analysis in support of the NGSS. With this technique, the patterns of evolution are more visible to students.

NSTA Press® Session: STEM and Art Is Smart!

(Grades K–8)

204, Convention Center

Science Focus: GEN

John Eichinger (jeich3384@aol.com), California State University, Los Angeles

Dabble in several content-rich, evidence-based explorations in integrated STEM/art instruction from my NSTA Press books, *Activities Linking Science With Math, K–4* and *Activities Linking Science With Math, 5–8*.

Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists

(Grades 6–12)

Grand Ballroom B, Convention Center

Science Focus: ESS

Michael Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

This NESTA-ESIP hands-on workshop highlights freely available lessons and strategies integrating data acquisition, analysis, and interpretation into the classroom, engaging students in the scientific process.

Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102)

(General)

Capri, Renaissance

Science Focus: GEN

LaMoine Motz (llmotz@comcast.net), 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.

Juliana Texley (@JulianaTexley; juliana.texley@nsta.org), NSTA President, Boca Raton, Fla.

Is your district planning for new science facilities? Are you involved? If not, you need to be before it is too late. In an advanced course (an extension of the Science Facilities 101 Session) the author team for *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present more detailed information and examples of safe, ergonomically correct, and functional science facilities for STEM-based science. Budgeting, working with architects, technology, and special adjacencies will be addressed. Handouts!

Mars, Common Core, Modeling, and Your Classroom

(Grade 8)

Naples III, Renaissance

Science Focus: ESS, PS

Kendia Herrington, Buchanan High School, Clovis, Calif.

Come experience activities that explore ions and discover the forces holding them together on Mars. We will reflect and discover using practices of the CCSS. These activities are adapted from the MAVEN Educator Ambassador Program.

ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding

(Grades 6–8) *104C, Convention Center*
Science Focus: PS1.A, CCC1, CCC4, SEP2

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

Explore the periodic table and bonding through a card game, molecular animations, and video from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in www.middleschoolchemistry.com.

He's Not My Brother...Or Is He? An Inquiry Approach to Understanding Meiosis

(Grades 9–12) *Sicilian Ballroom, Renaissance*
Science Focus: LS3.A, SEP

Jennifer Horton (jhorton@wpusd.k12.ca.us), Lincoln High School, Lincoln, Calif.

Melissa Marcucci (mmarcucc@fcusd.org), Cordova High School, Rancho Cordova, Calif.

Improve student understanding of meiosis through a model-based reasoning approach that incorporates activities, reading protocols, dialogues, and writing.

Common Core Classroom: How to Develop Amazing Writers!

(Grades 1–5) *Casablanca, Westin*
Science Focus: GEN, NGSS

Lisa Nyberg (@docnyberg; lnyberg@csufresno.edu), California State University, Fresno

Join us to see how the study of raptors makes elementary CCSS ELA come to life! We will demonstrate how the talons of science snare and inspire students!

A Beautiful Romance! Primarily Physical Science and the CCSS

(Grades 1–3) *Centennial Salon A, Westin*
Science Focus: PS1.A, PS2.A, SEP1, SEP3, SEP4, SEP6, SEP8

Kathy Jones, Shasta Elementary School, Chico, Calif.

Experience a series of NGSS physical science activities geared toward grades 1–3 classrooms, incorporating the CCSS ELA to produce meaningful student work in science.



The Natural Connection Between STEM and Common Core

(Grades 4–8) *Centennial Salon B, Westin*
Science Focus: ETS

Cheryl Frye (cfrye@menifeeUSD.org), **Mindy Jodoin** (mjodoin@menifeeUSD.org), and **Lisa Waller** (lwaller@menifeeUSD.org), Menifee (Calif.) Union School District
Theresa Ladd (tladd@menifeeUSD.org), Menifee Valley Middle School, Menifee, Calif.

This workshop will demonstrate how STEM is driving CCSS curriculum school wide. We will share our STEM projects that have evolved to include environmental stewardship and service learning. STEM projects using the engineering design process include truss bridges, wind turbines, and a fitness trail.

Ready, Set, Go! Exploring NGSS, K–3 Performance Expectations

(Grades K–3) *Ocean Ballroom, Westin*
Science Focus: GEN, NGSS

Maureen Allen (mallensci@earthlink.net), Science Consultant, Orange County Dept. of Education, Los Alamitos, Calif.

Come explore selected NGSS Performance Expectations for grades K–3 and see how engaging and fun they can be for you and your students. Rotate through centers that have all the materials to help you experience the Performance Expectations. Leave with a packet of ideas to get you started!

2:00–3:15 PM Exhibitor Workshops

Bringing STEM to a School District Through FOSS

(Grades P–8) 101B, Convention Center

Science Focus: ETS

Sponsor: Delta Education/School Specialty Science—FOSS

Linda De Lucchi, The Lawrence Hall of Science, University of California, Berkeley

Hear from a panel of administrators and lead teachers about the role of the FOSS program in the implementation of K–8 STEM initiatives in a California district. Partnerships and the design of professional development will be presented. Find out about engineering activities integrated into FOSS.

Blast into the NGSS by Designing a STEM Project

(Grades K–12) 102 A/B, Convention Center

Science Focus: ETS

Sponsor: Pearson

Francis Ogata, Pearson Science Specialist, Sacramento, Calif.

STEM, STEM, STEM for all ages!—we will model how to engage students in real-world problem solving using a hands-on engineering lesson. Join us and learn how to use STEM projects to meet the NGSS engineering practices and performance expectations. Take home an exciting, ready-to-use STEM prototype for instant implementation.

Investigating a Cliff Model

(Grades 6–8) 102C, Convention Center

Science Focus: ESS2, ETS2

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Here's your chance to engineer a coastal breakwater! Using a unit from LAB-AIDS' *Issues and Earth Science*, analyze design trade-offs. Explore how the natural world is influenced by our engineered world, creating more societal issues that must be solved through engineering. SEPUP embeds the engineering practices and uses real issues to deliver powerful content learning.

Using the Polymerase Chain Reaction to Identify Genetically Modified Foods

(Grades 8–College) 103A, Convention Center

Science Focus: LS3.A

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

For centuries, selective breeding and conventional hybridization were used to produce desirable qualities in crops. Today, genetic engineering directly manipulates the DNA,

quickly producing these traits. Due to controversy, some companies removed GM ingredients from their foods. We will extract snack food DNA and analyze it using PCR and electrophoresis. Free flash drive/T-shirt drawing!

Bring Visual Science into Grades 6–8 Classrooms—It's a Game Changer!

(Grades 6–8) 103B, 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 video and activities to support blended learning. Learn how to integrate compelling visuals and video and receive a one-year subscription to Carolina's Twig online video-based learning program!

Engaging Students Effectively: The BIOZONE Solution

(Grades 9–12) 104A, Convention Center

Science Focus: ESS, LS

Sponsor: BIOZONE International

Richard Allan (richard@biozone.co.nz), BIOZONE International, Hamilton, New Zealand

Find out how and why teachers of NGSS-focused biology, AP biology, environmental science, and anatomy/physiology are using BIOZONE's workbooks to significantly improve student outcomes. BIOZONE's unique 3-in-1 solution is part textbook/study guide/activity workbook. Fabulous graphics matched to critical-thinking questions enhance student engagement. Attendees receive free books.

Engineering the Future™: A Practical Approach to STEM for High School

(Grades 9–12) 104B, Convention Center

Science Focus: ETS

Sponsor: It's About Time

Presenter to be announced

STEM—it's a real need. *Engineering the Future* is a real answer. See how the Museum of Science, Boston has packaged a solution that makes implementing STEM easy. Find out how *Engineering the Future*'s real-world projects give students an opportunity to see engineering as part of their everyday world.

Telling Molecular Stories with David Goodsell's Cellular Landscapes

(Grades 9–College)

201B, Convention Center

Science Focus: LS

Sponsor: 3D Molecular Designs

Tim Herman (herman@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

These amazing landscapes allow you to tell molecular stories. In “Your Flu Shot in Action” story, students trace the expression of an antibody gene from the nucleus to the endoplasmic reticulum where docked ribosomes synthesize it. Then the antibody continues to the cell surface via the Golgi and secretory vesicles.

Engineering Design vs. Science Practices: A Closer Look at NGSS Practices

(Grades 6–9)

202 A/B, Convention Center

Science Focus: ETS, SEP

Sponsor: eCYBERMISSION

Chris Campbell (ccampbell@ecybermission.com), eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

Implementing the NGSS with its emphasis on engineering design can be easy and fun. We’ll discuss science and engineering design practices and engage in hands-on demos that you can take back to your middle school science class. Get details about the free STEM competition, eCYBERMISSION, and learn how it can help you integrate engineering design into your classroom.

Adventures into the Digital Biology Classroom: How Technology Can Revolutionize Teaching

(General)

202C, Convention Center

Science Focus: LS

Sponsor: Animalearn

Nicole Green (info@animalearn.org), Animalearn, Jenkintown, Pa.

Join Animalearn on a tour of cutting-edge technology—including The Science Bank, our free lending program

of more than 500 innovative science-teaching tools with realistic models and software. Find out how to make your classroom more tech friendly, green, dynamic, and cost effective. Receive hands-on instruction on how to use a variety of popular dissection models and programs, including the latest iPad apps. One participant will receive access to dissection software—a \$400 value!

Science Safety: It’s Everyone’s Responsibility

(Grades K–12)

203 A/B, Convention Center

Science Focus: GEN

Sponsor: Ward’s Science

Sandra Antalis, VWR International, San Diego, Calif.

Is your classroom really safe? Do you have the proper safety equipment? What does a standard safety contract look like? Is media reviewed to determine if safe practices are being modeled? Do you know about the latest GHS for chemical classification and labeling? We’ll cover resources and solutions for ensuring safety awareness. Handouts and giveaways!

It’s Elementary—Light and Optics for Kids

(Grades 2–6)

203C, Convention Center

Science Focus: PS, INF, NGSS

Sponsor: SPIE, the international society for optics and photonics

Colette DeHarpporte (colette@laserclassroom.com), Laser Classroom, Minneapolis, Minn.

With a simple, yet powerful kit, you can introduce light and optics to kids ages 5–16. Engage and excite young scientists with 10 fun activities that lay the foundation for understanding the fundamentals of light and optics: reflection, refraction, color, shadows, and more. Complimentary kits will be supplied to the first 25 participants.

2:00–3:30 PM Exhibitor Workshop

Physics and Physical Science with Vernier

(Grades 7–College)

103C, Convention Center

Science Focus: PS

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 LabQuest Mini with a computer, or LabQuest 2 as a stand-alone device, with a computer, or wirelessly to iPad, Chromebook, and BYOD environments.

2:00–6:00 PM Short Course

NGSS What Does It Really Look Like? Explanation and Argumentation in the Middle School and High School Classroom (SC-4)

(Grades 6–12)

International 1, Hilton

Tickets Required; \$25

Meredith Houle Vaughn (mhoule@mail.sdsu.edu) and **Donna L. Ross** (dlross@mail.sdsu.edu), San Diego State University, San Diego, Calif.

For description, see page 36.

2:30–3:00 PM Presentation

AAPT Session: Physical Science Course for Elementary School

(Grades 6–College)

Seaview Ballroom A, Hyatt

Science Focus: PS

Beth Stoeckly, California State University, Channel Islands, Camarillo

Find out which hands-on experiments are recommended for elementary classrooms.

3:00–4:00 PM Exhibitor Workshop

Communicating Science Through Lab Notebooking

(Grades 9–College)

201A, Convention Center

Science Focus: GEN

Sponsor: Bio-Rad Laboratories

Damon Tighe (damon_tighe@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Maintaining a proper lab notebook is key to communicating processes and findings to build on results as well as making a difference in awarding patents. Find out what the critical elements are to properly document results and how to assess student notebooks using a rubric.

3:00–5:00 PM Hands-On Workshop

ACS Session: Energy in Chemistry: An Atomic View

(Grades 9–12)

International 4/5, Hilton

Science Focus: PS

Marta Gmurczyk (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Engage in “argumentation activities” that can help students understand 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.

3:30–4:00 PM Presentations

“Run the Gantlet!” Challenge-based Lab Practicums for Your Physics Class

(Grades 9–College)

Regency Ballroom F, Hyatt

Science Focus: PS, SEP

Michael Lew, Loyola High School, Los Angeles, Calif.

Create challenging, fun, and engaging physics lab practicums that use experimental design and spreadsheet-based computational analysis to make scientific predictions.

AAPT Session: The Best Electricity and Magnetism Demos You Aren’t Doing

(Grades 6–College)

Seaview Ballroom A, Hyatt

Science Focus: PS, INF

James Lincoln (james@physicsvideos.net), Tarbut V’Torah Community Day School, Irvine, Calif.

Discover some lesser known but greater impact demonstrations that are rarely seen. These are coupled with enhanced versions of old classics.

Put Me in Coach: A Peer Coaching Model for Implementing Science and Engineering Practices

(Grades 6–12)

Verona, Renaissance

Science Focus: GEN, SEP

Tatiana Lim-Breitbart (calprepchem@gmail.com), Aspire California College Preparatory Academy, Berkeley

In order to authentically implement science and engineering practices, students need to rely on each other as they co-construct their learning. Let’s tackle two models for peer coaching: Partner Experts and Expert Facilitators.

3:30–4:30 PM Featured Presentation**NGSS Using the Past to Take Science Education into the Future**

(General)

Grand Ballroom A, Convention Center

Science Focus: GEN, NGSS

**Myrna Lynn Perez Sheldon**

(@SRCatHarvard; myrna.p.sheldon@rice.edu), Post Doctoral Fellow, Center for Women, Gender, and Sexuality Studies, Rice University, and Editor-in-Chief, *cosmologicsmagazine.com*, Houston, Tex.

Presider: Terrie Perez, EmSTEM Middle School, El Cajon, Calif.

Why do we teach science in our public school classrooms? We do it because we believe that all students must understand the fundamentals of science in order to succeed in our modern world. But science is much more than a collection of facts about the natural world. If we want our students to have a deeper understanding of science and engineering, we must give them the tools to connect science to the subjects that engage the big questions—social studies, English, political science, and others. In this talk, Myrna Perez Sheldon tells us the power of connecting science education with the humanities, and shows us some of the newest and most innovative digital resources to do this!

A historian of science, Myrna Perez Sheldon researches the relationship between the science of evolution and its role in public culture, specifically the role of public science classrooms in debates over the nature and purpose of science. She has translated this academic work into digital curricula for K–12 classrooms through her work with the Darwin Correspondence Project at Cambridge University and the Program for Science, Religion, and Culture at Harvard University.

After earning a bachelor's degree in biology from Westmont College and a PhD from the Department of the History of Science at Harvard University, Myrna is now a Postdoctoral Fellow at the Center for Women, Gender, and Sexuality Studies at Rice University. Her historical work touches themes in the history of biology, science, religion, gender studies of science, and U.S. history.

3:30–4:30 PM Presentations**Speak Like a Scientist: English Language Development in Science Classrooms**

(Grades 3–8)

Pacific 1, Hilton

Science Focus: GEN, SEP

Robin Gose (rmgose@gmail.com), The Thinkery, Austin, Tex.

Current research informs practice in this discussion-based session on authentically embedding language development into rigorous science instruction to improve student engagement in reasoning and scientific discourse.

Teaching Forensic DNA Using Models, Kinesthetic Learning, STR Activity, and NGSS

(Grades 9–12)

Pacific 2, Hilton

Science Focus: LS, INF

Anthony Bertino (nolanp@nycap.rr.com) and **Patricia Nolan Bertino** (nolanp@nycap.rr.com), Retired Educators, Scotia, N.Y.

Increase student comprehension, collaboration, and interest using inexpensive models, kinesthetic learning activities, nonfiction readings, and carousel brainstorming. Perform a STR activity to identify 911 victims. Take home free lessons and demo descriptions.

Engineering NGSS into Your High School Science Classroom

(Grades 7–College)

Beacon A, Hyatt

Science Focus: GEN, SEP

Bev DeVore-Wedding (bdevorewedding@gmail.com), Meeker High School, Lincoln, Neb.

Mary Glodowski (mary.glodowski@gmail.com), Edmonds School District, Lynnwood, Wash.

Implementing curriculum changes to support the NGSS? Need help interpreting science and engineering practices vs. inquiry? Discussion focuses on these NGSS concepts. Handouts!

CCSS Science Writing Task: Assessing Evidence-based Opinion Writing in Science

(Grades 2–6)

Regency Ballroom C, Hyatt

Science Focus: GEN, SEP7, SEP8

Elizabeth Woodward (elizabeth.woodward@ousd.k12.ca.us), Oakland (Calif.) Unified School District

Reason-based writing anchored in science provides a bridge between NGSS argumentation and CCSS ELA opinion writing. We will cover assessment samples and discussion of the design process.

Vocabulary Magic: Making Science Words REAL!

(Grades 3–12) *Regency Ballroom E, Hyatt*

Science Focus: GEN

Joanne Billingsley, Billingsley Education, San Antonio, Tex.

Tap into the power of music, communication, and imagery to create a brain-friendly, language-rich, interactive science classroom where students learn the academic language they need to succeed.

A Tool to Develop Preservice Teachers: NSTA Learning Center

(College) *Seaview Ballroom B, Hyatt*

Science Focus: GEN

John Putnam (jputnam@nsta.org), Assistant Executive Director, Services, NSTA, Arlington, Va.

Al Byers (abyers@nsta.org), Assistant Executive Director, Government Partnerships and e-Learning 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.

Turning STEM into STEAM: Bringing the Arts into Your Science Classroom

(Grades K–12) *Shoreline A, Hyatt*

Science Focus: GEN

Cheryl Buettner, Da Vinci Academy, Temecula, Calif.

Music, drama, and art can enliven any area of the science curriculum. Learn techniques and ideas for engaging your students through the visual and performing arts.

Bring the Science of Cars into the Classroom

(Grades 7–12) *Shoreline B, Hyatt*

Science Focus: ETS, PS1, PS2, PS3, INF, CCC4, CCC5, SEP1, SEP2, SEP4

Andrew Nydam (andrewnydam@hotmail.com), ASM International Foundation, Materials Park, Ohio

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

Students love cars but dislike science? Here are some lessons using the car to teach major science concepts. Yes, even if you are mechanically challenged!



NSTA Press® Session: Get the FACTs—136 Formative Assessment Classroom Techniques!

(General) *204, Convention Center*

Science Focus: GEN, SEP

Page Keeley (@CTSKeeley; pagekeeleey@gmail.com), 2008–2009 NSTA President, Fort Myers, Fla.

Joyce Tugel (jtugel@mmsa.org), Maine Mathematics and Science Alliance, Augusta

Experience a strategy harvest of selected K–16 techniques used for continuous formative assessment while simultaneously supporting use of the science and engineering practices. New FACTs from *Science Formative Assessment, Vol. 2* will be featured along with the book as a door prize!

Supporting NGSS and CCSS with Environment-based Instruction...in the Classroom and Beyond

(Grades K–12) *Capri, Renaissance*

Science Focus: ESS3.C, INF, CCC2, SEP1, SEP4, SEP6

Christy Porter Humpert (christy.porterhumpert@calrecycle.ca.gov) and **Kirk Amato** (@CAEEI; kirk.amato@calrecycle.ca.gov), California Dept. of Resources Recycling and Recovery, Sacramento

Kelly Keeler (kkeeler@cscmail.org), California Science Center, Los Angeles

Heidi Schaefer (hls1238@gmail.com), 32nd Street/USC Visual & Performing Arts (K–5) School, Los Angeles, Calif. Discover how to support NGSS and CCSS implementation integrating environment-based instructional materials in the classroom with hands-on experiences outside the classroom.

Revolutionary War Boat Race—From Investigation to Engineering in Interdisciplinary Curriculum

(Grades 6–8) *Naples III, Renaissance*

Science Focus: ETS, CCC, SEP

Amy Frame, Environmental Charter Schools, Lawndale, Calif.

Share a teaching team's experience planning explorations of optimal design in engineering model boats in an American Revolution project, incorporating new middle school science, math, and English standards. Handouts include planning templates and simplified NGSS rubrics. Red coat and pointy hat optional!

Engaging K–6 Science Students with Scientific Inquiry, Supported by Science Literacy Skills and Extraordinary Print Resources

(Grades K–6)

Casablanca, Westin

Science Focus: GEN, SEP1, SEP5, SEP8

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

Walk away with strategies to engage K–6 science students, involving teaching science literacy skills, science process skills, and hands-on explorations in tandem—stimulating inquiry and developing student competence. Handouts!

ASEE Session: Using Communities of Practice to Engage Girls in STEM

(Grades 6–College)

Centennial Salon C, Westin

Science Focus: ETS

Mary Bonk Isaac (mbonkisaac@gmail.com), HEDGE Co., Spring Valley, Calif.

Find out how to use communities of practice to engage females in STEM, particularly engineering and technology.

Learn how you can leverage the various communities of practice in your community to engage more females in your STEM classrooms AND keep them interested all the way into a successful career.

Reinventing the Science Fair

(Grades 5–12)

Ocean Ballroom, Westin

Science Focus: ETS, SEP1

Terri Lake (tlake25@gmail.com), Bourgade Catholic High School, Phoenix, Ariz.

Tired of using the same old trifold boards for the science fair? Have your students use their imagination and develop a product that would solve a household or community problem. Handouts.

3:30–4:30 PM Hands-On Workshops

NASA Astrobiology: The Search for Life Beyond Earth

(Grades 5–12)

International 2, Hilton

Science Focus: ESS

Rachel Zimmerman Brachman (rachel.zimmerman-brachman@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Astrobiologists seek answers to the fundamental question, “Are we alone?” Learn how the Astrobiology of Icy Worlds team at NASA’s Jet Propulsion Laboratory searches for signs of life on icy moons of our solar system.

Molecules, Energy Transfer, and Microbes to Promote Critical Thinking and Bridge Disciplines

(Grades 7–12)


International 3, Hilton

Science Focus: PS

John Fedors (jfedors@wavecable.com), Science Activities, Lincoln, Calif.

Engage in activities using readily available materials to stimulate critical thinking and bridge science disciplines. Use Glo Germ™, magic bubble/wire, various polymers, and more.



 **Explore Our Solar System with Free NASA After-School Activity Guides**

(Grades 3–6) *Regency Ballroom B, Hyatt*

Science Focus: ESS, ETS, INF

Leslie Lowes (*leslie.lowes@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Enrich young learners' experience through the excitement of exploring our solar system! Adapted from NASA classroom curricula, these free activity guides have been used as part of the California AfterSchool Network's Jumpstart STEM program and NASA's Summer of Innovation.

How Long Does It Take to Get to Mars?

(Grades 8–College) *Regency Ballroom D, Hyatt*

Science Focus: ESS1, PS2, CCC2, SEP4, SEP7

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

Explore how to apply Kepler's laws to planetary orbits. Calculate a least-energy transfer orbit (in a simplified way that generates good estimates) using nothing more complex than a square root function. Also, see how to demonstrate Kepler's second law using free software and an image provided by the presenter.

National Earth Science Teachers Association (NESTA) Rock and Mineral Raffle

(General) *Grand Ballroom B, Convention Center*

Science Focus: ESS

Michael Passow (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.

NESTA offers more than 50 specimens to choose from for a chance to win display-quality specimens of rocks, minerals, and fossils as well as other Earth science–related materials.

iPad: Next Step to a Digital Classroom

(Grades 6–12) *Naples I, Renaissance*

Science Focus: GEN, NGSS

Greg Dodd (*gbdodd@gmail.com*), George Washington High School, Charleston, W.Va.

As schools implement 1:1 iPads, teachers need training in using iPads effectively for science instruction. Come learn how to use the iPad to create a digital classroom.

ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences

(Grades 6–8) *104C, Convention Center*

Science Focus: PS1.A, CCC2, CCC4, SEP2, SEP3

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

Explore water's characteristic properties and what makes water a polar molecule through hands-on activities and molecular animations from the free completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *www.middleschoolchemistry.com*.

Notebooks: A Tool for Student Thinking

(Grades 1–12) *Centennial Salon A, Westin*

Science Focus: GEN, NGSS

Karen Cerwin (*kcerwin@wested.org*), K–12 Alliance/WestEd, Huntington Beach, Calif.

Wondering how to increase student thinking/writing in notebooks? Compare your notebook practices along a continuum of developing independence in student entries indicating thinking rather than copying.

Otters in Action!

(Grades 2–6) *Centennial Salon D, Westin*

Science Focus: GEN, SEP

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

Discover how to use an activity budget as a tool to observe the animals around us. We'll collect data on sea otters and explore how we can scaffold elementary students' data analysis writing. Discussion includes how this type of writing fits into the NGSS.

4:00–4:30 PM Presentation

AAPT Session: Transformer Basics and How “Wall-Wart” Plugs Waste Energy

(Grades 6–College) *Seaview Ballroom A, Hyatt*

Science Focus: PS, INF

William Layton (*layton@physics.ucla.edu*), University of California, Los Angeles

Transformers are everywhere inside and outside of our homes. This presentation will describe how transformers work using Faraday and Lenz's laws and provide a demonstration that many physics teachers have a hard time understanding.

4:00–5:15 PM Exhibitor Workshops**STEM and NGSS Inquiry in Chemistry—Effective, Efficient, Economical***(Grades 6–12)**102 A/B, Convention Center*

Science Focus: PS

Sponsor: Pearson

Ed Waterman, Retired Educator, Fort Collins, Colo.

Learn how to transition to a STEM and NGSS student-centered chemistry classroom by implementing inquiry activities that are safe, simple, easy to use, material conserving, time efficient, and effective. 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.

DuPont Presents: Power Up and Design Your Own Battery*(Grades 6–12)**102C, Convention Center*

Science Focus: ETS2, PS3

Sponsor: LAB-AIDS®, Inc.

Jessica Jones, Chatham Middle School, Chatham, Va.

Although we live in a battery-powered lifestyle, most of us have no idea how batteries work. Join us as we make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries. The strategies modeled move toward active learning and open inquiry.

Biotechnology Basics*(Grades 6–College)**103A, Convention Center*

Science Focus: LS, INF

Sponsor: Edvotek Inc.

Danielle Snowflack (info@edvotek.com) and **Brian Ell** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Feeling overwhelmed by the complicated experiments performed in biotechnology laboratories? If so, join us for this hands-on workshop that explores biotechnology techniques commonly used in research labs (DNA isolation, PCR, and electrophoresis). These experiments can help students understand how techniques like genetic engineering work in a real-world context. Free flash drive/T-shirt drawing!

An Invitation: Moving Forward with the NRC Framework and NGSS*(Grades K–8)**103B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

From crosscutting concepts to science and engineering practices, take away strategies and approaches that can bring the NRC Framework and NGSS to life in your district.

Implementing an NGSS-based Middle School PBIS™ Curriculum with Fidelity*(Grades 6–8)**104B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: It's About Time

Presenter to be announced

Discover the online support to help implement a research-based science curriculum and the tool to help you know if you're doing it right. It's About Time's NSF-funded Cyberlearning Professional Development Model addresses barriers to the successful implementation and scaling-up of research-based curricula. Leave with online resources and an observation protocol to implement with fidelity.

Genes, Genomes, and the New World of Personalized Medicine*(Grades 9–College)**201B, Convention Center*

Science Focus: LS

Sponsor: MSOE Center for BioMolecular Modeling

Tim Herman (herman@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

Introduce students to the new science of genomics and personalized medicine with interactive tools, such as the DNA Discovery Kit, new Flow of Genetic Information Kit, and gene maps. We will tell a “genomic story” you can use to engage students by personalizing biologic genomic processes.

Exploring STEM Through Biotechnology

(Grades 7–College)

202 A/B, Convention Center

Science Focus: LS, INF, SEP

Sponsor: The MiniOne Electrophoresis

Richard Chan and **Rita Wong**, and The MiniOne Electrophoresis, San Diego, Calif.

The MiniOne™ delivers the complete, real-time electrophoresis experience in the palm of your hand. Separate, view, and capture DNA band images within a single class period. It is a game changer for teaching molecular biology in the classroom.

STEM Engineering for Middle School and High School with TeacherGeek Rubber Band Racer

(Grades 4–12)

203 A/B, Convention Center

Science Focus: ETS, PS

Sponsor: Ward's Science

Kelly Smith, VWR Education/Ward's Natural Science, Rochester, N.Y.

Engage students and encourage problem solving and creative thinking with this hands-on physical science activity that addresses the crosscutting concept cause and effect. In this make-and-take workshop, you'll design, build, test, and modify a machine, then compete in a race to the finish line. Bring your completed product back to your classroom and continue the fun!



5:00–5:30 PM Presentations

AAPT Session: Recycled Goods as Inspiration in Learning

(Grades 6–College)

Seaview Ballroom A, Hyatt

Science Focus: PS, INF, SEP

Craig Sipes, Trash for Teaching, Gardena, Calif.

Discover how “Trash for Teaching” fosters hands-on learning through recycled materials.

Inquiring About STEM? Learn to Kick-Start High School Connections with Our Institute

(Grades 9–College)

Shoreline B, Hyatt

Science Focus: ETS

Charles Setterfield, Sinclair Community College, Dayton, Ohio

“It has given a kick-start to the rest of my teaching career.” Hear how 150 STEM teachers developed inquiry-based lessons to link school to work.

Engage Students, Integrate STEM, and Improve 21st-Century Skills Using Underwater Robots

(Grades 6–College)

Naples I, Renaissance

Science Focus: ETS, INF, SEP1, SEP2, SEP5, SEP8

Tracy Crews (tracy.crews@oregonstate.edu), OSU Hatfield Marine Center, Newport, Ore.

The Marine Advanced Technology Education (MATE) Center supports Remotely Operated Vehicle programs around the world. Come learn more.

5:00–6:00 PM Presentations**10 Activities To Invigorate Your Physics Classes***(Grades 7–12)**Atlantic 2, Hilton*

Science Focus: PS

Kim Gerber (*kgerber@leyden212.org*), East Leyden High School, Franklin Park, Ill.

These 10 time-tested activities can create interest and challenge the inventiveness and creativity of your physics students.

Literacy + Science: A Continuum of Student Learning Outcomes for Literacy in Grades 6–8 Science*(Grades 6–8)**Pacific 1, Hilton*

Science Focus: GEN, SEP

Deborah Farkas (*farkasd@sfsud.edu*), San Francisco (Calif.) Unified School District**Lisa Ernst** (*ernstl@sfsud.edu*), Alice Fong Yu Alternative School, San Francisco, Calif.

Hear how San Francisco Unified School District has developed and begun to implement student learning outcomes for literacy in grade 6–8 science.

Plate Tectonics and the Western United States*(Grades 4–12)**Regency Ballroom F, Hyatt*

Science Focus: ESS2.B

Terry Logue (*tjlogue@una.edu*), Retired Educator, Casper, Wyo.

This lecture/slide presentation will review the history of plate tectonics, cite evidence to support the the current model, and emphasize effects on the Western U.S.

NABT Session: California Unconference for Biology Teachers*(General)**Seaview Ballroom C, Hyatt*

Science Focus: LS, SEP1

Jaelyn Reeves-Pepin (*@jreevespepin; jreevespepin@nabt.org*), NABT, Reston, Va.**Bethany Dixon** (*@msbethdixon; bdixon@rocklinacademy.org*), Western Sierra Collegiate Academy, Rocklin, Calif.

Join us for this “unconference.” The focus is on sharing resources and building communities, but you set the agenda. All biology teachers at all levels are welcome.

**NSTA Press® Session: Uncovering Elementary Students Ideas in Science Through Talk and Argument***(Grades P–5)**204, Convention Center*

Science Focus: GEN, SEP

Page Keeley (*@CTSKeeley; pagekeeley@gmail.com*), 2008–2009 NSTA President, Fort Myers, Fla.Learn ways to engage students in productive science talk through formative assessment while supporting the *Common Core* literacy capacities of speaking and listening and the NGSS science and engineering practices.**NGSS, Experiment Implementation, and Inclusion in Science Notebooks***(Grades 6–12)**Verona, Renaissance*

Science Focus: GEN, SEP

Yamileth Shimojo (*@RCOE; yshimojo@rcoe.us*), Riverside County Office of Education, Murrieta, Calif.

Emphasis will be placed on the use of checkpoints as a strategy for providing students with quick feedback as they progress through a laboratory experiment or an activity designed to engage the learner as they move through a curricular unit. Explore NGSS connections through the pedagogical tool of a science notebook.

How the NGSS California Integrated Model Promotes Student Understanding*(Grades 6–8)**Centennial Salon A, Westin*

Science Focus: GEN, NGSS

Robert Sherriff, Winston Churchill Middle School, Carmichael, Calif.

Discover the process the California Science Expert Panel members used for determining the best learning sequence of the NGSS for middle school. Hear why the integrated programs were designed the way they are and the reasoning involved.

Science Content + Literacy = Common Core Success*(Grades 3–8)**Ocean Ballroom, Westin*

Science Focus: GEN, NGSS

Linda Linnen (*lslinnen@aol.com*), Retired Teacher, Littleton, Colo.

Walk away with many upper elementary and middle school classroom lesson ideas appropriate for teaching literacy and science simultaneously geared toward the CCSS.

5:00–6:00 PM Hands-On Workshops

Advanced Student Thinking Through Interactive Notebooks

(Grades 7–12)

International 2, Hilton

Science Focus: GEN

Jennifer Weibert (jweibert@fcoe.org), Fresno County Office of Education, Fresno, Calif.

Increase the rigor of student thinking in your science classroom with a focus on the synthesis of student learning using interactive notebook outputs. Explore what different levels of input/output look like using Webb's Depth of Knowledge. Current classroom examples will be shown.

Engaging Ways to Teach and Assess Understanding of Natural Selection

(Grades 7–12)

International 3, Hilton

Science Focus: LS

Dianne Anderson (dianneanderson@pointloma.edu), Point Loma Nazarene University, San Diego, Calif.

Biology concept cartoons and the Conceptual Inventory of Natural Selection can be used to improve learning of natural selection by middle school and high school students.

STEM Activities: Engaging the Brain

(Grades 7–12)

Pacific 2, Hilton

Science Focus: ETS, CCC, SEP

Wayne Snyder (snyder66@verizon.net), Educational Consultant, Glendora, Calif.

Incorporating STEM in the classroom in a way that includes inquiry and literacy increases motivation, perseverance, and learning. We will do/discuss several brain-based and STEM-based activities.

Everyday Science for the Playground

(Grades K–8)

Regency Ballroom B, Hyatt

Science Focus: ETS, INF

Erin Eberhart (@itofoundation; insidetheoutdoors@ocde.us), Orange County Dept. of Education, Costa Mesa, Calif.

Turn the outdoor classroom into a STEM laboratory using simple strategies that combine play and learning.

CCSS Reading, Writing, and Seed Dispersal! Integrating CCSS and NGSS

(Grades 6–12)

Regency Ballroom C, Hyatt

Science Focus: GEN, SEP1, SEP2, SEP3, SEP7, SEP8

Katie Tobin (tobink@sfsd.edu) and **Dawn Rege** (reged@sfsd.edu), and San Francisco (Calif.) Unified School District

Engage in a hands-on model building activity that gets science students reading, writing, and engaging in academic discourse. Solve the following problem: “How far can my seed travel?” Join us and germinate new learning in your science classroom.



NSTA Press® Session: Scientific Argumentation in Biology: 30 Classroom Activities

(Grades 6–12)

Regency Ballroom D, Hyatt

Science Focus: LS, SEP

Victor Sampson (@drvictorsampson; victor.sampson@gmail.com), The University of Texas at Austin

Sharon Schleigh (sharon.schleigh@purduecal.edu), Purdue University Calumet, Hammond, Ind.

Receive a brief overview of scientific argumentation and introduction to three different approaches for engaging students in scientific argumentation. Experience one of the approaches firsthand.

Stellar Evolution—From Formation to Destruction

(Grades 5–12)

Regency Ballroom E, Hyatt

Science Focus: ESS1.A, PS1.C, PS2.C, CCC1, CCC2, CCC4, CCC5, CCC7, SEP2, SEP8

Donna Young (donna@aavso.org), AAVSO, Cambridge, Mass.

Use images of stellar nurseries, proto-stars, supernova remnants, planetary nebulae, white dwarfs, neutron stars, pulsars, and black holes to model stellar evolution and planet formation.

Developing Models That Have Explanatory and Predictive Power

(Grades K–12)

Seaview Ballroom B, Hyatt

Science Focus: PS, SEP2

David Brothers, Wentzville (Mo.) R-IV School District
Developing and using models is an unfamiliar science practice for many teachers. Participants, in groups, will construct a model for water evaporating and condensing in an open and a closed container as well as discuss how to engage students in modeling at different grade levels and abilities.

NGSS Topic Study: A Tool for Building NGSS Awareness and Capacity*(General)**Shoreline A, Hyatt*

Science Focus: GEN, NGSS

Cristina Trecha (@ucsdsp), University of California, Berkeley**John Spiegel** (@sdngss; john.spiegel@sdcoe.net), San Diego County Office of Education, San Diego, Calif.

Take a deep dive into the NGSS through the process of Curriculum Topic Study. This workshop is designed for teacher leaders and professional developers.

ACS Middle Level Session: Chemical Change—Breaking and Making Bonds*(Grades 6–8)**104C, Convention Center*

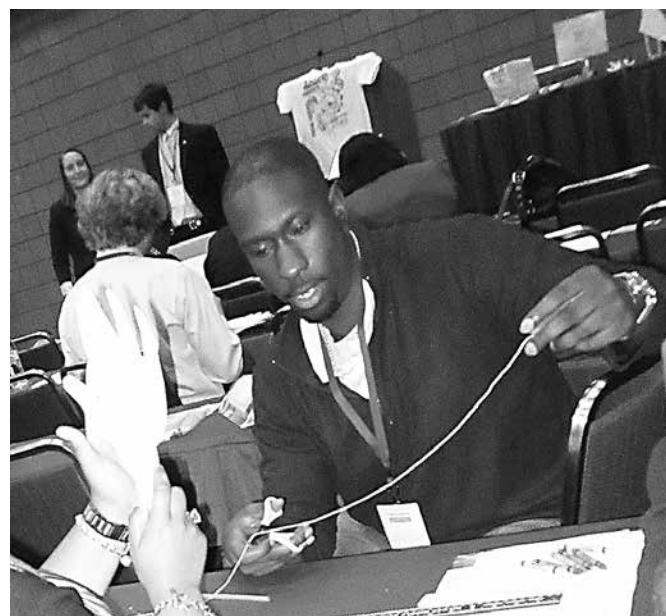
Science Focus: PS1.B, CCC2, CCC4, SEP2

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 animations from the free, completely developed lesson plans in www.middleschoolchemistry.com.**Engineering Tales***(Grades K–5)**Centennial Salon B, Westin*

Science Focus: ETS

Keri Porter (@STEAM—solutions; keriporter@lausd.net), ESC South, El Segundo, Calif.

Experience an active CCSS approach linking an engineering design process—Ask, Imagine, Plan, Create, and Improve—to solve a problem based upon a fictional tale.

**ASEE Session: Effectively Modeling STEM Careers in Underserved K–12 Communities***(Grades 6–12)**Centennial Salon C, Westin*

Science Focus: ETS

Gary Cruz, Great Minds In STEM, Monterey Park, Calif. Through Great Minds in STEM™, Viva Technology™, and STEM-Up™ Initiative—100,000 students, teachers, and parents across 18 states have become more technologically literate through the positive imaging and modeling of science and engineering.**Layers, Layers, Earth Explored!***(Grades 4–8)**Centennial Salon D, Westin*

Science Focus: ESS2.A, ESS2.B, CCC4, SEP1, SEP2, SEP4, SEP8

Jennifer Foster (jfoster@cusd.net) and **Kim Castagna** (kcastagna@cusd.net), Carpinteria Middle School, Carpinteria, Calif.

How do scientists discover Earth's layering? Explore density/inference with engaging activities that seek to answer that question. Receive field-tested unit links that support the NGSS.

5:30–6:00 PM Presentations**Mission to NGSS Learning Outcomes via Mission to Mars Projects***(Grades 6–12)**Beacon A, Hyatt*

Science Focus: ESS

Yatri Shukla (yshukla@orangeusd.org), Santiago Charter Middle School, Orange, Calif.

Explore how Mission to Mars-themed learning projects are ideal for the NGSS. Students must calculate the sols on Mars; figure out a comfortable location to house their module; create survival plans for sustainability, communication, and energy; and more.

AAPT Session: High-Schoolers at UCLA's Plasma Lab*(Grades 6–College)**Seaview Ballroom A, Hyatt*

Science Focus: PS, INF, CCC, SEP

Joseph Wise, Wildwood School, Middle and Upper School Campus, Los Angeles, Calif.

Hear how high school physics students have been contributing to ongoing research at UCLA's Plasma Laboratory for many years.

NASA's SOFIA Is Flying! STEM Applied in the Air, Classroom, and the Ambassador Program

(Grades 7–College) Shoreline B, Hyatt
Science Focus: ESS1, ETS, PS4.B, PS4.C

Kathleen Fredette (*kathdette@me.com*), Palmdale (Calif.)
School District

Examine STEM through the lens of recent astronomical discoveries made using telescopes and instruments sensitive across the electromagnetic spectrum, especially with infrared facilities such as NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA). Find out how you can fly on NASA's SOFIA!

Using Popular Science Magazine Articles to Improve Students' Critical Thinking and Scientific Literacy

(Grades 9–12) Naples I, Renaissance

Science Focus: GEN, NGSS

Patrice Pages (*@ChemMatters*; *p_pages@acs.org*), American Chemical Society, Washington, D.C.

We will describe how science-related magazine articles can be integrated into instruction to stimulate student interest in science and increase their scientific knowledge.

6:00–8:00 PM Networking Opportunity

NSTA Multicultural/Equity Division Reception/Keynote

Beacon B, Hyatt

Please join the NSTA Multicultural/Equity Committee in honoring explorer Juan Martinez for his leadership in getting urban youth outdoors and involved with environmental programs. Reception hosted by National Geographic.

6:00–9:30 PM Meeting

CSTA Leadership Forum Meeting

(By Invitation Only)

Naples II, Renaissance

CSTA will host this Leadership Forum to assist California educators in reaching their full leadership potential.



8:00–9:00 AM Presentations

Physics Demonstrations and Labs: Motion and Forces

(Grades 8–12) *Seaview Ballroom A, Hyatt*
Science Focus: PS2, CCC, SEP1, SEP2, SEP6, SEP7, SEP8

Kevin Dwyer (*chsdwyer@yahoo.com*), Cypress High School, Cypress, Calif.

Laura Henriques (*laura.henriques@csulb.edu*), California State University, Long Beach

Join this fast-paced session as a group of physics and physical science teachers share favorite demonstrations, labs, and online resources to illustrate motion and forces concepts. Correlations to the NGSS will also be addressed (primarily, PS2 Motion and Stability: Forces and Interactions).

Integrating Science Literacy and English Literacy in the K–12 Science Classroom: Benefits for Hearing-impaired Students

(Grades K–12) *201A, Convention Center*
Science Focus: GEN, NGSS

L.K. Quinsland, National Technical Institute for the Deaf, Rochester, N.Y.

This interactive session will identify teaching strategies that promote science and written English literacy (K–16) for deaf and hard-of-hearing as well as hearing students. Although the presenter works primarily with deaf/hard-of-hearing students, the cognitive and language development strategies discussed in this session transcend the sound barrier and apply to ALL learners.

Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century

(General) *202 A/B, Convention Center*
Science Focus: ESS, INF

Mark McCaffrey (@McCaffreyMark; *mccaffrey@ncse.com*), National Center for Science Education, Oakland, Calif. Join Mark McCaffrey from National Center for Science Education as he shares key resources to help provide your students with climate and energy knowledge and know-how for the 21st century.

iPad Invasion in the Middle School Science Lab

(Grades 4–12) *203 A/B, Convention Center*
Science Focus: GEN

Maggie Mabery (@MBMSScience; *mmabery@mbusd.org*) and **James Locke** (*jlocke@mbusd.org*), Manhattan Beach Middle School, Manhattan Beach, Calif.

iPads are invading schools. Come see how two middle school science teachers implemented these tools successfully into their science labs.

8:00–9:00 AM Hands-On Workshops

NGSS Supporting Students as They Engage in Argument from Evidence

(Grades 6–8) *Regency Ballroom A, Hyatt*
Science Focus: ESS

Emily Weiss, SWMEA President, and The Lawrence Hall of Science, University of California, Berkeley

Explore ways to incorporate gathering evidence and using scientific argumentation to make evidence-based explanations in middle school science classrooms. We will focus on the science of climate change, using a curriculum sequence that explores the ocean atmosphere connection and climate change using real data.

Family STEM Explorations Created by Community Partnerships

(Grades 1–6, College) *Regency Ballroom B, Hyatt*
Science Focus: ETS, INF, SEP

David Heil (*dheil@davidheil.com*), David Heil & Associates, Inc., Portland, Ore.

Team up with businesses and higher education organizations in your community to host family STEM events using fun hands-on activities that engage the entire family.

CCSS Practicing Evidence-based Argumentation

(Grades 3–8) *Regency Ballroom C, Hyatt*
Science Focus: PS1.A, CCC2, CCC4, CCC7, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Laura Prival, Oakland (Calif.) Unified School District
Engaging in argumentation supports meaning-making and promotes reasoning. Join us for an exploration of strategies that lead to quality academic discussions around heat and density.

Teach Marine Biology (Instead of Biology) to Cover the CCSS and NGSS

(Grades 9–11) *Regency Ballroom D, Hyatt*
Science Focus: LS, SEP1, SEP2, SEP3, SEP6, SEP8

Mark Friedman (*marklewisfriedman@animo.org*), Ánimo Leadership Charter High School, Inglewood, Calif.

Hook your high school biology students with marine science materials—we've got lesson plans, labs, activities, games, puzzles, web interactives, movies with thought questions, web quests, and more to get you started.

Bring Learning to Life in the Garden!

(Grades K–6) *Regency Ballroom E, Hyatt*
Science Focus: LS, INF

Whitney Cohen, Life Lab, Santa Cruz, Calif.

Cultivate new learning by using an outdoor garden classroom to foster a spirit of inquiry and promote ecological literacy. Experience hands-on activities correlated to the NGSS and CCSS.

Juice from Juice

(Grades 3–12) *Seaview Ballroom B, Hyatt*
Science Focus: ESS2.A, ESS2.D, ESS3.A, ESS3.C, ESS3.D, ETS, LS1.A, LS1.B, LS1.C, LS2.A, LS2.B, PS1.A, PS1.B, PS2.B, PS2.C, PS3, PS4.B, INF, CCC2, CCC3, CCC4, CCC5, CCC6, SEP

Michelle Hansen (*mchansen@caltech.edu*), California Institute of Technology, Pasadena

Discover how to make dye-sensitized solar cells using blackberry juice! This experiment brings current solar energy research efforts at Caltech into your classroom.

Engaging Kids with NGSS Science and Engineering Practices in a Community-based Science Workshop

(Grades 3–11) *Seaview Ballroom C, Hyatt*
Science Focus: INF, SEP

Jerry Valadez (*jdvsience@yahoo.com*), SAM Academy, Inc., Fresno, Calif.

Ana Lopez (*anaglopez4@att.net*), Central Valley Science Project, Sanger, Calif.

James Marshall (*jamesm@csufresno.edu*), California State University, Fresno

Explore how kids become engaged with the NGSS science and engineering practices and CCSS while having fun in a Sanger Community Science Workshop.

Advancing Language Proficiency Through Science and Engineering Practices

(Grades K–5) *104B, Convention Center*
Science Focus: ETS1.B, LS2, CCC4, CCC6, SEP4

Bradley Schleder, Kings Canyon Unified School District, Reedley, Calif.

Michelle French (*michannfrench@sbcglobal.net*), Tulare County Office of Education, Visalia, Calif.

Explore the real-world engineering design process and learn how it can provide an authentic vehicle for addressing the CCSS ELA. *Note:* Hands-on activities available to the first 40 participants.

Unleashing Your Inner Scientist!

(Grades 1–8) *104C, Convention Center*
Science Focus: GEN, SEP1, SEP4, SEP8

Carl Carranza (*carl.carranza@lacity.org*), Cabrillo Marine Aquarium, San Pedro, Calif.

Find yourself teaching science with little or no “formal” science training? Have no fear—let’s uncover the unknown science within you!

Goo-tonian: Connecting Non-Newtonian Fluids to the NGSS

(Grades 7–College) 202C, Convention Center
Science Focus: ESS3, ETS, LS1, PS, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP

Clarissa Resella (@bioteach4u; resella@hartdistrict.org), Saugus High School, Saugus, Calif.

Erica Hardbarger (ehardbarger@hartdistrict.org), William S. Hart High School, Newhall, Calif.

Julie Huffman (jhuffman@hartdistrict.org), Golden Valley High School, Santa Clarita, Calif.

Judy Paul (jpaul@hartdistrict.org), La MESA Junior High School, Santa Clarita, Calif.

Roll up your sleeves (and pant legs)! Experience firsthand Newtonian fluids and non-Newtonian fluids using simple ingredients. This hands-on, inquiry-based workshop will demonstrate the ease by which old favorites can come alive and connect to the NGSS.

STEM Lessons and Capacity Building

(Grades 4–6) 203C, Convention Center
Science Focus: GEN, NGSS

Presenters to be announced

Experience a grade 5 unit using STEM while incorporating the NGSS and CCSS. We will also share how our elementary school is in the process of building STEM capacity throughout all grades.

8:00–9:15 AM Exhibitor Workshops

Marine Science Education—Awareness, Understanding, and Action

(Grades K–12) 101B, Convention Center
Science Focus: ESS3, ETS1.B, ETS2, LS2, CCC2, CCC7, SEP1, SEP6, SEP7

Sponsor: Ocean Classrooms

Cynthia Long (cyndi@oceanclassrooms.com) and **Caine Delacy** (caine@oceanclassrooms.com), Ocean Classrooms, Boulder, Colo.

Awareness begins with understanding the ocean, its inhabitants, and how we are connected. Human activity across the globe has altered ocean ecosystems. Learn how to develop ocean advocates in your classroom by incorporating marine science content understanding, identifying human impact on the ocean, and designing actions we can take.

Using Climate Proxies to Learn About Earth's Climate History

(Grades 6–8) 102C, Convention Center
Science Focus: ESS1.C, ESS2, ETS2

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

How can scientists tell what Earth's climate was like thousands of years before human measurements? This NSF-supported unit simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph replica samples of these organisms to determine warm and cold periods in the past 200,000 years.



8:00 AM–5:00 PM Meeting

Shell Judging Panel Meeting

By Invitation Only

Centennial Salon C, Westin

8:30–9:00 AM Presentation

Using Rubrics and Self- or Peer-grading to Improve the Quality of Written Lab Reports

(Grades 9–College)

Shoreline A, Hyatt

Science Focus: GEN, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Daphne Traeger (traeger_d@sgusd.k12.ca.us) and **Chanda Strom**, Gabrielino High School, San Gabriel, Calif.

Hear how using rubrics and self- or peer-grading has helped improve the quality of our students' written lab reports. We will share sample rubrics, data on student lab report scores and AP test scores, and anecdotal feedback from students and teachers.

8:30–11:30 AM Short Courses

Combining the NGSS Practices and CCSS to Reach the Performance Expectations (SC-5)

(Grades 6–12)

103C, Convention Center

Tickets Required; \$63

Arthur Beauchamp (acbeauchamp@ucdavis.edu) and **Cynthia Passmore** (cpassmore@ucdavis.edu), University of California, Davis

Rich Hedman (hedmanr@csus.edu), MASE Center, Sacramento, CA

For description, see page 37.

CCSS Sinking and Floating: Teaching Students How Graphs Can Describe Relationships Between Phenomena (SC-6)

(Grades 6–10)

201B, Convention Center

Tickets Required; \$35

Susan Gomez-Zwiep (susan.gomez-zwiep@csulb.edu) and **David Harris** (dharris62@mac.com), K–12 Alliance/WestEd, Huntington Beach, Calif.

For description, see page 37.

9:00 AM–12 Noon Exhibits

Hall B, Convention Center

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

9:30–10:00 AM Presentations

NGSS California's Science Standards: How Are We Doing?

(Grades K–12)

Regency Ballroom A, Hyatt

Science Focus: GEN, NGSS

Chris Breazeale, California Dept. of Education, Sacramento
Rolling out new standards can be daunting. Dialogue with the California Department of Education around challenges and benefits in a state of six million students.

Creative Writing in the Science Classroom

(Grades 7–12)

Shoreline A, Hyatt

Science Focus: LS, PS, SEP

Erin Be (ebe@bentleyschool.net) and **Kristina Pappas** (kristinampappas@gmail.com), Bentley School, Upper School, Lafayette, Calif.

Communicating effectively and thinking critically are skills scientists use daily. Join us as we brainstorm ways to get students involved in creative writing in physics, biology, and chemistry.



9:30–10:30 AM Featured Presentation**From Silent Spring to Silent Night: A Tale of Toads and Men***(General)**Grand Ballroom A, Convention Center*

Science Focus: LS



Tyrone Hayes (*tyrone@berkeley.edu*), American Biologist and Professor of Integrative Biology, University of California, Berkeley

President: Pamela Turner, Author, Oakland, Calif.

Join Dr. Tyrone B. Hayes as he shares his amphibian research. Two main areas of interest are metamorphosis and sex differentiation as well as examining growth (larval and adult) and hormonal regulation of aggressive behavior. A few of the amphibians he has studied include local toads, the African clawed frog, the Japanese kajika frog, and the field tree frog.

Dr. Tyrone B. Hayes is an American biologist and professor of Integrative Biology at University of California, Berkeley known for his research findings that the herbicide atrazine is an endocrine disruptor that demasculinizes and feminizes male frogs. His studies have been used as models to develop laboratory and field techniques to examine the effects of endocrine disrupting chemical contaminants on amphibian development. He continues to examine the effects of pesticides on larval development and the potential role of pesticides in amphibian declines.

Tyrone earned his bachelor's degree in organismic and evolutionary biology from Harvard University and his PhD in integrative biology from the University of California, Berkeley.

9:30–10:30 AM Presentations**Shoestring Aquaponics***(Grades 7–12)**Regency Ballroom D, Hyatt*

Science Focus: ETS, CCC, SEP

Michael Towne, Citrus Hill High School, Perris, Calif.

Find out how to build a functioning aquaponics system for under \$100. Use this system as a basis for developing an integrated applied science program. Take home practical plans with a parts list for building a classroom system.

Team APES! Team-teach AP Environmental Science to Improve Teaching and Learning*(Grades 11–12)**Regency Ballroom F, Hyatt*

Science Focus: ESS

Craig Bouma, Loyola High School of Los Angeles, Calif.

Two AP Environment Science teachers will share their team-teaching experiences in an effort to mentor new teachers and improve teaching.

Student Technology and Education Mentors (STEM²)*(Grades 4–12)**Seaview Ballroom B, Hyatt*

Science Focus: ETS, SEP

Erik Skramstad, Clark County School District, Las Vegas, Nev.

Hear about STEM² content and activities and the tips and tricks necessary for using this valuable resource. Learn how to foster STEM learning through informal opportunities such as summer camps and much more.

Integrating CCSS and NGSS: The Role of Teacher Leadership to Transform Science Teaching and Learning*(General)**Seaview Ballroom C, Hyatt*

Science Focus: GEN, NGSS

Christine Lee, California State University, East Bay, Hayward

Dawn O'Connor (*dawno@acoe.org*), Alameda County Office of Education, Hayward, Calif.

Join us as we examine the conditions for transforming science education and learning in support of the NGSS and CCSS. Discussion centers on building successful teacher leadership.

Teaching Science from a Global Perspective

(Grades 9–12)

104C, Convention Center

Science Focus: GEN, NGSS

Anne Artz (@anneartz; aartz@ucsd.edu), The Preuss School UCSD, La Jolla, Calif.

Emphasis will be placed on practical ways to incorporate global data into every science lesson. Learn about hands-on lessons that promote global learning and understanding using data bases, technology, and professional development opportunities.

Starting with the End in Mind: Building an Instructional Unit from NGSS Performance Expectations

(Grades K–12)

201A, Convention Center

Science Focus: GEN, NGSS

Dean Gilbert (dgilbert@ocde.us), Orange County Dept. of Education, Costa Mesa, Calif.

Using a modified version of the backward mapping design, join me as I showcase a newly developed tool that guides a teacher through the development of a multilayered instructional unit. Walk away with a step-by-step guide and template that allows for a complete “electronic” design of your unit of instruction.

9:30–10:30 AM Hands-On Workshops



Teach and Enhance Graphing Skills Using NASA’s Kepler Mission Data

(Grades 7–12)

Regency Ballroom B, Hyatt

Science Focus: ESS1.A, CCC1, CCC3, SEP3, SEP7

Edna DeVore (edevore@seti.org), SETI Institute, Mountain View, Calif.

Gary Nakagiri (gnakagiri@gmail.com), Alameda County Office of Education, Hayward, Calif.

Find out how to use graphing software and Kepler Mission data to improve students’ understanding of graphs, models, and Kepler’s laws. NASA classroom resource materials provided.

CCSS Get to the Point: Techniques for Downhill Writing

(Grades 6–12)

Regency Ballroom C, Hyatt

Science Focus: GEN, NGSS

Taylor Holloway, Ridgecrest Intermediate School, Rancho Palos Verdes, Calif.

In downhill writing, students present their main idea(s) first and then follow with clear explanations. Examine student examples of uphill and downhill writing and see the key differences between the two. Leave with tips for how to incorporate downhill writing into your science curriculum.

Engineering Careers!

(Grades 5–12)

Regency Ballroom E, Hyatt

Science Focus: ETS, INF

Sandra Kaszynski (sandra.d.kaszynski@jpl.nasa.gov), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Ever notice that not only do students not know what is available as far as technology or engineering careers, but most do not know what an engineer does! This workshop suggests a great way to engage students in engineering careers as well as a host of other possibilities. Group work turns into a whole-class conversation!

Using Modeling Activities in the High School Chemistry Class

(Grades 9–12)

Seaview Ballroom A, Hyatt

Science Focus: PS1, PS2, PS3, CCC4, 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.

Bubble Gum with a Nod to Science and Math

(Grades 2–8)

Shoreline B, Hyatt

Science Focus: GEN, SEP2, SEP6, SEP7

Eric Bull (ebull@jessup.edu), William Jessup University, Rocklin, Calif.

Require your students to mindfully chew a piece of bubble gum for a few minutes...consider how it might change in weight, texture, and taste. This incredibly fun activity incorporates measurement and observation to learn what happens to bubble gum after several minutes of chewing.

Crosscutting STEM (and STEAM) into Picture Books for Elementary Students

(Grades P–4) 104B, Convention Center

Science Focus: GEN, INF, NGSS

Ava Pugh (apugh@ulm.edu), University of Louisiana at Monroe

This STEM workshop provides hands-on activities for Science inferencing, Technology implementation, Engineering by Synectics, and Math tessellations featuring the trade book *Brown Bear, Brown Bear*.

The Earth Is Cracked: Looking at Plate Tectonics

(Grades 6–12) 202 A/B, Convention Center

Science Focus: ESS

Debra Bereki, Retired Science Educator, Fillmore, Calif. Have fun exploring simple classroom activities and demonstrations that illustrate plate tectonics and what is inside Earth. Student samples shared.

Hands-On Human Ecology for the Next Generation

(Grades 7–College) 202C, Convention Center

Science Focus: ESS

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

Discover innovative activities for the NGSS that explore population growth, carrying capacity, human impacts on the environment, and paths to sustainability.

Science Fair Projects: The Perfect STEM and Common Core Experience for Students!

(Grades 4–8) 203C, Convention Center

Science Focus: ETS, INF, SEP

Maureen Allen (mallensci@earthlink.net), Science Consultant, Orange County Dept. of Education, Los Alamitos, Calif.

Come see how Science Fair projects can be brought into the science classroom—making for a great STEM experience that incorporates the CCSS and the science and engineering practices with ease!

10:00–10:30 AM Presentation

NGSS *The Mighty Atom: Integrating Close Reading Strategy with the CCSS and the NGSS*

(Grades 8) Regency Ballroom A, Hyatt

Science Focus: ETS2.B, PS1.A, CCC6, SEP1, SEP4, SEP6, SEP8

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

Close Reading comes alive in the science classroom! Come learn how to integrate effective strategies that improve literacy for middle school science students. Explore how you can engage and excite students to read nonfiction text to strengthen and assess content knowledge on the structure of the atom.

10:00–11:15 AM Exhibitor Workshops

On Light and Color: A Most Illuminating Workshop and Demo Show

(Grades 6–12) 102 A/B, Convention Center

Science Focus: PS

Sponsor: Arbor Scientific

James Lincoln (james@physicsvideos.net), Tarbut V'Torah Community Day School, Irvine, Calif.

Learn how to use “cool tools” in an inquiry-driven STEM curriculum. Classroom-ready activities presented by award-winning teacher James Lincoln include mixing primary colors of light, understanding why the eye cannot discern true yellow from red and green, and why it’s acceptable to eat a black strawberry.

Waves, Energy, and Color

(Grades 6–8) 102C, Convention Center

Science Focus: ETS2, PS4

Sponsor: LAB-AIDS®, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Although we live an EM waves-enabled lifestyle, most of us have no idea how they work. Join LAB-AIDS for an NGSS-based waves activity from SEPUP’s *Issues and Physical Science* program. Explore light properties by investigating colors of the visible spectrum and their energy levels using phosphorescent material. SEPUP embeds research-based practices and real issues for powerful content learning.

11:00 AM–12 Noon Presentations

NGSS NGSS, Essential Questions, and Notebooking Practices

(Grades 6–12)

Regency Ballroom A, Hyatt

Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP7, SEP8

Henry Shimojyo, Lake Elsinore (Calif.) Unified School District

Emphasis will be placed on Essential Questions (EQs) as the driving force of curricular design. Participants will analyze several science notebooks that have used the specific strategy of EQs. Discussion includes connections to the NGSS.

Engineering Encounters: Growing Confident Problem Solvers

(Grades P–8)

Regency Ballroom B, Hyatt

Science Focus: ETS, INF, CCC, SEP

Carrie Lynne Draper (clstrasburger@gmail.com), Readiness Learning Associates, Pasadena, Calif.

Take a virtual tour of signature STEM programs and learn the ABCs for improving engineering in your school/science center. A teacher's participation with Sally Ride Science, NASA Explorer Schools, and the Mickelson ExxonMobil Teachers Academy and lessons learned can bring measurable success and innovation for your school/center engineering program preK–8.

CCSS How to Teach *Common Core Writing Standards* While Helping Students Learn Science

(Grades 6–College)

Regency Ballroom C, Hyatt

Science Focus: GEN, SEP

Sandra Yellenberg (sandra_yellenberg@sccoe.org), Santa Clara County Office of Education, San Jose, Calif.

Claims-Evidence-Reasoning supports most writing in science classrooms. Get my new graphic organizer and learn strategies that improve student writing and increase understanding of science content.

Literacy and Writing in Science (LAWS)

(Grades 6–12)

Regency Ballroom F, Hyatt

Science Focus: GEN, INF, NGSS

Rachel Murillo, @Rachel_SCI_LAWS, Hill Classical Middle School, Long Beach, Calif.

Literacy and Writing in Science is a supplemental curriculum developed by and for teachers designed to engage and stimulate student inquiry and analysis of scientific problems in support of the NGSS while supporting CCSS ELA.

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

(Grades 9–12)

Seaview Ballroom A, Hyatt

Science Focus: ETS, INF

Anthony Bertino (nolanp@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 iPad and iPhone apps. We'll cover time of death, anthropology, facial recognition, ballistics, crime scene documentation, and more.

Supporting English Language Learners

(Grades K–11)

Seaview Ballroom B, Hyatt

Science Focus: GEN

Adrienne Somera, Northwest Educational Service District, Bellingham, Wash.

Encounter a variety of strategies for supporting English language learners in science classes. Join me as I share examples of modified elementary and secondary lessons. Handouts!

Hands-On Elementary Science Activities

(Grades 1–6)

Shoreline A, Hyatt

Science Focus: GEN

Daniel Rosenberg, The Pegasus School, Huntington Beach, Calif.

Discover a variety of hands-on science activities that you can do in the classroom tomorrow! Encounter techniques for teaching science to gifted students as well as a variety of activities in the areas of chemistry, life science, physical science, computer science, engineering, forensic science, sports science, and space science.

Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students

(Grades 9–12)

Shoreline B, Hyatt

Science Focus: PS

Presenter to be announced

Attention will be paid to the key components and strategies to writing a fundable proposal and the available ACS grant opportunities for high school chemistry teachers and students.

TEDitorials: Open Up Your Classroom to the World of TED

(Grades 6–College) 202C, Convention Center
Science Focus: GEN, INF, NGSS

Brian Miller (@smarterteacher; smarterteacher@gmail.com), La Salle High School, Pasadena, Calif.

TED began in 1984 as a conference where Technology, Entertainment, and Design converged, and today covers almost all topics—from science to business to global issues. Increase science literacy and critical thinking by adding TEDitorials to your science curriculum.

Online Peer Review: It's More than Course Design

(College) 203 A/B, Convention Center
Science Focus: GEN

Theresa Hornstein, Lake Superior College, Duluth, Minn.

Examine Lake Superior College's peer-review process for online courses and learn how it can be adapted for your campus.

**NSTA Press® Session: Citizen Science: Diverse Projects That Bring Biology to Life**

(Grades 4–11) 204, Convention Center
Science Focus: GEN, INF, SEP

Jennifer Fee, The Cornell Lab of Ornithology, Ithaca, N.Y.
LoriAnne Barnett (@loriannebarnett; lorianne@usanpn.org), USA National Phenology Network, Tucson, Ariz.

Motivate your students with real data! Meeting standards goes hand-in-hand with student investigations and contributing data to citizen science. No matter the season, budget, or amount of time and technology you have, we'll show you how to engage your students with citizen science.

11:00 AM–12 Noon Hands-On Workshops**Ecosystems K–5**

(Grades K–5) Regency Ballroom E, Hyatt
Science Focus: LS2.A

Susan Holton (sholton@mbusd.org), Pennekamp Elementary School, Manhattan Beach, Calif.

Engage in several hands-on activities related to ecosystems and adaptations. Play a game teaching NGSS's HS-LS2-1 "Interdependent Relationships in Ecosystems." Activities involve collecting, analyzing, and interpreting data.

Achieving Success and Motivation with the CCSS and NGSS in Urban Schools

(Grades 6–12) Seaview Ballroom C, Hyatt
Science Focus: GEN, INF, NGSS

Gerard Vargas (gvargas@animo.org), Ánimo Leadership Charter High School, Inglewood, Calif.

I'll demonstrate and share proven brain research-based differentiation strategies to improve motivation, retention, and success for all students. Come work through and receive sample activities that exemplify the dynamics of these transforming strategies.



Bridging the Gap

(Grades 7–9)

104C, Convention Center

Science Focus: GEN, INF, SEP3, SEP5, SEP6

Alexandra Hill (alexandrahill@iusd.org), **Kimberly Soliday**, and **Todd Munoz** (toddmunoz@iusd.org), Jeffrey Trail Middle School, Irvine, Calif.

Kathy Marvin, Jeffrey Trail Middle School, Irvine, Calif. No textbook required! Use this inquiry-based unit to effectively teach scientific investigations! Actively engage your students as they engineer a solution to a seemingly impossible problem. Similar to how engineers from NASA dealt with the *Apollo 13* obstacle, students will build a bridge for an apparatus they have never seen with limited materials, time, and measurements.

Learning Earth Science Content with Pop-Up Books

(Grades 5–7)

202 A/B, Convention Center

Science Focus: ESS

Ted Stoeckley (ted.stoeckley@gmail.com), Hall Middle School, Larkspur, Calif.

Experience Earth science concepts such as plate tectonics, layers of Earth, Pangaea, strike-slip fault, thrust fault, and convergent boundaries in 3-D with student-designed pop-up books.

Enhancing a Grade 4 STEM Unit on Natural Hazards with Interactive Websites

(Grades 2–6)

203C, Convention Center

Science Focus: ESS, CCC2, SEP1, SEP2, SEP3, SEP4, SEP5

Alicia Klaich, Smithridge STEM Academy, Reno, Nev.

Shake up your lessons by creating a structure for a JELL-O® earthquake simulation and then learn how interactive websites increased the technology for this grade 4 STEM unit on natural hazards.



Exhibitors

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

Biology/Life Science	B
Chemistry/Physical Science	C
Earth/Space Science	EA
Environmental Science	EN
Integrated/General Science	G
Physics/Physical Science	PH
Professional Development	PD
Technology Education	T

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Our innovative, hands-on kits and models focus on core ideas and crosscutting concepts in biology, chemistry, and physical and life sciences. We involve teachers in developing kits, writing materials, and field testing. Kits meet STEM and the NGSS. Ask about our new Enzymes in Action Kit® and ATP Model.

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5615 Kirby Dr., Suite 310 All
Houston, TX 77005 PreK–12
Phone: 713-348-5516
E-mail: david@acceleratelearning.com
Website: www.acceleratelearning.com

Accelerate Learning and Rice University are the creators of STEMscopes, a set of curricula that addresses preK–12 NGSS, state, and early childhood science learning standards. Each curriculum was built from the ground up and focuses on driving student ownership through digital and hands-on inquiry-based learning.

Achieve Science #709
(Assemblies, Hands-on, Family Events, and PD)
La Mirada, CA 90638 G, PD
Phone: 562-713-5000 PreK–8
E-mail: info@achievescience.com
Website: www.achievescience.com

Achieve Science offers engaging interactive assemblies, hands-on experiments with everyday objects, and family-friendly STEM programs. Our professional development workshop prepares teachers to implement the NGSS, STEM, CCSS, and 21st-century skills with inexpensive hands-on experiments.

Activate Learning #620
44 Amogere Crossway All
Greenwich, CT 06836 K–8
Phone: 646-502-5231
E-mail: tpence@sangariglobaled.com
Website: www.sangariglobaled.com

Activate Learning produces and distributes science curriculum products for grades K–8.

Adam Equipment #604
26 Commerce Dr. B, C, EA, EN
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Exhibitors

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Phone: 951-763-4102, x225
E-mail: emafla@boojum.org
Website: www.boojum.org

The Boojum Institute for Experiential Education fosters positive peer relationships, self-confidence, and environmental stewardship by connecting individuals with nature and each other through hands-on learning experiences.

California Dept. of Education #224
1430 N St. All
Sacramento, CA 95814 K–12
E-mail: eoliva@cde.ca.gov
Website: www.cde.ca.gov

The California Department of Education (CDE) serves our state by innovating and collaborating with educators, schools, parents, and community partners. We will answer questions regarding Science, Technology, Engineering, and Mathematics and the Presidential Awards for Excellence in Science and Mathematics Teaching.

California Foundation for Agriculture in the Classroom #100
B, C, EN, EA, G
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We provide free resources for K–12 teachers and educators! Our hands-on, interactive lesson plans and activities that are aligned to the CCSS and NGSS help students make a deeper connection to the world around them through STEM, plant nutrients, food safety, nutrition, and so much more.

California OutDoor Education and Science School #723
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Riverside, CA 92521
Phone: 951-827-3111
E-mail: maria.simani@ucr.edu
Website: www.cspso.org

California Science Project is a statewide network for professional learning and leadership development for California Educators. The CSP collaborates with science faculty, educators, schools, and districts to provide effective and high-quality instruction, with a focus on the needs of English language learners, students in poverty, and students with low literacy.

California Science Teachers Association #326
PD
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Phone: 916-979-7004
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 Phone: 607-254-2489
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Exhibitors

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Dinah-Might Adventures is an educational publishing and consulting company owned by author/speaker Dinah Zike. Her books are known for their innovative ways to use Foldables® in teaching all subjects and grade levels. She also offers professional development at the Dinah Zike Academy, a unique trainer of trainers facility.



Disney Youth Group Programs #728	PH	E.A.T Foundation #715	B, C, EA, EN, G, PD, T	Edvotek Inc. #608	B
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Anaheim, CA 92802		Phone: 559-707-8823		Washington, DC 20001	
Phone: 800-854-8671		E-mail: kellyg@eatfdn.org		Phone: 800-338-6835	
Website: www.disneyyouth.com		Website: www.eatfdn.org		E-mail: mariad@edvotek.com	

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Phone: 619-563-5138		Phone: 703-312-9360	
E-mail: patty@donatelifecalifornia.org		E-mail: whitsett@nsta.org	
Website: www.donatelifecalifornia.org		Website: www.ecybermission.com	

Donate Life California is the nonprofit organ, eye, and tissue donor registry dedicated to inspiring people to sign up on the California donor registry. Our free *Educator Resource Guide* and DVD provide students, teachers, and families with the opportunity to discuss organ donation prior to students applying for their driver's license.

The DuPont Challenge #229	B, C, EA, EN, G, PH	Educational Innovations, Inc. #609	B, C, EA, EN, G, PH
200 Powder Mill Rd.	K–12	5 Francis J. Clarke Circle	K–12, College
Wilmington, DE 19898		Bethel, CT 06801	
Phone: 302-695-2554		Phone: 203-229-0730	
E-mail: thechallenge@dupont.com		E-mail: ted@teachersource.com	
Website: thechallenge.dupont.com		Website: www.teachersource.com	

The DuPont Challenge Science Essay Competition is the premier science competition in the United States and Canada, inspiring students to excel and achieve in scientific writing. Students from grades 6–12 are eligible to participate in the flagship essay competition (now in its 29th year), while a brand new Elementary Division (grades K–5) encourages teachers to guide their classrooms in creating a science storybook. When students win, teachers win, too! For more information, visit The DuPont Challenge website at thechallenge.dupont.com.

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The Electric Carnival #717	G, PH
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 Websites: www.sciencefirst.com; www.starlab.com

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Science Olympiad #418
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 Manteca, CA 95336 K–12
 E-mail: cascienceleague@aol.com
 Website: www.norcalscienceolympiad.com

Science Olympiad is a national nonprofit organization dedicated to improving the quality of K–12 science education, increasing student interest in science, and providing recognition for outstanding achievement by both students and teachers. These goals are achieved by participating in Science Olympiad tournaments and incorporating Science Olympiad into classroom curriculum.

Search Associates #110
 4407 61st Ave. W PreK–12
 University Place, WA 98466
 Phone: 253-301-4027
 E-mail: mwilliams@searchassociates.com
 Website: www.searchassociates.com

Search Associates is an international education recruitment organization dedicated to connecting teachers and administrators with international schools around the world.

SeaWorld Parks and Entertainment #309
 9205 South Park Center Loop B
 Suite 400 PreK–12
 Orlando, FL 32819 College
 Phone: 813-918-5246
 E-mail: william.street@seaworld.com
 Website: www.seaworld.com

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 Website: www.nsta.org/shellsciencelab

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 Website: www.simulationcurriculum.com

Simulation Curriculum is a developer of award-winning interactive Earth and space science curriculum solutions for elementary school, middle school, high school, and college.

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 Phone: 281-312-1297 PreK–12, College
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SmartSchool Systems offers innovative technology products for the STEM classroom. The award-winning SmartMicroScope is a handheld digital microscope for all ages. The NEW vLog dataloggers connect to mobile devices, laptops, and desktops simultaneously.

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 Washington, DC 20036 K-12, College
 Phone: 202-785-2255
 E-mail: ssnyder@societyforscience.org
 Website: www.societyforscience.org

Society for Science & the Public (SSP) is a nonprofit 501(c)(3) membership organization dedicated to public engagement in scientific research and education. Our vision is to promote the understanding and appreciation of science and the vital role it plays in human advancement: to inform, educate, and inspire.

South Dakota State University #724
 SAV 131 Box 2202 C
 Brookings, SD 57007 9-12
 Phone: 605-688-4726
 E-mail: matt.miller@sdstate.edu
 Website: www.sdstate.edu/chem

The Department of Chemistry and Biochemistry at South Dakota State University offers a MS degree in chemistry for secondary science teachers, which is predominately online. The program focuses on content knowledge specific to advanced placement chemistry and has

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 Santa Rosa, CA 95409 5-12
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for optics and photonics B, EA, G, PH, T
 1000 20th St. PreK-12, College
 Bellington, WA 98225
 Phone: 360-685-5449
 E-mail: kathleen@spie.org
 Website: www.spie.org

SPIE, the international society for optics and photonics, is a not-for-profit association, advancing

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STAR Science and Eco Station #129
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 Culver City, CA 90117 PreK-8
 Phone: 714-271-7414
 E-mail: bend@starinc.org
 Website: www.starinc.org

STAR Science offers hands-on inquiry-based education for elementary and middle school students throughout California. The STAR Eco Station is an environmental science museum, an exotic wildlife rescue center, and a haven for endangered and illegally-trafficked exotic animals.



Exhibitors

STEM Teacher and Researcher (STAR) Program #626

PD
 CESAME Dept., Cal Poly College
 1 Grand Ave.
 San Luis Obispo, CA 93407
 Phone: 805-756-2412
 E-mail: star@calpoly.edu
 Website: www.starteacherresearcher.org

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B, G, T
 6508 Tri-County Pkwy. College
 Schertz, TX 78154
 Phone: 877-967-9438
 E-mail: cynthia@swiftoptical.com
 Website: www.swiftoptical.com

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Teacher Curriculum Institute #714

B, EA,
 2440 W. El Camino Real, Suite 400 EN, G, PD, T
 Mountain View, CA 94040
 Phone: 877-234-3214 K-8
 E-mail: info@teachtci.com
 Website: www.teachtci.com

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Toshiba/NSTA ExploraVision #225

K-12
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 Arlington, VA 22201
 Phone: 800-Explor9
 E-mail: exploravision@nsta.org
 Website: www.exploravision.org

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TPS Publishing Inc. #722

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 Phone: 760-880-5149
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UC Davis Young Scholars Program #112

B, C, EA, EN, PH
 School of Education 10-11
 1 Shields Ave.
 Davis, CA 95616
 Phone: 530-752-0622
 E-mail: jrpomeroy@ucdavis.edu
 Website: jyp.ucdavis.edu

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 Austin, TX 78758
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3D Molecular Designs (Booth #109)

Thursday, December 4	10:00–11:15 AM	201B, Conv. Center	Dive in with Magnetic Water Molecules (p. 54)
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Friday, December 5	8:00–9:15 AM	201B, Conv. Center	Telling Molecular Stories with David Goodsell’s Cellular Landscapes (p. 91)
Friday, December 5	2:00–3:15 PM	201B, Conv. Center	Telling Molecular Stories with David Goodsell’s Cellular Landscapes (p. 115)

Activate Learning (Booth #620)

Thursday, December 4	12:30–1:45 PM	202C, Conv. Center	Blending the CCSS and NGSS in Your K–5 Science Classroom (p. 64)
Friday, December 5	8:00–9:15 AM	202C, Conv. Center	Implementing the Eight NGSS Practices with Research-based Curriculum (p. 91)

Amplify Education, Inc. (Booth #415)

Thursday, December 4	8:00–9:15 AM	103C, Conv. Center	Making Failure Fun: Amplify Science Games (p. 51)
Thursday, December 4	10:00–11:15 AM	103C, Conv. Center	Learn How to Integrate the NGSS and CCSS ELA from The Lawrence Hall of Science (p. 54)
Thursday, December 4	12:30–1:45 PM	103C, Conv. Center	Immerse Students into the World of Scientists and Engineers by Putting Sims at the Center of Learning (p. 63)

ANATOMY IN CLAY® Learning System (Booth #310)

Thursday, December 4	4:00–5:15 PM	203C, Conv. Center	Pitch Hands-On Anatomy Education for a Home Run in Student Success (p. 79)
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Animalearn (Booth #213)

Friday, December 5	2:00–3:15 PM	202C, Conv. Center	Adventures into the Digital Biology Classroom: How Technology Can Revolutionize Teaching (p. 115)
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Arbor Scientific (Booth #222)

Saturday, December 6	10:00–11:15 AM	102 A/B, Conv. Center	On Light and Color: A Most Illuminating Workshop and Demo Show (p. 133)
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Bio-Rad Laboratories (Booth #510)

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BIOZONE International (Booth #318)

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Carolina Biological Supply Co. (Booth #401)

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CPO Science/School Specialty Science (Booth #603)

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Dinah-Might Adventures (Booth #414)

Thursday, December 4	2:15–3:30 PM	104A, Conv. Center	Making Science Notebooks FOLD-tastic via Notebook Foldables® (p. 70)
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Educational Innovations, Inc. (Booth #609)

Friday, December 5	10:00–11:15 AM	202 A/B, Conv. Center	Magnify Your Mind!—with The Private Eye® (p. 100)
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Edvotek Inc. (Booth #608)

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Flinn Scientific, Inc. (Booth #306)

Thursday, December 4	10:00–11:15 AM	104A, Conv. Center	Flinn Favorite Biology Lab Activities and Games (p. 54)
Thursday, December 4	12:30–1:45 PM	104A, Conv. Center	Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 63)
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Frey Scientific/School Specialty Science (Booth #605)

Thursday, December 4	10:00–11:15 AM	101A, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 53)
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Howard Hughes Medical Institute (Booth #505)

Thursday, December 4	12:30–1:45 PM	203 A/B, Conv. Center	Free AP Environmental Science Resources from BioInteractive (p. 64)
Thursday, December 4	2:15–3:30 PM	203 A/B, Conv. Center	Teaching Cell Signaling with BioInteractive (p. 71)
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It’s About Time (Booth #509)

Friday, December 5	8:00–9:15 AM	104B, Conv. Center	Active Chemistry and Active Physics: Project-Based Inquiry Science™ That Engages Students (p. 91)
Friday, December 5	10:00–11:15 AM	104B, Conv. Center	Project-Based Inquiry Science™: Blending Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 100)
Friday, December 5	12 Noon–1:15 PM	104B, Conv. Center	Earth and Space Science—More Pertinent Today, More Important to Our Future (p. 102)
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Klein Educational Systems (Booth #119)

Thursday, December 4	2:15–3:30 PM	203C, Conv. Center	Implementing the NGSS and CCSS Just Got a Whole Lot Easier! (p. 71)
Friday, December 5	8:00–9:15 AM	203C, Conv. Center	Implementing the NGSS and CCSS Just Got a Whole Lot Easier! (p. 92)

LAB-AIDS®, Inc. (Booth #508)

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Friday, December 5	10:00–11:15 AM	201B, Conv. Center	AP Environmental Water Quality Assessment Curriculum (p. 100)

LEGO Education (Booth #228)

Thursday, December 4	10:00–11:15 AM	203C, Conv. Center	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 55)
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The MiniOne™ Electrophoresis System (Booth #710)

Friday, December 5	4:00–5:15 PM	202 A/B, Conv. Center	Exploring STEM Through Biotechnology (p. 122)
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MSOE Center for BioMolecular Modeling (Booth #107)

Thursday, December 4	2:15–3:30 PM	201B, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 71)
Friday, December 5	12 Noon–1:15 PM	201B, Conv. Center	Protein Modeling: A Science Olympiad Event and the NGSS (p. 102)
Friday, December 5	4:00–5:15 PM	201B, Conv. Center	Genes, Genomes, and the New World of Personalized Medicine (p. 121)

Nasco Modesto (Booth #720)

Friday, December 5	12 Noon–1:15 PM	203C, Conv. Center	Nasco SciQuest® Kits for Your Classrooms (p. 103)
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National Geographic Learning (Booth #615)

Friday, December 5	8:00–9:15 AM	201B, Conv. Center	A Revolutionary Way to Address All Your Standards with National Geographic (p. 91)
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Ocean Classrooms (Booth #705)

Friday, December 5	12 Noon–1:15 PM	202 A/B, Conv. Center	Access and Analyze LIVE Ocean Data in the Classroom (p. 102)
Saturday, December 6	8:00–9:15 AM	101B, Conv. Center	Marine Science Education—Awareness, Understanding, and Action (p. 129)

PASCO scientific (Booth #501)

Friday, December 5	8:00–9:15 AM	101A, Conv. Center	Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab! (p. 90)
Friday, December 5	10:00–11:15 AM	101A, Conv. Center	Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology (p. 99)
Friday, December 5	12 Noon–1:15 PM	101A, Conv. Center	Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software! (p. 101)

Pearson (Booth #600)

Friday, December 5	8:00–9:15 AM	102 A/B, Conv. Center	Using Problem-Based Learning to Up Your NGSS Game (p. 90)
Friday, December 5	10:00–11:15 AM	102 A/B, Conv. Center	The <i>Next Generation Science Standards</i> : What They Mean for Earth and Space Science (p. 99)
Friday, December 5	12 Noon–1:15 PM	102 A/B, Conv. Center	Teaching Evolution in a Climate of Controversy: Even with NGSS, the Battles Continue (p. 101)
Friday, December 5	2:00–3:15 PM	102 A/B, Conv. Center	Blast into the NGSS by Designing a STEM Project (p. 114)
Friday, December 5	4:00–5:15 PM	102 A/B, Conv. Center	STEM and NGSS Inquiry in Chemistry—Effective, Efficient, Economical (p. 121)

Simulation Curriculum Corp. (Booth #218)

Thursday, December 4	12:30–1:45 PM	202 A/B, Conv. Center	Stellar Evolution Made Easy (p. 64)
Thursday, December 4	2:15–3:30 PM	202 A/B, Conv. Center	Plate Tectonics: Continents on the Move (p. 71)
Friday, December 5	8:00–9:15 AM	202 A/B, Conv. Center	Hurricanes and Typhoons: Nature on the Rampage (p. 91)

SPIE, the international society for optics and photonics (Booth #707)

Thursday, December 4	12:30–1:45 PM	203C, Conv. Center	It's Elementary—Light and Optics for Kids (p. 64)
Friday, December 5	2:00–3:15 PM	203C, Conv. Center	It's Elementary—Light and Optics for Kids (p. 115)

TCI (Booth #714)

Thursday, December 4	2:15–3:30 PM	202C, Conv. Center	Ride the Wave with Bring Science Alive! (p. 71)
Thursday, December 4	4:00–5:15 PM	202C, Conv. Center	Ignite the NGSS with Today's Cutting-Edge Technology (p. 79)
Friday, December 5	12 Noon–1:15 PM	202C, Conv. Center	Modeling the Earth, Sun, and Other Stars with Bring Science Alive! (p. 102)

Vernier Software & Technology (Booth #300)

Friday, December 5	8:00–9:30 AM	103C, Conv. Center	Chemistry and Biology with Vernier (p. 92)
Friday, December 5	10:00–11:30 AM	103C, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 101)
Friday, December 5	12 Noon–1:30 PM	103C, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 104)
Friday, December 5	2:00–3:30 PM	103C, Conv. Center	Physics and Physical Science with Vernier (p. 115)

Ward's Science (Booth #217)

Friday, December 5	8:00–9:15 AM	203 A/B, Conv. Center	Experience 21st-Century STEM Integration with Technology (p. 92)
Friday, December 5	10:00–11:15 AM	203 A/B, Conv. Center	It's Alive! Using Live Materials in K–5 Lessons (p. 100)
Friday, December 5	12 Noon–1:15 PM	203 A/B, Conv. Center	It's Alive! (Or Once Was)...Using Live and Preserved Materials in Middle School and High School (p. 103)

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Ward's Science, cont.

Friday, December 5	2:00–3:15 PM	203 A/B, Conv. Center	Science Safety: It's Everyone's Responsibility (p. 115)
Friday, December 5	4:00–5:15 PM	203 A/B, Conv. Center	STEM Engineering for Middle School and High School with TeacherGeek Rubber Band Racer (p. 122)

Wavefunction, Inc. (Booth #524)

Thursday, December 4	10:00–11:15 AM	202C, Conv. Center	Molecular-Level Visualization and the NGSS: Engaging Your Students (p. 55)
Friday, December 5	10:00–11:15 AM	202C, Conv. Center	Molecular-Level Visualization and the NGSS: Promoting Conceptual Understanding (p. 100)

Schedule at a Glance

Earth and Space Science

Thursday

8:00–9:00 AM	6–C	Pacific 1, Hilton	NASA: The Latest SOFIA Science (p. 45)
8:00–9:00 AM	K–12	Beacon A, Hyatt	Engage Your Students with NOAA’s Ocean Acidification and Coral Reef Resources (p. 45)
8:00–9:00 AM	6–8	Verona, Renaissance	Next Gen in the Dirt: 10,000 Sunflowers Garden Project (p. 46)
8:00–9:00 AM	7–12	International 3, Hilton	Citizen Science: Project Based Learning at the Museum and in the Classroom (p. 48)
8:00–9:00 AM	K–12	Harbor A/B, Hyatt	NASA in Your Pocket: Mobile Apps to Increase STEM Engagement (p. 48)
8:00–9:00 AM	3–C	Regency Blrm. E, Hyatt	Sky Events in 2015 (p. 48)
8:00–9:00 AM	4–12	Shoreline A, Hyatt	Supporting Literacy in Science Education (p. 48)
8:00–9:00 AM	K–8	Naples I, Renaissance	AMSE Session: Creating and Implementing Effective Watershed Lessons for All Students: Use of <i>Next Generation Science Standards</i> Appendix D and Case Studies (p. 50)
8:00–9:00 AM	1–7	Centennial Salon D, Westin	Ocean Challenge: 21st-Century Skills in Action (p. 50)
9:15–10:30 AM	G	Grand Blrm., Conv. Center	The Balancing Act of Environmental Education: Removing the Fear But Keeping Reality (p. 52)
12:30–1:00 PM	K–12	Harbor C, Hyatt	AMS DataStreme Project and the NGSS (p. 58)
12:30–1:30 PM	K–8	Regency Blrm. B, Hyatt	Students’ Cloud Observations On-Line: A Worldwide STEM Classroom (p. 58)
12:30–1:30 PM	4–12	Shoreline B, Hyatt	Engage Students in Marine Debris Efforts Using an Integrated Science, Technology, Engineering, Arts, Mathematics, and Social Studies Curriculum (p. 60)
12:30–1:30 PM	3–8	Centennial Salon D, Westin	Hands-On Tornadoes, Hurricanes, and Lightning Strikes—Oh My! (p. 62)
12:30–1:45 PM	6–12	202 A/B, Conv. Center	Stellar Evolution Made Easy (p. 64)
12:30–1:45 PM	9–C	203 A/B, Conv. Center	Free AP Environmental Science Resources from BioInteractive (p. 64)
1:00–1:30 PM	10–12	Pacific 1, Hilton	Introduction into Geographical Information Systems and Remote Sensing (p. 64)
1:00–1:30 PM	7–C	Harbor A/B, Hyatt	Using Google Earth in the Classroom (p. 65)
1:00–1:30 PM	4–10	Harbor C, Hyatt	Global Science Inquiry: The World MOON Project (p. 65)
2:00–2:30 PM	9–C	Harbor C, Hyatt	Developing an Honors Geology Dual-Enrollment Class in Cooperation with California State University, Bakersfield (p. 65)
2:00–3:00 PM	K–12	Shoreline A, Hyatt	Captivate Your Students Using Data Visualizations and Learn How to Integrate Global Environmental Data into Your Classroom (p. 67)
2:00–3:00 PM	9–12	Regency Blrm. B, Hyatt	Water, Water, Everywhere—But What Will It Support? (p. 68)
2:00–3:00 PM	2–12	Regency Blrm. D, Hyatt	We’re All in This Together—Watersheds and You! (p. 68)
2:00–3:00 PM	6–12	Capri, Renaissance	Vital Signs of the Planet: Understanding the Terrestrial Planets by Learning to Read Earth’s Vital Signs (p. 68)
2:00–3:00 PM	K–8	Centennial Salon D, Westin	Teaching STEM with Project Learning Tree (p. 69)
2:15–3:30 PM	5–8	101B, Conv. Center	Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate Using FOSS (p. 70)
2:15–3:30 PM	9–12	102C, Conv. Center	Using Climate Proxies to Learn About Earth’s Climate History (p. 70)
2:15–3:30 PM	6–12	202 A/B, Conv. Center	Plate Tectonics: Continents on the Move (p. 71)
3:30–4:00 PM	7–C	Harbor C, Hyatt	Create a Student-publishing Project Using Double Star Measurements Designed to Complement the CCSS (p. 73)
3:30–4:30 PM	6–12	104C, Conv. Center	Use NASA Airborne Science Aircraft and Missions to Bring Real-Time Science to Your Classroom (p. 75)
3:30–4:30 PM	K–12	Verona, Renaissance	Implementing and Assessing NGSS Science Practices with MY NASA DATA (p. 75)
3:30–4:30 PM	4–12	Beacon A, Hyatt	Rocking Around the Rock Cycle (p. 76)
3:30–4:30 PM	4–C	Beacon B, Hyatt	Mars Bound! Mission to the Red Planet (p. 76)
3:30–4:30 PM	5–12	Regency Blrm. B, Hyatt	Free Apps That Bring Real-World Science into the Classroom! (p. 76)
3:30–4:30 PM	G	Shoreline B, Hyatt	Using Hubble Deep Field Data (p. 76)
3:30–4:30 PM	4–8	Centennial Salon A, Westin	Energy Here, Energy There, Energy Everywhere! (p. 77)
3:30–4:30 PM	1–6	Centennial Salon C, Westin	NASA’s “Reading, Writing, Rings, and More” (p. 77)
3:30–4:30 PM	K–6	Centennial Salon D, Westin	Teaching the NGSS Through Water Science (p. 77)
4:00–4:30 PM	G	Harbor C, Hyatt	The Classroom “Without” Walls (p. 78)
4:00–5:15 PM	5–8	101B, Conv. Center	Evidence for Plate Movement with FOSS Earth History for Middle School (p. 78)
5:00–5:30 PM	5–C	Beacon A, Hyatt	Marine Restoration, from the Classroom to the Wild (p. 80)

Schedule at a Glance Earth and Space Science

5:00–6:00 PM	6–12	Atlantic 2, Hilton	Cool Is Hot: The Electromagnetic Spectrum, IR Radiation, and IR Astronomy (p. 82)
5:00–6:00 PM	K–5	Regency Blrm. C, Hyatt	Earthquake! Integrating CCSS and NGSS Practices in the K–5 Science Classroom (p. 82)
5:00–6:00 PM	6–C	Seaview Blrm. B, Hyatt	Black Holes Suck (p. 82)
5:30–6:00 PM	6–12	Beacon A, Hyatt	Keeping Science in the Classroom and Non-science Out (p. 84)

Friday

8:00–9:00 AM	6–12	Pacific 2, Hilton	Tsunami! Understanding the Generation, Propagation, and Hazards of Tsunamis (p. 87)
8:00–9:00 AM	6–12	Grand Blrm. B, Conv. Center	How Weird Can It Get? Developing Weather and Climate Literacy (p. 89)
8:00–9:00 AM	6–8	Centennial Salon A, Westin	Into the Volcano—Inner Workings and Eruption Types (p. 90)
8:00–9:15 AM	6–12	202 A/B, Conv. Center	Hurricanes and Typhoons: Nature on the Rampage (p. 91)
8:30–9:00 AM	G	Shoreline A, Hyatt	Ocean Stewardship: Bringing Marine Protected Areas into the Classroom (p. 93)
9:30–10:30 AM	10–12	International 2, Hilton	Environmental Science Labs, Projects, and Field Investigations (p. 95)
9:30–10:30 AM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Coming Soon to a Dwarf Planet in Your Solar System—NASA's Dawn Mission to the Asteroid Belt (p. 95)
9:30–10:30 AM	6–12	Grand Blrm. B, Conv. Center	Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists (p. 97)
9:30–10:30 AM	6–12	Sicilian Blrm., Renaissance	NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy (p. 98)
9:30–10:30 AM	6–8	Centennial Salon A, Westin	Get Eroded: Earth Science Erosion Models (p. 98)
10:00–11:15 AM	K–12	102 A/B, Conv. Center	The <i>Next Generation Science Standards</i> : What They Mean for Earth and Space Science (p. 99)
10:00–11:15 AM	10–12	201B, Conv. Center	AP Environmental Water Quality Assessment Curriculum (p. 100)
12 Noon–1:15 PM	9–12	104B, Conv. Center	Earth and Space Science—More Pertinent Today, More Important to Our Future (p. 102)
12 Noon–1:15 PM	6–C	202 A/B, Conv. Center	Access and Analyze LIVE Ocean Data in the Classroom (p. 102)
12 Noon–1:15 PM	3–5	202C, Conv. Center	Modeling the Earth, Sun, and Other Stars with Bring Science Alive! (p. 102)
12:30–1:30 PM	9–12	Atlantic 2, Hilton	Earth's Changing Climate Program: A Model for the Development of a Collaboration Between Formal and Informal Education Institutions (p. 105)
12:30–1:30 PM	6–12	International 2, Hilton	Making Waves: Seismic Waves Activities and Demonstrations (p. 106)
12:30–1:30 PM	6–12	Grand Blrm. B, Conv. Center	Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts (p. 108)
12:30–1:30 PM	8–12	Sicilian Blrm., Renaissance	NASA's Space Forensics: Integrating Storytelling into STEM Education (p. 108)
2:00–3:00 PM	6–C	Regency Ballroom D, Hyatt	Diving Deeper into Science Practice and Crosscutting Concepts with NOAA (p. 110)
2:00–3:00 PM	6–12	Grand Blrm. B, Conv. Center	Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists (p. 112)
2:00–3:00 PM	8	Naples III, Renaissance	Mars, <i>Common Core</i> , Modeling, and Your Classroom (p. 112)
2:00–3:15 PM	6–8	102C, Conv. Center	Investigating a Cliff Model (p. 114)
2:00–3:15 PM	9–12	104A, Convention Center	Engaging Students Effectively: The BIOZONE Solution (p. 114)
3:30–4:30 PM	K–12	Capri, Renaissance	Supporting NGSS and CCSS with Environment-based Instruction...in the Classroom and Beyond (p. 118)
3:30–4:30 PM	5–12	International 2, Hilton	NASA Astrobiology: The Search for Life Beyond Earth (p. 119)
3:30–4:30 PM	3–6	Regency Ballroom B, Hyatt	Explore Our Solar System with Free NASA After-School Activity Guides (p. 120)
3:30–4:30 PM	8–C	Regency Ballroom D, Hyatt	How Long Does It Take to Get to Mars? (p. 120)
3:30–4:30 PM	G	Grand Blrm. B, Conv. Ctr.	National Earth Science Teachers Association (NESTA) Rock and Mineral Raffle (p. 120)
5:00–6:00 PM	4–12	Regency Ballroom F, Hyatt	Plate Tectonics and the Western United States (p. 123)
5:00–6:00 PM	5–12	Regency Ballroom E, Hyatt	Stellar Evolution—From Formation to Destruction (p. 124)
5:00–6:00 PM	4–8	Centennial Salon D, Westin	Layers, Layers, Earth Explored! (p. 125)

Schedule at a Glance Earth and Space Science

5:30–6:00 PM	6–12	Beacon A, Hyatt	Mission to NGSS Learning Outcomes via Mission to Mars Projects (p. 125)
5:30–6:00 PM	7–C	Shoreline B, Hyatt	NASA's SOFIA Is Flying! STEM Applied in the Air, Classroom, and the Ambassador Program (p. 126)

Saturday

8:00–9:00 AM	G	202 A/B, Conv. Center	Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century (p. 127)
8:00–9:00 AM	6–8	Regency Ballroom A, Hyatt	Supporting Students as They Engage in Argument from Evidence (p. 127)
8:00–9:00 AM	3–12	Seaview Ballroom B, Hyatt	Juice from Juice (p. 128)
8:00–9:00 AM	7–C	202C, Convention Center	Goo-tonian: Connecting Non-Newtonian Fluids to the NGSS (p. 129)
8:00–9:15 AM	K–12	101B, Convention Center	Marine Science Education—Awareness, Understanding, and Action (p. 129)
8:00–9:15 AM	6–8	102C, Convention Center	Using Climate Proxies to Learn About Earth's Climate History (p. 129)
9:30–10:30 AM	11–12	Regency Ballroom F, Hyatt	Team APES! Team-teach AP Environmental Science to Improve Teaching and Learning (p. 131)
9:30–10:30 AM	7–12	Regency Ballroom B, Hyatt	Teach and Enhance Graphing Skills Using NASA's Kepler Mission Data (p. 132)
9:30–10:30 AM	6–12	202 A/B, Convention Center	The Earth Is Cracked: Looking at Plate Tectonics (p. 133)
9:30–10:30 AM	7–C	202C, Convention Center	Hands-On Human Ecology for the Next Generation (p. 133)
11:00 AM–12 Noon	5–7	202 A/B, Conv. Center	Learning Earth Science Content with Pop-Up Books (p. 136)
11:00 AM–12 Noon	2–6	203C, Conv. Center	Enhancing a Grade 4 STEM Unit on Natural Hazards with Interactive Websites (p. 136)

Engineering, Technology, and the Application of Science

Thursday

8:00–9:00 AM	6–8	Verona, Renaissance	Next Gen in the Dirt: 10,000 Sunflowers Garden Project (p. 46)
8:00–9:00 AM	K–12	Harbor A/B, Hyatt	NASA in Your Pocket: Mobile Apps to Increase STEM Engagement (p. 48)
8:00–9:00 AM	5–12	Regency Blrm. D, Hyatt	Bionic Hand Engineering Using CCSS and NGSS (p. 48)
8:00–9:00 AM	4–12	Shoreline A, Hyatt	Supporting Literacy in Science Education (p. 48)
8:00–9:00 AM	K–8	Naples I, Renaissance	AMSE Session: Creating and Implementing Effective Watershed Lessons for All Students: Use of <i>Next Generation Science Standards</i> Appendix D and Case Studies (p. 50)
8:00–9:15 AM	3–5	101B, Conv. Center	Engineering Design in the FOSS Next Generation Program (p. 51)
10:00–11:15 AM	5–12	101A, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 53)
10:00–11:15 AM	5–12	102 A/B, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 54)
10:00–11:15 AM	K–8	103B, Conv. Center	Vroom, Vroom, Beep, Beep...Connecting CCSS ELA and STEM (p. 54)
10:00–11:15 AM	6–9	202 A/B, Conv. Center	"Hard" Doesn't Mean "Bad": Helping Students Understand that Facing Challenges Is a Good Thing (p. 55)
10:00–11:15 AM	5–8	203C, Conv. Center	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 55)
12:30–1:00 PM	6–12	Pacific 1, Hilton	Partnering to Create Ocean Stewards (p. 56)
12:30–1:00 PM	7–C	Regency Blrm. D, Hyatt	Inquiry Teaching and Learning Opportunities: ESSEA Lesson Modules (p. 58)
12:30–1:30 PM	4–12	Shoreline B, Hyatt	Engage Students in Marine Debris Efforts Using an Integrated Science, Technology, Engineering, Arts, Mathematics, and Social Studies Curriculum (p. 60)
12:30–1:45 PM	9–12	102C, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 63)
12:30–1:45 PM	6–8	103C, Conv. Center	Immerse Students into the World of Scientists and Engineers by Putting Sims at the Center of Learning (p. 63)
1:00–1:30 PM	10–12	Pacific 1, Hilton	Introduction into Geographical Information Systems and Remote Sensing (p. 64)
2:00–3:00 PM	9–12	International 3, Hilton	Teach Engineering Principles on the Cheap with Concrete (p. 66)
2:00–3:00 PM	5–8	Naples I, Renaissance	NMLSTA Session: Using Problem-Based Learning to Address CCSS and NGSS (p. 67)
2:00–3:00 PM	K–6	Beacon B, Hyatt	Engineering in the Elementary (p. 68)
2:00–3:00 PM	3–8	Ocean Blrm., Westin	Engineering: Build a Better Kaleidoscope! (p. 69)
2:15–3:30 PM	5–12	102 A/B, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 70)
2:15–3:30 PM	9–12	102C, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 70)
2:15–3:30 PM	K–12	203C, Conv. Center	Implementing the NGSS and CCSS Just Got a Whole Lot Easier! (p. 71)

Schedule at a Glance Engineering, Technology, and the Application of Science

3:30–4:30 PM	6–12	104C, Conv. Center	Use NASA Airborne Science Aircraft and Missions to Bring Real-Time Science to Your Classroom (p. 75)
3:30–4:30 PM	7–12	Naples I, Renaissance	Writing for Literacy with the DuPont Challenge (p. 75)
3:30–4:30 PM	6–12	International 3, Hilton	Engineering: The Missing Piece of the Puzzle! (p. 76)
3:30–4:30 PM	4–C	Beacon B, Hyatt	Mars Bound! Mission to the Red Planet (p. 76)
4:00–4:30 PM	G	Harbor C, Hyatt	The Classroom “Without” Walls (p. 78)
4:00–5:15 PM	K–6	101A, Conv. Center	STEM, Science Fairs, and Other Student Projects (p. 78)
4:00–5:15 PM	5–12	102 A/B, Conv. Center	Building an Electric Motor the STEM Way (p. 78)
4:00–5:15 PM	5–10	201B, Conv. Center	Take a Swipe at Microbes! (p. 79)
5:00–5:30 PM	5–C	Beacon A, Hyatt	Marine Restoration, from the Classroom to the Wild (p. 80)
5:00–6:00 PM	6–C	Regency Blrm. B, Hyatt	Engage Students in Technology, Teach Forensic Science, and Encourage STEM Careers with CSI Web Adventures (p. 80)
5:00–6:00 PM	P–12	104B, Conv. Center	Don’t Introduce a Nonnative Invasive Species into Your Neighborhood (p. 81)
5:00–6:00 PM	K–5	Regency Blrm. C, Hyatt	Earthquake! Integrating CCSS and NGSS Practices in the K–5 Science Classroom (p. 82)
5:00–6:00 PM	K–12	Shoreline B, Hyatt	Integrated Place-based STEM: Local Context for STEM Content (p. 83)
5:00–6:00 PM	K–3	Casablanca, Westin	Science and Engineering Notebooking for the Primary Classroom (p. 83)
5:00–6:00 PM	P–3	Centennial Salon B, Westin	Using Children’s Literature to Discover and Explore the Engineering Design Process Through Storytelling and Making (p. 83)

Friday

8:00–9:00 AM	3–12	204, Conv. Center	NSTA Press® Session: Uncovering Students’ Ideas in the STEM Disciplines (p. 88)
8:00–9:00 AM	5–12	Regency Blrm. E, Hyatt	Working the NGSS into Your Curriculum Through Ocean Exploration (p. 89)
8:00–9:00 AM	K–8	Centennial Salon D, Westin	Hands-On STEM (p. 90)
8:00–9:00 AM	K–5	Centennial Salon C, Westin	ASEE Session: Introducing Engineering to Elementary School (p. 90)
8:00–9:15 AM	6–12	102C, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It’s a Plant’s Life! (p. 90)
8:00–9:15 AM	K–12	203C, Conv. Center	Implementing the NGSS and CCSS Just Got a Whole Lot Easier! (p. 92)
9:30–10:30 AM	G	Grand Blrm. A, Conv. Center	STEM the New Normal! Really When Did That Happen? (p. 94)
9:30–10:30 AM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Coming Soon to a Dwarf Planet in Your Solar System—NASA’s Dawn Mission to the Asteroid Belt (p. 95)
9:30–10:30 AM	5–12	Centennial Salon C, Westin	ASEE Session: ASEE’s K–12 Outreach Program, eGFI: Engineering, Go For It! and <i>TeachEngineering.org</i> (p. 98)
9:30–10:30 AM	K–8	Centennial Salon D, Westin	Think and Build (p. 98)
10:00–11:15 AM	6–8	102C, Conv. Center	Waves, Energy, and Color (p. 99)
10:00–11:15 AM	6–8	104B, Conv. Center	Project-Based Inquiry Science™: Blending Engineering Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 100)
12 Noon–1:15 PM	6–12	102C, Conv. Center	DuPont Presents: The Science of Food Safety (p. 101)
12 Noon–1:15 PM	6–12	103B, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 102)
12 Noon–1:15 PM	6–C	202 A/B, Conv. Center	Access and Analyze LIVE Ocean Data in the Classroom (p. 102)
12:30–1:30 PM	8–C	Regency Blrm. F, Hyatt	Simulate STEM Online Through Virtual Clinical Trials (p. 105)
12:30–1:30 PM	K–12	Seaview Blrm. B, Hyatt	Bridging the STEM Gap with Toshiba/NSTA Explora-Vision (p. 106)
12:30–1:30 PM	1–6	Centennial Salon C, Westin	ASEE Session: Engaging Elementary-aged Children and Parents in Engineering (p. 109)
2:00–3:00 PM	4–7/C	Centennial Salon C, Westin	ASEE Session: Engineering Girls—It Takes a Village: A Unique Two- to Four-Year Institutional Collaboration Serving the Homeless Population (p. 111)
2:00–3:00 PM	K–8	Centennial Salon D, Westin	Elementary Engineering—You Can Do It! (p. 111)
2:00–3:00 PM	7–12	Atlantic 2, Hilton	From Single Cells to Complex Systems—Biofuels from Algae in the Future? (p. 111)
2:00–3:00 PM	1–2	Regency Ballroom B, Hyatt	Introduction to Aeronautics STEMinar (p. 112)
2:00–3:00 PM	1–2	Centennial Salon B, Westin	The Natural Connection Between STEM and Common Core (p. 113)
2:00–3:15 PM	P–8	101B, Convention Center	Bringing STEM to a School District Through FOSS (p. 114)
2:00–3:15 PM	K–12	102 A/B, Conv. Center	Blast into the NGSS by Designing a STEM Project (p. 114)
2:00–3:15 PM	6–8	102C, Conv. Center	Investigating a Cliff Model (p. 114)

Schedule at a Glance Engineering, Technology, and the Application of Science

2:00–3:15 PM	9–12	104B, Convention Center	<i>Engineering the Future™: A Practical Approach to STEM for High School</i> (p. 114)
2:00–3:15 PM	6–9	202 A/B, Conv. Center	<i>Engineering Design vs. Science Practices: A Closer Look at NGSS Practices</i> (p. 115)
3:30–4:30 PM	7–12	Shoreline B, Hyatt	<i>Bring the Science of Cars into the Classroom</i> (p. 118)
3:30–4:30 PM	6–8	Naples III, Renaissance	<i>Revolutionary War Boat Race—From Investigation to Engineering in Interdisciplinary Curriculum</i> (p. 118)
3:30–4:30 PM	6–C	Centennial Salon C, Westin	<i>ASEE Session: Using Communities of Practice to Engage Girls in STEM</i> (p. 119)
3:30–4:30 PM	5–12	Ocean Ballroom, Westin	<i>Reinventing the Science Fair</i> (p. 119)
3:30–4:30 PM	3–6	Regency Ballroom B, Hyatt	<i>Explore Our Solar System with Free NASA After-School Activity Guides</i> (p. 120)
4:00–5:15 PM	6–12	102C, Conv. Center	<i>DuPont Presents: Power Up and Design Your Own Battery</i> (p. 121)
4:00–5:15 PM	4–12	203 A/B, Conv. Center	<i>STEM Engineering for Middle School and High School with TeacherGeek Rubber Band Racer</i> (p. 122)
5:00–5:30 PM	9–C	Shoreline B, Hyatt	<i>Inquiring About STEM? Learn to Kick-Start High School Connections with Our Institute</i> (p. 122)
5:00–5:30 PM	6–C	Naples I, Renaissance	<i>Engage Students, Integrate STEM, and Improve 21st-Century Skills Using Underwater Robots</i> (p. 122)
5:00–6:00 PM	7–12	Pacific 2, Hilton	<i>STEM Activities: Engaging the Brain</i> (p. 124)
5:00–6:00 PM	K–8	Regency Blrm. B, Hyatt	<i>Everyday Science for the Playground</i> (p. 124)
5:00–6:00 PM	K–5	Centennial Salon B, Westin	<i>Engineering Tales</i> (p. 125)
5:00–6:00 PM	6–12	Centennial Salon C, Westin	<i>ASEE Session: Effectively Modeling STEM Careers in Underserved K–12 Communities</i> (p. 125)
5:30–6:00 PM	7–C	Shoreline B, Hyatt	<i>NASA's SOFIA Is Flying! STEM Applied in the Air, Classroom, and the Ambassador Program</i> (p. 126)

Saturday

8:00–9:00 AM	1–6/C	Regency Ballroom B, Hyatt	<i>Family STEM Explorations Created by Community Partnerships</i> (p. 127)
8:00–9:00 AM	3–12	Seaview Ballroom B, Hyatt	<i>Juice from Juice</i> (p. 128)
8:00–9:00 AM	K–5	104B, Convention Center	<i>Advancing Language Proficiency Through Science and Engineering Practices</i> (p. 128)
8:00–9:15 AM	K–12	101B, Convention Center	<i>Marine Science Education—Awareness, Understanding, and Action</i> (p. 129)
8:00–9:15 AM	6–8	102C, Convention Center	<i>Using Climate Proxies to Learn About Earth's Climate History</i> (p. 129)
9:30–10:30 AM	7–12	Regency Ballroom D, Hyatt	<i>Shoestring Aquaponics</i> (p. 131)
9:30–10:30 AM	4–12	Seaview Ballroom B, Hyatt	<i>Student Technology and Education Mentors (STEM²)</i> (p. 131)
9:30–10:30 AM	5–12	Regency Ballroom E, Hyatt	<i>Engineering Careers!</i> (p. 132)
9:30–10:30 AM	4–8	203C, Convention Center	<i>Science Fair Projects: The Perfect STEM and Common Core Experience for Students!</i> (p. 133)
10:00–10:30 AM	8	Regency Ballroom A, Hyatt	<i>The Mighty Atom: Integrating Close Reading Strategy with the CCSS and the NGSS</i> (p. 133)
10:00–11:15 AM	6–8	102C, Conv. Center	<i>Waves, Energy, and Color</i> (p. 133)
11:00 AM–12 Noon	P–8	Regency Ballroom B, Hyatt	<i>Engineering Encounters: Growing Confident Problem Solvers</i> (p. 134)
11:00 AM–12 Noon	9–12	Seaview Ballroom A, Hyatt	<i>Fun Forensic Apps: Inexpensive, Interesting Ways to Integrate Math, Science, and Technology</i> (p. 134)

Informal Science Education

Thursday

8:00–9:00 AM	3–C	Bayhill 19, Hyatt	<i>Dazzling Deceptions: Discrepant Events That Delight and Mystify!</i> (p. 45)
8:00–9:00 AM	G	Regency Blrm. B, Hyatt	<i>Dinner with a Scientist</i> (p. 45)
8:00–9:00 AM	8–C	Shoreline B, Hyatt	<i>Road Map to Stoichiometry</i> (p. 46)
8:00–9:00 AM	6–8	Verona, Renaissance	<i>Next Gen in the Dirt: 10,000 Sunflowers Garden Project</i> (p. 46)
8:00–9:00 AM	7–12	International 3, Hilton	<i>Citizen Science: Project Based Learning at the Museum and in the Classroom</i> (p. 48)
8:00–9:00 AM	3–C	Regency Blrm. E, Hyatt	<i>Sky Events in 2015</i> (p. 48)

Schedule at a Glance Informal Science Education

8:00–9:00 AM	1–7	Centennial Salon D, Westin	Ocean Challenge: 21st-Century Skills in Action (p. 50)
12:30–1:00 PM	6–12	Pacific 1, Hilton	Partnering to Create Ocean Stewards (p. 56)
12:30–1:30 PM	K–8	Regency Blrm. B, Hyatt	Students' Cloud Observations On-Line: A Worldwide STEM Classroom (p. 58)
12:30–1:30 PM	4–12	Regency Blrm. F, Hyatt	Time Will Tell: Using Time-lapse Photography and Digital Storytelling to Observe Change (p. 58)
12:30–1:30 PM	3–C	Seaview Blrm. A, Hyatt	Magical Illusions and Scintillating Simulations for Science: It's Showtime! (p. 58)
12:30–1:30 PM	5–10	International 3, Hilton	99 Cent Science (p. 59)
12:30–1:30 PM	G	Regency Blrm. E, Hyatt	Tuning Protocol: How to Work with Others to Tune Up a Lesson (p. 60)
12:30–1:30 PM	4–12	Shoreline B, Hyatt	Engage Students in Marine Debris Efforts Using an Integrated Science, Technology, Engineering, Arts, Mathematics, and Social Studies Curriculum (p. 60)
12:30–1:30 PM	3–8	Centennial Salon D, Westin	Hands-On Tornadoes, Hurricanes, and Lightning Strikes—Oh My! (p. 62)
2:00–3:00 PM	6–C	Regency Blrm. E, Hyatt	Where Are the Women? What Educators Should Think and Do About the Underrepresentation of Women in Science (p. 66)
2:00–3:00 PM	3–12	Regency Blrm. F, Hyatt	Marine Debris: It's Everywhere! (p. 67)
2:00–3:00 PM	3–C	Seaview Blrm. A, Hyatt	Dazzling Deceptions: Discrepant Events That Delight and Mystify! (p. 67)
2:00–3:00 PM	2–12	Regency Blrm. D, Hyatt	We're All in This Together—Watersheds and You! (p. 68)
2:00–3:00 PM	K–8	104C, Conv. Center	Informal/Formal: Let's Attack NGSS Together! (p. 68)
2:00–3:00 PM	K–8	Centennial Salon D, Westin	Teaching STEM with Project Learning Tree (p. 69)
2:30–3:00 PM	C	Harbor C, Hyatt	Personalized Medicine in Our Near Futures (p. 72)
3:30–4:30 PM	3–C	Regency Blrm. E, Hyatt	Using Technology to Connect Neuroscience with Teaching and Learning (p. 74)
3:30–4:30 PM	7–8	104B, Conv. Center	The Success of Implementing an Evidence-based Sexual Health Education Curriculum in Middle School Science (p. 75)
3:30–4:30 PM	4–C	Beacon B, Hyatt	Mars Bound! Mission to the Red Planet (p. 76)
3:30–4:30 PM	3–8	Regency Blrm. A, Hyatt	Practices Made Perfect: Simple Activities to Teach Every NGSS Practice (p. 76)
3:30–4:30 PM	5–9	Sicilian Blrm., Renaissance	Creating "Wows" in Biology to Increase Student Engagement (p. 77)
4:00–4:30 PM	G	Harbor C, Hyatt	The Classroom "Without" Walls (p. 78)
5:00–6:00 PM	6–12	Pacific 2, Hilton	Lotions, Potions, and Scrubs: Polymer Science in Cosmetics (p. 80)
5:00–6:00 PM	6–C	Regency Blrm. B, Hyatt	Engage Students in Technology, Teach Forensic Science, and Encourage STEM Careers with CSI Web Adventures (p. 80)
5:00–6:00 PM	5–9	Regency Blrm. E, Hyatt	Learning Science as Science Is Done: Science Practices and Student-centered Investigation (p. 82)
5:00–6:00 PM	5–7	Naples I, Renaissance	Food Science from STEM to Plate (p. 83)
5:00–6:00 PM	K–3	Casablanca, Westin	Science and Engineering Notebooking for the Primary Classroom (p. 83)
5:00–6:00 PM	P–3	Centennial Salon B, Westin	Using Children's Literature to Discover and Explore the Engineering Design Process Through Storytelling and Making (p. 83)
5:30–6:00 PM	7–C	Harbor C, Hyatt	Restoration Projects Leading from Service Learning to Doing Research (p. 84)

Friday

8:00–8:30 AM	P–12	Shoreline A, Hyatt	STEM-ing the Gap in Outdoor Education to Increase Student Achievement (p. 87)
8:00–9:00 AM	G	Beacon A, Hyatt	AMSE Session: The Promise of the NGSS and America's Forgotten Children (p. 87)
8:00–9:00 AM	3–C	Regency Blrm. F, Hyatt	Space Exploration in the Next 20 Years: It's Not Going to Be Like the Last 50 (p. 88)
8:00–9:00 AM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Problem-Solving with Think-Alouds (p. 88)
8:00–9:00 AM	3–7	Verona, Renaissance	Science Update: Energize Student-based Research with Real-World Science (p. 89)
8:00–9:00 AM	K–12	Ocean Blrm., Westin	San Francisco as a Case Study for NGSS-readiness in California Public Schools (p. 89)
8:00–9:00 AM	3–8	Regency Blrm. B, Hyatt	Stretch Your Legs for Science! (p. 89)
8:00–9:15 AM	6–C	103A, Conv. Center	Biotechnology Basics (p. 91)
8:30–9:00 AM	G	Shoreline A, Hyatt	Ocean Stewardship: Bringing Marine Protected Areas into the Classroom (p. 93)
9:30–10:30 AM	5–12	International 3, Hilton	Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewViar (p. 95)
9:30–10:30 AM	9–C	Regency Blrm. D, Hyatt	Add a Wellness Thread to Your Anatomy Curriculum (p. 95)
9:30–10:30 AM	4–8	Casablanca, Westin	STEM: Science Teaching (with an) Environmental Mission (p. 96)

Schedule at a Glance Informal Science Education

9:30–10:30 AM	P–6	Centennial Salon B, Westin	Thinking Creatively to Collaborate Across Districts in STEM Education (p. 96)
9:30–10:30 AM	P	Ocean Blrm., Westin	Defining Science Learning and Teaching for Early Childhood (p. 96)
9:30–10:30 AM	K–12	Regency Blrm. A, Hyatt	Connect Science Content with the NGSS Crosscutting Concepts (p. 97)
9:30–10:30 AM	K–8	204, Conv. Center	NSTA Press® Session: Bringing Outdoor Science In (p. 97)
10:00–11:15 AM	8–C	103A, Conv. Center	Case of the Missing Records (p. 99)
10:00–11:15 AM	K–12	202 A/B, Conv. Center	Magnify Your Mind!—with The Private Eye® (p. 100)
12 Noon–1:15 PM	8–C	103A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 102)
12:30–1:30 PM	9–12	Atlantic 2, Hilton	Earth’s Changing Climate Program: A Model for the Development of a Collaboration Between Formal and Informal Education Institutions (p. 105)
12:30–1:30 PM	6–12	Regency Blrm. B, Hyatt	From STEM Role Models to STEM Mentors—High School Girls Benefit from Ongoing Relationships with Women in Industry (p. 105)
12:30–1:30 PM	G	Regency Blrm. D, Hyatt	California Science Assessments—The Past, the Present, and the Future (p. 105)
12:30–1:30 PM	1–6	Verona, Renaissance	Hosting Family Partnerships Through Classroom STEM Nights (p. 106)
12:30–1:30 PM	8–12	Sicilian Blrm., Renaissance	NASA’s Space Forensics: Integrating Storytelling into STEM Education (p. 108)
12:30–1:30 PM	3–12	Centennial Salon A, Westin	A Problem of Scale (p. 108)
12:30–1:30 PM	K–8	Centennial Salon D, Westin	Shipping from STEM to Stern (p. 109)
2:00–2:30 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Social Homework (p. 110)
2:00–3:15 PM	2–6	203C, Convention Center	It’s Elementary—Light and Optics for Kids (p. 115)
3:30–4:00 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: The Best Electricity and Magnetism Demos You Aren’t Doing (p. 116)
3:30–4:30 PM	9–12	Pacific 2, Hilton	Teaching Forensic DNA Using Models, Kinesthetic Learning, STR Activity, and NGSS (p. 117)
3:30–4:30 PM	7–12	Shoreline B, Hyatt	Bring the Science of Cars into the Classroom (p. 118)
3:30–4:30 PM	K–12	Capri, Renaissance	Supporting NGSS and CCSS with Environment-based Instruction...in the Classroom and Beyond (p. 118)
3:30–4:30 PM	3–6	Regency Ballroom B, Hyatt	Explore Our Solar System with Free NASA After-School Activity Guides (p. 120)
4:00–4:30 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Transformer Basics and How “Wall-Wart” Plugs Waste Energy (p. 120)
4:00–5:15 PM	6–C	103A, Conv. Center	Biotechnology Basics (p. 121)
4:00–5:15 PM	7–C	202 A/B, Conv. Center	Exploring STEM Through Biotechnology (p. 122)
5:00–5:30 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Recycled Goods as Inspiration in Learning (p. 122)
5:00–5:30 PM	6–C	Naples I, Renaissance	Engage Students, Integrate STEM, and Improve 21st-Century Skills Using Underwater Robots (p. 122)
5:00–6:00 PM	K–8	Regency Blrm. B, Hyatt	Everyday Science for the Playground (p. 124)
5:30–6:00 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: High-Schoolers at UCLA’s Plasma Lab (p. 125)

Saturday

8:00–9:00 AM	G	202 A/B, Conv. Center	Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century (p. 127)
8:00–9:00 AM	1–6/C	Regency Ballroom B, Hyatt	Family STEM Explorations Created by Community Partnerships (p. 127)
8:00–9:00 AM	K–6	Regency Ballroom E, Hyatt	Bring Learning to Life in the Garden! (p. 128)
8:00–9:00 AM	3–12	Seaview Ballroom B, Hyatt	Juice from Juice (p. 128)
8:00–9:00 AM	3–11	Seaview Ballroom C, Hyatt	Engaging Kids with NGSS Science and Engineering Practices in a Community-based Science Workshop (p. 128)
8:00–9:00 AM	7–C	202C, Convention Center	Goo-tonian: Connecting Non-Newtonian Fluids to the NGSS (p. 129)
9:30–10:30 AM	5–12	Regency Ballroom E, Hyatt	Engineering Careers! (p. 132)
9:30–10:30 AM	P–4	104B, Convention Center	Crosscutting STEM (and STEAM) into Picture Books for Elementary Students (p. 133)
9:30–10:30 AM	4–8	203C, Convention Center	Science Fair Projects: The Perfect STEM and <i>Common Core</i> Experience for Students! (p. 133)
11:00 AM–12 Noon	6–12	Regency Ballroom F, Hyatt	Literacy and Writing in Science (LAWS) (p. 134)
11:00 AM–12 Noon	P–8	Regency Ballroom B, Hyatt	Engineering Encounters: Growing Confident Problem Solvers (p. 134)

Schedule at a Glance Informal Science Education

11:00 AM–12 Noon	9–12	Seaview Ballroom A, Hyatt	Fun Forensic Apps: Inexpensive, Interesting Ways to Integrate Math, Science, and Technology (p. 134)
11:00 AM–12 Noon	6–C	202C, Convention Center	TEDitorials: Open Up Your Classroom to the World of TED (p. 135)
11:00 AM–12 Noon	4–11	204, Conv. Center	NSTA Press® Session: Citizen Science: Diverse Projects That Bring Biology to Life (p. 135)
11:00 AM–12 Noon	6–12	Seaview Ballroom C, Hyatt	Achieving Success and Motivation with the CCSS and NGSS in Urban Schools (p. 135)
11:00 AM–12 Noon	7–9	104C, Conv. Center	Bridging the Gap (p. 136)

General Science Education

Thursday

8:00–8:30 AM	9–12	International 1, Hilton	Incorporating Complex Text into the Science Classroom (p. 45)
8:00–8:30 AM	G	Harbor C, Hyatt	Lessons Learned in Lesson Study (p. 45)
8:00–9:00 AM	G	Regency Blrm. B, Hyatt	Dinner with a Scientist (p. 45)
8:00–9:00 AM	G	Regency Blrm. F, Hyatt	2016 Revision of the Science Framework for California’s Public Schools: K–12 (p. 45)
8:00–9:00 AM	G	Seaview Blrm. A, Hyatt	Using NSTA Resources for Professional Development (p. 46)
8:00–9:00 AM	8–C	Shoreline B, Hyatt	Road Map to Stoichiometry (p. 46)
8:00–9:00 AM	G	Centennial Salon B, Westin	First-Timer Conference Attendees Orientation: Is This Your First NSTA Conference? (p. 46)
8:00–9:00 AM	K–5	204, Conv. Center	NSTA Press® Session: Picture-Perfect Science Lessons: Using Children’s Books to Guide Inquiry (p. 47)
8:00–9:00 AM	6–12	International 2, Hilton	Revealing Student Thinking: Teacher Tools for Assessing Student Understanding in the NGSS Classroom (p. 47)
8:00–9:00 AM	K–12	Regency Blrm. C, Hyatt	Scientific Explanations Using Claims, Evidence, and Reasoning: Connecting CCSS and NGSS (p. 48)
8:00–9:00 AM	G	Seaview Blrm. C, Hyatt	The Far Side of Science 2014 (p. 48)
8:00–9:00 AM	1–5	Casablanca, Westin	Write Like a Scientist! (p. 50)
8:00–9:00 AM	K–12	Centennial Salon A, Westin	Project Based Learning: Three Easy Steps to Classroom Implementation (p. 50)
8:00–9:00 AM	1–5	Centennial Salon C, Westin	CESI Session: Integrating Science and Literacy: Proven Strategies Developed from Evidence-based Practices (p. 50)
8:00–9:15 AM	K–6	101A, Conv. Center	Science, the Literacy Connection, and the CCSS ELA (p. 51)
8:00–9:15 AM	K–5	103B, Conv. Center	Bring Visual Science into Grades K–5 Classrooms—It’s a Game Changer! (p. 51)
8:00–9:15 AM	6–8	103C, Conv. Center	Making Failure Fun: Amplify Science Games (p. 51)
8:30–9:00 AM	9–12	International 1, Hilton	An Alternative Approach to Literacy (p. 52)
10:00–11:15 AM	1–6	101B, Conv. Center	Science Practices: What Does Argumentation Look Like in an Elementary Classroom? (p. 53)
10:00–11:15 AM	K–5	103C, Conv. Center	Learn How to Integrate the NGSS and CCSS ELA from The Lawrence Hall of Science (p. 54)
11:10 AM–12:10 PM	G	Hall B entrance, Conv. Center	Meet the Presidents and Board/Council (p. 56)
12:30–1:00 PM	6–12	International 2, Hilton	Using Journals to Incorporate <i>Common Core</i> into Your Science Instruction (p. 56)
12:30–1:00 PM	9–C	Harbor A/B, Hyatt	Open-Source Statistics Examples for Student Engagement (p. 56)
12:30–1:30 PM	K–12	Seaview Blrm. B, Hyatt	The NGSS@NSTA Hub (p. 58)
12:30–1:30 PM	6–12	104C, Conv. Center	NGSS and Assessment of Student Notebooks (p. 58)
12:30–1:30 PM	6–8	Centennial Salon A, Westin	Turning STEM into STEAM (p. 59)
12:30–1:30 PM	K–9	Centennial Salon B, Westin	The Development of Context-based, Integrated STEM Units (p. 59)
12:30–1:30 PM	6–8	104B, Conv. Center	Integrating ELA/ELD Strategies with the NGSS for the English Language Learner in Your Classroom (p. 59)
12:30–1:30 PM	5–12	Atlantic 2, Hilton	Using Google Docs in the Classroom (p. 59)
12:30–1:30 PM	5–10	International 3, Hilton	99 Cent Science (p. 59)
12:30–1:30 PM	2–6	Regency Blrm. A, Hyatt	Collaborative Design of Fair Tests: Involving Students in Planning and Carrying Out Investigations (p. 60)
12:30–1:30 PM	8–12	Regency Blrm. C, Hyatt	Forensics Science: Using Math and Science to Solve Crimes (p. 60)

Schedule at a Glance General Science Education

12:30–1:30 PM	G	Regency Blrm. E, Hyatt	Tuning Protocol: How to Work with Others to Tune Up a Lesson (p. 60)
12:30–1:30 PM	6–8	Shoreline A, Hyatt	Trying It On: A Year of Implementing Integrated NGSS in Middle School (p. 60)
12:30–1:30 PM	9–12	204, Conv. Center	NSTA Press® Session: Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12 (p. 60)
12:30–1:30 PM	K–5	Naples I, Renaissance	CSSS Session: Mastering the Science Practices and the CCSS: Using Hands-On Performance Assessment with K–5 Students (p. 62)
12:30–1:45 PM	P–8	101A, Conv. Center	How Do They Use FOSS in Their School District? (p. 62)
12:30–1:45 PM	1–6	101B, Conv. Center	Crosscutting Concepts: What Do They Look Like in an Elementary Classroom? (p. 62)
12:30–1:45 PM	P–5	202C, Conv. Center	Blending the CCSS and NGSS in Your K–5 Science Classroom (p. 64)
1:00–1:30 PM	6–12	International 2, Hilton	Classroom Procedures to Support Science Notebooks (p. 64)
2:00–3:00 PM	6–12	International 2, Hilton	NGSS, Close Reading, and Classroom Notebooking Practices (p. 66)
2:00–3:00 PM	7–12	Pacific 1, Hilton	NARST Session: Strategies for Being a Great Mentor—Moving Beyond Classroom Management to Focus on Student Learning (p. 66)
2:00–3:00 PM	6–C	Regency Blrm. E, Hyatt	Where Are the Women? What Educators Should Think and Do About the Underrepresentation of Women in Science (p. 66)
2:00–3:00 PM	3–12	Regency Blrm. F, Hyatt	Marine Debris: It’s Everywhere! (p. 67)
2:00–3:00 PM	3–C	Seaview Blrm. A, Hyatt	Dazzling Deceptions: Discrepant Events That Delight and Mystify! (p. 67)
2:00–3:00 PM	G	Seaview Blrm. C, Hyatt	Integrating the NGSS Practices Through Online Collaboration with Google (p. 67)
2:00–3:00 PM	K–12	Shoreline B, Hyatt	The Apps That Launched STEAM Classrooms (p. 67)
2:00–3:00 PM	6–8	Naples III, Renaissance	Designing a Middle School Integrated NGSS Curriculum (p. 67)
2:00–3:00 PM	P–2	Casablanca, Westin	“Please, Can I Write...?” High-Interest Science Topics Motivate Beginning Writers (p. 67)
2:00–3:00 PM	7–C	Harbor A/B, Hyatt	Chemical Change and Stability: Kinetics and Equilibrium (p. 68)
2:00–3:00 PM	4–C	Seaview Blrm. B, Hyatt	Let’s Talk About Sex (p. 68)
2:00–3:00 PM	1–12	Centennial Salon A, Westin	Science as a Context for <i>Common Core</i> Writing: A Win-Win for Both (p. 69)
2:15–3:30 PM	K–6	101A, Conv. Center	Teaching Argumentation for Our Next Generation (p. 70)
2:15–3:30 PM	G	104A, Conv. Center	Making Science Notebooks FOLD-tastic via Notebook Foldables® (p. 70)
3:15–4:30 PM	P–12	Grand Blrm. A, Conv. Center	Using the Tools of the NGSS to Support Quality Science Instruction (p. 72)
3:30–4:00 PM	G	Shoreline A, Hyatt	<i>Common Core State Standards</i> : Five Critical Process Skills (p. 73)
3:30–4:30 PM	5–9	Regency Blrm. C, Hyatt	Science Seminars: How Argumentation Helps You Meet the NGSS and CCSS at the Same Time (p. 74)
3:30–4:30 PM	K–12	Regency Blrm. F, Hyatt	Performance Assessments: Features and Models of Quality Performance Tasks for the NGSS (p. 74)
3:30–4:30 PM	P–12	Seaview Blrm. A, Hyatt	Finding Treasure in Trade Books: NSTA Resources (p. 74)
3:30–4:30 PM	G	Seaview Blrm. B, Hyatt	Before and After Retirement: Practicalities and Possibilities (p. 74)
3:30–4:30 PM	G	Seaview Blrm. C, Hyatt	UFOs, Crime Scenes, Mysteries, and More! Family Science Night in Action! (p. 74)
3:30–4:30 PM	7–10	Centennial Salon B, Westin	Surfing into the NGSS: Remote Sensing and Engineering on the California Coast (p. 75)
3:30–4:30 PM	6–12	Pacific 2, Hilton	Embedding Research into Classroom Practice: Perspectives from a Panel of Teacher Researchers (p. 75)
3:30–4:30 PM	3–8	Regency Blrm. A, Hyatt	Practices Made Perfect: Simple Activities to Teach Every NGSS Practice (p. 76)
3:30–4:30 PM	P–8	Grand Blrm. B, Conv. Center	CESI Session: Elementary Science Share-a-Thon (p. 76)
3:30–4:30 PM	K–8	Casablanca, Westin	Accessing Complex Science Text Through Close Reading Strategies (p. 77)
3:30–4:30 PM	2–6	Ocean Blrm., Westin	Scientific Sketching as a Tool for Scientific Practices (p. 77)
3:30–5:00 PM	9–C	204, Conv. Center	NSTA Press® Session: Planning for Hard-to-Teach Biology Concepts Included in the NGSS (p. 78)
4:00–4:30 PM	G	Shoreline A, Hyatt	Supporting Academic Language Learners (ALL) in Science Conversations (p. 78)
4:00–5:15 PM	K–8	202C, Conv. Center	Ignite the NGSS with Today’s Cutting-Edge Technology (p. 79)
5:00–6:00 PM	K–12	Harbor A/B, Hyatt	New Teachers and the New Standards (p. 80)
5:00–6:00 PM	6–C	Regency Blrm. F, Hyatt	Teacher Communities Collaborating to Implement NGSS Practices (p. 81)
5:00–6:00 PM	P–12	104B, Conv. Center	Don’t Introduce a Nonnative Invasive Species into Your Neighborhood (p. 81)
5:00–6:00 PM	K–12	Centennial Salon A, Westin	Science Notebooks: A Tool for Thinking in the Age of CCSS and NGSS (p. 81)
5:00–6:00 PM	K–8	Centennial Salon D, Westin	Table-Top Aquaponics: \$40 Simple STEM Project Makes Engineering Practical (p. 81)

Schedule at a Glance General Science Education

5:00–6:00 PM	3–5	Ocean Blrm., Westin	Mastering Models Through Science Inquiry and Project Based Learning (p. 81)
5:00–6:00 PM	6–12	International 2, Hilton	What Does It Really Look Like? Asking Questions and Designing Investigations in the Middle School and High School Classroom (p. 82)
5:00–6:00 PM	1–5	Beacon B, Hyatt	NGSS: Make Your Lessons 3-D (p. 82)
5:00–6:00 PM	5–9	Regency Blrm. E, Hyatt	Learning Science as Science Is Done: Science Practices and Student-centered Investigation (p. 82)
5:00–6:00 PM	2–12	Seaview Blrm. C, Hyatt	Noodling It Out: The Modeling Project (p. 82)
5:00–6:00 PM	5–7	Naples I, Renaissance	Food Science from STEM to Plate (p. 83)
5:00–6:00 PM	5–8	Naples III, Renaissance	Modeling Modeling (p. 83)
5:30–6:00 PM	7–C	Harbor C, Hyatt	Restoration Projects Leading from Service Learning to Doing Research (p. 84)

Friday

8:00–8:30 AM	P–6/C	Regency Blrm. D, Hyatt	Developing the Reluctant Preservice Teacher’s Confidence in Facilitating Science Lessons (p. 87)
8:00–8:30 AM	P–12	Shoreline A, Hyatt	STEM-ing the Gap in Outdoor Education to Increase Student Achievement (p. 87)
8:00–9:00 AM	9–12	Atlantic 2, Hilton	What! We Have to Teach English, Too? (p. 87)
8:00–9:00 AM	G	Beacon A, Hyatt	AMSE Session: The Promise of the NGSS and America’s Forgotten Children (p. 87)
8:00–9:00 AM	6–9	Beacon B, Hyatt	Using the NGSS Practices in Middle School Classrooms (p. 88)
8:00–9:00 AM	3–C	Regency Blrm. F, Hyatt	Space Exploration in the Next 20 Years: It’s Not Going to Be Like the Last 50 (p. 88)
8:00–9:00 AM	G	Seaview Blrm. B, Hyatt	Authors Wanted! Learn How to Submit an Article for Publication in an NSTA Journal (p. 88)
8:00–9:00 AM	9–12	Seaview Blrm. C, Hyatt	NABT Session: Do You See What I See? (p. 88)
8:00–9:00 AM	5–12	Naples I, Renaissance	NMLSTA Session: Making Global Connections on a Budget for Middle School STEM (p. 88)
8:00–9:00 AM	6–C	Naples III, Renaissance	From Designing Nanobots to Modeling Redwoods: Spotlight on STEM Careers (p. 88)
8:00–9:00 AM	3–7	Verona, Renaissance	Science Update: Energize Student-based Research with Real-World Science (p. 89)
8:00–9:00 AM	K–12	Ocean Blrm., Westin	San Francisco as a Case Study for NGSS-readiness in California Public Schools (p. 89)
8:00–9:00 AM	3–8	Regency Blrm. B, Hyatt	Stretch Your Legs for Science! (p. 89)
8:00–9:15 AM	K–11	102 A/B, Conv. Center	Using Problem-Based Learning to Up Your NGSS Game (p. 90)
8:00–9:15 AM	G	104A, Conv. Center	Envelope Graphic Organizers—UnFOLDing the Possibilities (p. 91)
8:00–9:15 AM	K–5	201B, Conv. Center	A Revolutionary Way to Address All Your Standards with National Geographic (p. 91)
8:00–9:15 AM	6–8	202C, Conv. Center	Implementing the Eight NGSS Practices with Research-based Curriculum (p. 91)
8:00–9:15 AM	4–12	203 A/B, Conv. Center	Experience 21st-Century STEM Integration with Technology (p. 92)
8:00–10:00 AM	G	Capri, Renaissance	NSTA’s Exemplary Science Programs (ESP) Meeting Current Reform Efforts (p. 92)
8:30–9:00 AM	G	Regency Blrm. D, Hyatt	Identifying, Describing, and Developing Interdisciplinary Links Among <i>Common Core</i> , Elementary Science Education, English, 5Es, Gardner, and Universal Design for Learning (p. 93)
9:30–10:30 AM	5–12	International 3, Hilton	Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewViar (p. 95)
9:30–10:30 AM	G	Beacon A, Hyatt	NSELA Session: Tools for Science Leaders, Part 1 (p. 95)
9:30–10:30 AM	9–C	Regency Blrm. D, Hyatt	Add a Wellness Thread to Your Anatomy Curriculum (p. 95)
9:30–10:30 AM	K–12	Regency Blrm. E, Hyatt	Leadership, Capacity, and Change: What It Takes to Implement the Convergence of the NGSS and CCSS (p. 95)
9:30–10:30 AM	6–C	Regency Blrm. F, Hyatt	Wood-to-Wheels: Engineering Better Biofuels (p. 95)
9:30–10:30 AM	6–12	Naples I, Renaissance	Do You Need a New Science Lab? (p. 96)
9:30–10:30 AM	7–12	Verona, Renaissance	Science Fair: Gateway to Implementing Project Based Learning (p. 96)
9:30–10:30 AM	P	Ocean Blrm., Westin	Defining Science Learning and Teaching for Early Childhood (p. 96)
9:30–10:30 AM	6–12	Atlantic 2, Hilton	From Genes to Jeans (p. 96)
9:30–10:30 AM	7–11	Pacific 2, Hilton	Proven Practices for Implementing Interactive Science Notebooks (p. 96)

Schedule at a Glance General Science Education

9:30–10:30 AM	4–7	Beacon B, Hyatt	ASTE Session: The Fish Weir Engineering Challenge: A Culturally Relevant Activity (p. 97)
9:30–10:30 AM	K–12	Regency Blrm. A, Hyatt	Connect Science Content with the NGSS Crosscutting Concepts (p. 97)
9:30–10:30 AM	K–12	Seaview Blrm. B, Hyatt	Exploring the Science and Engineering Practices (p. 97)
9:30–10:30 AM	K–8	204, Conv. Center	NSTA Press® Session: Bringing Outdoor Science In (p. 97)
9:30–10:30 AM	P–8	101B, Conv. Center	Model Elementary Science Implementations (p. 99)
10:00–11:15 AM	K–12	202 A/B, Conv. Center	Magnify Your Mind!—with The Private Eye® (p. 100)
10:00–11:15 AM	K–5	203 A/B, Conv. Center	It's Alive! Using Live Materials in K–5 Lessons (p. 100)
10:00–11:30 AM	3–C	103C, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 101)
12 Noon–1:30 PM	3–C	103C, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 104)
12:30–1:30 PM	G	Grand Blrm. A, Conv. Center	The Central Role of Dialogue in the Sense-making Classroom (p. 104)
12:30–1:30 PM	9–12	Pacific 1, Hilton	Using POGIL Strategies to Help All Students Tackle Common Core (p. 105)
12:30–1:30 PM	6–12	Regency Blrm. B, Hyatt	From STEM Role Models to STEM Mentors—High School Girls Benefit from Ongoing Relationships with Women in Industry (p. 105)
12:30–1:30 PM	G	Regency Blrm. D, Hyatt	California Science Assessments—The Past, the Present, and the Future (p. 105)
12:30–1:30 PM	1–12	Regency Blrm. E, Hyatt	Let the iPad Tell a Science (Digital) Story! (p. 105)
12:30–1:30 PM	6–9	204, Conv. Center	NSTA Press® Session: Doing Good Science in Middle School (p. 106)
12:30–1:30 PM	C	Beacon B, Hyatt	ASTE Session: Poster Session for Far West and Northwestern Regional Units (p. 107)
12:30–1:30 PM	1–C	Capri, Renaissance	Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 101) (p. 108)
12:30–1:30 PM	K–8	Centennial Salon D, Westin	Shipping from STEM to Stern (p. 109)
1:00–1:30 PM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Historical Origins of Physics Symbols (p. 109)
2:00–3:00 PM	12–C	Pacific 1, Hilton	SCST Session: Using Bean Beetles to Encourage Inquiry and Critical Thinking (p. 110)
2:00–3:00 PM	G	Beacon A, Hyatt	NSELA Session: Tools for Science Leaders, Part 2 (p. 110)
2:00–3:00 PM	G	Beacon B, Hyatt	STEM Professional Development and Teacher Implementation (p. 110)
2:00–3:00 PM	7–C	Regency Ballroom F, Hyatt	Research Experiences for Science Teachers (p. 110)
2:00–3:00 PM	K–12	Seaview Ballroom B, Hyatt	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 111)
2:00–3:00 PM	6–C	Shoreline A, Hyatt	Tricks from an Old Dog (p. 111)
2:00–3:00 PM	6–12	Naples I, Renaissance	Successful Science Screencasts (p. 111)
2:00–3:00 PM	K–6	Verona, Renaissance	A STEM Metamorphosis: The Lemelson STEM Academy (p. 111)
2:00–3:00 PM	6–12	International 3, Hilton	Modeling: An Exploration of Tools and Approaches (p. 112)
2:00–3:00 PM	6–12	Pacific 2, Hilton	Excite Your Students with Library of Congress Primary Sources! (p. 112)
2:00–3:00 PM	3–12	Regency Ballroom C, Hyatt	Stop Teaching in Silos! Science Opens the Door to <i>Common Core!</i> (p. 112)
2:00–3:00 PM	K–8	204, Convention Center	NSTA Press® Session: STEM and Art Is Smart! (p. 112)
2:00–3:00 PM	G	Capri, Renaissance	Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102) (p. 112)
2:00–3:00 PM	1–5	Casablanca, Westin	<i>Common Core</i> Classroom: How to Develop Amazing Writers! (p. 113)
2:00–3:00 PM	1–5	Ocean Ballroom, Westin	Ready, Set, Go! Exploring NGSS, K–3 Performance Expectations (p. 113)
2:00–3:15 PM	6–8	103B, Convention Center	Bring Visual Science into Grades 6–8 Classrooms—It's a Game Changer! (p. 114)
3:00–4:00 PM	9–C	201A, Conv. Center	Communicating Science Through Lab Notebooking (p. 116)
3:30–4:00 PM	6–12	Verona, Renaissance	Put Me in Coach: A Peer Coaching Model for Implementing Science and Engineering Practices (p. 116)
3:30–4:30 PM	G	Grand Blrm. A, Conv. Ctr.	Featured Presentation: Using the Past to Take Science Education into the Future (p. 117)
3:30–4:30 PM	3–8	Pacific 1, Hilton	Speak Like a Scientist: English Language Development in Science Classrooms (p. 117)
3:30–4:30 PM	7–C	Beacon A, Hyatt	Engineering NGSS into Your High School Science Classroom (p. 117)
3:30–4:30 PM	2–6	Regency Ballroom C, Hyatt	Science Writing Task: Assessing Evidence-based Opinion Writing in Science (p. 117)
3:30–4:30 PM	3–12	Regency Ballroom E, Hyatt	Vocabulary Magic: Making Science Words REAL! (p. 118)
3:30–4:30 PM	C	Seaview Ballroom B, Hyatt	A Tool to Develop Preservice Teachers: NSTA Learning Center (p. 118)

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3:30–4:30 PM	K–12	Shoreline A, Hyatt	Turning STEM into STEAM: Bringing the Arts into Your Science Classroom (p. 118)
3:30–4:30 PM	G	204, Convention Center	NSTA Press® Session: Get the FACTs—136 Formative Assessment Classroom Techniques! (p. 118)
3:30–4:30 PM	K–6	Casablanca, Westin	Engaging K–6 Science Students with Scientific Inquiry, Supported by Science Literacy Skills and Extraordinary Print Resources (p. 119)
3:30–4:30 PM	6–12	Naples I, Renaissance	iPad: Next Step to a Digital Classroom (p. 120)
3:30–4:30 PM	1–12	Centennial Salon A, Westin	Notebooks: A Tool for Student Thinking (p. 120)
3:30–4:30 PM	2–6	Centennial Salon D, Westin	Otters in Action! (p. 120)
4:00–5:15 PM	K–8	103B, Convention Center	An Invitation: Moving Forward with the NRC <i>Framework</i> and <i>NGSS</i> (p. 121)
4:00–5:15 PM	6–8	104B, Convention Center	Implementing an <i>NGSS</i> -based Middle School <i>PBIS</i> ™ Curriculum with Fidelity (p. 121)
5:00–6:00 PM	6–8	Pacific 1, Hilton	Literacy + Science: A Continuum of Student Learning Outcomes for Literacy in Grades 6–8 Science (p. 123)
5:00–6:00 PM	P–5	204, Convention Center	NSTA Press® Session: Uncovering Elementary Students Ideas in Science Through Talk and Argument (p. 123)
5:00–6:00 PM	6–12	Verona, Renaissance	<i>NGSS</i> , Experiment Implementation, and Inclusion in Science Notebooks (p. 123)
5:00–6:00 PM	6–8	Centennial Salon A, Westin	How the <i>NGSS</i> California Integrated Model Promotes Student Understanding (p. 123)
5:00–6:00 PM	3–8	Ocean Ballroom, Westin	Science Content + Literacy = <i>Common Core</i> Success (p. 123)
5:00–6:00 PM	7–12	International 2, Hilton	Advanced Student Thinking Through Interactive Notebooks (p. 124)
5:00–6:00 PM	6–12	Regency Blrm. C, Hyatt	Reading, Writing, and Seed Dispersal! Integrating <i>CCSS</i> and <i>NGSS</i> (p. 124)
5:00–6:00 PM	G	Shoreline A, Hyatt	<i>NGSS</i> Topic Study: A Tool for Building <i>NGSS</i> Awareness and Capacity (p. 125)
5:30–6:00 PM	9–12	Naples I, Renaissance	Using Popular Science Magazine Articles to Improve Students' Critical Thinking and Scientific Literacy (p. 126)

Saturday

8:00–9:00 AM	K–12	201A, Convention Center	Integrating Science Literacy and English Literacy in the K–12 Science Classroom: Benefits for Hearing-impaired Students (p. 127)
8:00–9:00 AM	4–12	203 A/B, Conv. Center	iPad Invasion in the Middle School Science Lab (p. 127)
8:00–9:00 AM	1–8	104C, Conv. Center	Unleashing Your Inner Scientist! (p. 128)
8:00–9:00 AM	4–6	203C, Conv. Center	STEM Lessons and Capacity Building (p. 129)
8:00–9:00 AM	9–C	Shoreline A, Hyatt	Using Rubrics and Self- or Peer-grading to Improve the Quality of Written Lab Reports (p. 130)
9:30–10:00 AM	K–12	Regency Ballroom A, Hyatt	California's Science Standards: How Are We Doing? (p. 130)
9:30–10:30 AM	G	Seaview Ballroom C, Hyatt	Integrating <i>CCSS</i> and <i>NGSS</i> : The Role of Teacher Leadership to Transform Science Teaching and Learning (p. 131)
9:30–10:30 AM	9–12	104C, Convention Center	Teaching Science from a Global Perspective (p. 132)
9:30–10:30 AM	K–12	201A, Convention Center	Starting with the End in Mind: Building an Instructional Unit from <i>NGSS</i> Performance Expectations (p. 132)
9:30–10:30 AM	6–12	Regency Ballroom C, Hyatt	Get to the Point: Techniques for Downhill Writing (p. 132)
9:30–10:30 AM	2–8	Shoreline B, Hyatt	Bubble Gum with a Nod to Science and Math (p. 132)
9:30–10:30 AM	P–4	104B, Convention Center	Crosscutting STEM (and STEAM) into Picture Books for Elementary Students (p. 133)
11:00 AM–12 Noon	6–12	Regency Ballroom A, Hyatt	<i>NGSS</i> , Essential Questions, and Notebooking Practices (p. 134)
11:00 AM–12 Noon	6–C	Regency Ballroom C, Hyatt	How to Teach <i>Common Core</i> Writing Standards While Helping Students Learn Science (p. 134)
11:00 AM–12 Noon	6–12	Regency Ballroom F, Hyatt	Literacy and Writing in Science (LAWS) (p. 134)
11:00 AM–12 Noon	K–11	Seaview Ballroom B, Hyatt	Supporting English Language Learners (p. 134)
11:00 AM–12 Noon	1–6	Shoreline A, Hyatt	Hands-On Elementary Science Activities (p. 134)
11:00 AM–12 Noon	6–C	202C, Convention Center	TEDitorials: Open Up Your Classroom to the World of TED (p. 135)
11:00 AM–12 Noon	C	203 A/B, Conv. Center	Online Peer Review: It's More than Course Design (p. 135)
11:00 AM–12 Noon	4–11	204, Conv. Center	NSTA Press® Session: Citizen Science: Diverse Projects That Bring Biology to Life (p. 135)

Schedule at a Glance General Science Education

11:00 AM–12 Noon	6–12	Seaview Ballroom C, Hyatt	Achieving Success and Motivation with the CCSS and NGSS in Urban Schools (p. 135)
11:00 AM–12 Noon	7–9	104C, Conv. Center	Bridging the Gap (p. 136)

Life Science

Thursday

8:00–9:00 AM	K–12	Beacon A, Hyatt	Engage Your Students with NOAA’s Ocean Acidification and Coral Reef Resources (p. 45)
8:00–9:00 AM	6–8	Verona, Renaissance	Next Gen in the Dirt: 10,000 Sunflowers Garden Project (p. 46)
8:00–9:00 AM	7–12	International 3, Hilton	Citizen Science: Project Based Learning at the Museum and in the Classroom (p. 48)
8:00–9:00 AM	4–12	Shoreline A, Hyatt	Supporting Literacy in Science Education (p. 48)
8:00–9:00 AM	5–9	Capri, Renaissance	Deep Science Learning with Sims (p. 50)
8:00–9:15 AM	6–8	102C, Conv. Center	Investigating Gas Exchange (p. 51)
8:00–9:15 AM	8–C	103A, Conv. Center	Using the Polymerase Chain Reaction to Identify Genetically Modified Foods (p. 51)
8:30–9:00 AM	9–C	Harbor C, Hyatt	Ecospheres! Engaging Students in Energy and Matter Dynamics in Ecosystems (p. 52)
10:00–11:15 AM	5–12	101A, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 53)
10:00–11:15 AM	5–12	102 A/B, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 54)
10:00–11:15 AM	8–C	103A, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 54)
10:00–11:15 AM	6–12	104A, Conv. Center	Flinn Favorite Biology Lab Activities and Games (p. 54)
10:00–11:15 AM	9–12	203 A/B, Conv. Center	Biology for NGSS: A New Approach for a New Program (p. 55)
12:30–1:00 PM	7–C	Regency Blrm. D, Hyatt	Inquiry Teaching and Learning Opportunities: ESSEA Lesson Modules (p. 58)
12:30–1:30 PM	3–C	Seaview Blrm. A, Hyatt	Magical Illusions and Scintillating Simulations for Science: It’s Showtime! (p. 58)
12:30–1:30 PM	6–8	Naples III, Renaissance	Integrating Writing Standards and Project Based Learning in Life Science (p. 58)
12:30–1:30 PM	6–12	Verona, Renaissance	Questions That Lead Students to “Get It” at the “Get Go” (p. 59)
12:30–1:30 PM	7–12	Beacon B, Hyatt	Infect Your Biology Classroom with Math! (p. 59)
12:30–1:30 PM	9–C	Capri, Renaissance	Human Body Systems—Building a Foundation for Complex Thinking and Success (p. 60)
12:30–1:30 PM	4–7	Centennial Salon C, Westin	Modeling Activities for Human Body Systems (p. 62)
12:30–1:45 PM	6–C	103A, Conv. Center	Biotechnology Basics (p. 63)
12:30–1:45 PM	K–12	103B, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 63)
12:30–1:45 PM	8–C	201B, Conv. Center	New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits (p. 63)
1:00–1:30 PM	9–12	Pacific 2, Hilton	Building a Community Classroom: Encouraging Students to Think Globally and Act Locally (p. 65)
1:00–2:30 PM	9–C	201A, Conv. Center	Identify Patient Zero of a Zombie Apocalypse (p. 65)
2:00–3:00 PM	10–C	Beacon A, Hyatt	Using Case Studies to Promote Technical Literacy in an Anatomy and Physiology Class (p. 66)
2:00–3:00 PM	K–12	Regency Blrm. A, Hyatt	Engineering Practices and the NGSS: Don’t Be Scared (p. 66)
2:00–3:00 PM	K–12	Shoreline A, Hyatt	Captivate Your Students Using Data Visualizations and Learn How to Integrate Global Environmental Data into Your Classroom (p. 67)
2:15–3:30 PM	5–12	102 A/B, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 70)
2:15–3:30 PM	8–C	103A, Conv. Center	Case of the Missing Records (p. 70)
2:15–3:30 PM	9–C	203 A/B, Conv. Center	Teaching Cell Signaling with BioInteractive (p. 71)
2:30–3:00 PM	C	Harbor C, Hyatt	Personalized Medicine in Our Near Futures (p. 72)
3:00–4:30 PM	9–C	201A, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3) (p. 72)
3:30–4:30 PM	3–C	Regency Blrm. E, Hyatt	Using Technology to Connect Neuroscience with Teaching and Learning (p. 74)
3:30–4:30 PM	7–8	104B, Conv. Center	The Success of Implementing an Evidence-based Sexual Health Education Curriculum in Middle School Science (p. 75)
3:30–4:30 PM	6–12	104C, Conv. Center	Use NASA Airborne Science Aircraft and Missions to Bring Real-Time Science to Your Classroom (p. 75)
3:30–4:30 PM	9–C	Harbor A/B, Hyatt	The Biology and Chemistry of the Digestive System (p. 76)

3:30–4:30 PM	5–12	Regency Blrm. B, Hyatt	Free Apps That Bring Real-World Science into the Classroom! (p. 76)
3:30–4:30 PM	9–C	Regency Blrm. D, Hyatt	Using the <i>Next Generation Science Standards</i> in Chemistry Classes (p. 76)
3:30–4:30 PM	7–12	Capri, Renaissance	Who’s Your Daddy? (p. 77)
3:30–4:30 PM	5–9	Naples III, Renaissance	Let’s Talk Science: Seeding Argumentation About Cells and Growth (p. 77)
3:30–4:30 PM	5–9	Sicilian Blrm., Renaissance	Creating “Wows” in Biology to Increase Student Engagement (p. 77)
4:00–4:30 PM	G	Harbor C, Hyatt	The Classroom “Without” Walls (p. 78)
4:00–5:15 PM	9–12	102C, Conv. Center	Investigating Stem Cell Differentiation (p. 79)
4:00–5:15 PM	8–C	103A, Conv. Center	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 79)
4:00–5:15 PM	6–12	103B, Conv. Center	AUTOPSY: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs (p. 79)
4:00–5:15 PM	5–10	201B, Conv. Center	Take a Swipe at Microbes! (p. 79)
4:00–5:15 PM	6–12	203 A/B, Conv. Center	Free Resources from HHMI for the NGSS Disciplinary Core Idea on Evolution (p. 79)
4:00–5:15 PM	6–C	203C, Conv. Center	Pitch Hands-On Anatomy Education for a Home Run in Student Success (p. 79)
5:00–5:30 PM	5–C	Beacon A, Hyatt	Marine Restoration, from the Classroom to the Wild (p. 80)
5:00–5:30 PM	7–12	Harbor C, Hyatt	Waffles! A Tasty Look at Protein Synthesis (p. 80)
5:00–6:00 PM	7–10	Pacific 1, Hilton	Don’t Just Punt It, Punnett! An Interactive Model on What the Punnett Square Really Represents (p. 80)
5:00–6:00 PM	7–C	Regency Blrm. D, Hyatt	Born to Run: An Inquiry-based Evolution Project (p. 82)
5:30–6:00 PM	6–12	Beacon A, Hyatt	Keeping Science in the Classroom and Nonscience Out (p. 84)

Friday

8:00–9:00 AM	9–12	Sicilian Blrm., Renaissance	Breathing Peas (p. 90)
8:00–9:15 AM	8–12	101A, Conv. Center	Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab! (p. 90)
8:00–9:15 AM	6–12	102C, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It’s a Plant’s Life! (p. 90)
8:00–9:15 AM	6–C	103A, Conv. Center	Biotechnology Basics (p. 91)
8:00–9:15 AM	6–12	103B, Conv. Center	Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (p. 91)
8:00–9:30 AM	7–C	103C, Conv. Center	Chemistry and Biology with Vernier (p. 92)
8:30–10:00 AM	9–C	201A, Conv. Center	What Fish Is That? Have Fun with PCR, Fish Flash Cards, and Jeopardy! to Perform DNA-based Identification (p. 93)
9:30–10:30 AM	K–12	Shoreline A, Hyatt	Gray Matter: Learning and Teaching Science with the Brain in Mind (p. 95)
9:30–10:30 AM	4–8	Casablanca, Westin	STEM: Science Teaching (with an) Environmental Mission (p. 96)
9:30–10:30 AM	K–8	Regency Blrm. C, Hyatt	Finding the Hidden Opportunities: Identifying <i>CCSS ELA</i> in Your Science Lessons (p. 97)
9:30–10:30 AM	6–8	Seaview Blrm. C, Hyatt	NABT Session: Meeting in the Middle: Adapting Resources for Your Middle School Student (p. 97)
10:00–11:15 AM	8–C	103A, Conv. Center	Case of the Missing Records (p. 99)
10:00–11:15 AM	K–6	103B, Conv. Center	Hands-On Science with Classroom Critters (p. 99)
10:00–11:15 AM	6–C	203C, Conv. Center	Do You Know How Many Lymph Nodes You Have? Hands-On Problem-solving Pedagogy (p. 100)
10:30 AM–12 Noon	9–C	201A, Conv. Center	DNA Detectives: Who Killed Jose? (p. 101)
12 Noon–1:15 PM	K–12	102 A/B, Conv. Center	Teaching Evolution in a Climate of Controversy: Even with NGSS, the Battles Continue (p. 101)
12 Noon–1:15 PM	6–12	102C, Conv. Center	DuPont Presents: The Science of Food Safety (p. 101)
12 Noon–1:15 PM	K–6	104A, Conv. Center	Biology for NGSS: A New Approach for a New Program (p. 102)
12 Noon–1:15 PM	6–C	202 A/B, Conv. Center	Access and Analyze LIVE Ocean Data in the Classroom (p. 102)
12 Noon–1:15 PM	6–12	203 A/B, Conv. Center	It’s Alive! (Or Once Was)...Using Live and Preserved Materials in Middle School and High School (p. 103)
12:30–1:30 PM	K–8	Casablanca, Westin	What Is Life? A Biological Approach (p. 108)
12:30–4:30 PM	6–12	Seaview Blrm. C, Hyatt	NABT Session: Make Your Class a Story Worth Telling: Conceptual Flow Graphics for NGSS Planning (p. 109)
1:30–2:30 PM	9–C	201A, Conv. Center	Are Worms Smarter than Your Students? (AP Big Ideas 1, 2, 3, 4) (p. 109)

Schedule at a Glance Life Science

2:00–3:00 PM	7–12	Atlantic 2, Hilton	From Single Cells to Complex Systems—Biofuels from Algae in the Future? (p. 111)
2:00–3:00 PM	6–C	Regency Ballroom E, Hyatt	Evolution in the Cloud (p. 112)
2:00–3:00 PM	9–12	Sicilian Blrm., Renaissance	He’s Not My Brother...Or Is He? An Inquiry Approach to Understanding Meiosis (p. 113)
2:00–3:15 PM	8–C	103A, Convention Center	Using the Polymerase Chain Reaction to Identify Genetically Modified Foods (p. 114)
2:00–3:15 PM	9–12	104A, Convention Center	Engaging Students Effectively: The BIOZONE Solution (p. 114)
2:00–3:15 PM	9–C	201B, Convention Center	Telling Molecular Stories with David Goodsell’s Cellular Landscapes (p. 115)
2:00–3:15 PM	G	202C, Convention Center	Adventures into the Digital Biology Classroom: How Technology Can Revolutionize Teaching (p. 115)
3:30–4:30 PM	9–12	Pacific 2, Hilton	Teaching Forensic DNA Using Models, Kinesthetic Learning, STR Activity, and NGSS (p. 117)
4:00–5:15 PM	6–C	103A, Conv. Center	Biotechnology Basics (p. 121)
4:00–5:15 PM	9–C	201B, Conv. Center	Genes, Genomes, and the New World of Personalized Medicine (p. 121)
4:00–5:15 PM	7–C	202 A/B, Conv. Center	Exploring STEM Through Biotechnology (p. 122)
5:00–6:00 PM	G	Seaview Ballroom C, Hyatt	NABT Session: California Unconference for Biology Teachers (p. 123)
5:00–6:00 PM	7–12	International 3, Hilton	Engaging Ways to Teach and Assess Understanding of Natural Selection (p. 124)
5:00–6:00 PM	6–12	Regency Blrm. D, Hyatt	NSTA Press® Session: <i>Scientific Argumentation in Biology: 30 Classroom Activities</i> (p. 124)

Saturday

8:00–9:00 AM	9–11	Regency Ballroom D, Hyatt	Teach Marine Biology (Instead of Biology) to Cover the CCSS and NGSS (p. 128)
8:00–9:00 AM	K–6	Regency Ballroom E, Hyatt	Bring Learning to Life in the Garden! (p. 128)
8:00–9:00 AM	3–12	Seaview Ballroom B, Hyatt	Juice from Juice (p. 128)
8:00–9:00 AM	K–5	104B, Convention Center	Advancing Language Proficiency Through Science and Engineering Practices (p. 128)
8:00–9:00 AM	7–C	202C, Convention Center	Goo-tonian: Connecting Non-Newtonian Fluids to the NGSS (p. 129)
8:00–9:15 AM	K–12	101B, Convention Center	Marine Science Education—Awareness, Understanding, and Action (p. 129)
9:30–10:00 AM	7–12	Shoreline A, Hyatt	Creative Writing in the Science Classroom (p. 130)
9:30–10:30 AM	G	Grand Blrm. A, Conv. Ctr.	From Silent Spring to Silent Night: A Tale of Toads and Men (p. 131)
11:00 AM–12 Noon	K–5	Regency Ballroom E, Hyatt	Ecosystems K–5 (p. 135)

Physical Science

Thursday

8:00–9:00 AM	7–12	International 4, Hilton	Experiences in Writing and Implementing a Districtwide Common Core Chemistry Unit (p. 45)
8:00–9:00 AM	6–C	Pacific 1, Hilton	NASA: The Latest SOFIA Science (p. 45)
8:00–9:00 AM	5–11	Regency Blrm. A, Hyatt	Exploration Questions: A Simple Way to Foster Student Engagement in the NGSS Practices of Science (p. 48)
8:00–9:00 AM	4–12	Shoreline A, Hyatt	Supporting Literacy in Science Education (p. 48)
8:00–9:00 AM	5–9	Capri, Renaissance	Deep Science Learning with Sims (p. 50)
8:00–9:15 AM	3–5	101B, Conv. Center	Engineering Design in the FOSS Next Generation Program (p. 51)
8:00–9:15 AM	5–12	102 A/B, Conv. Center	A STEM Approach to Teaching Electricity and Magnetism (p. 51)
10:00–11:15 AM	9–12	102C, Conv. Center	Chemical Formula and Amino Acids (p. 54)
10:00–11:15 AM	5–C	201B, Conv. Center	Dive In with Magnetic Water Molecules (p. 54)
10:00–11:15 AM	6–C	202C, Conv. Center	Molecular-Level Visualization and the NGSS: Engaging Your Students (p. 55)
12:30–1:30 PM	3–C	Seaview Blrm. A, Hyatt	Magical Illusions and Scintillating Simulations for Science: It’s Showtime! (p. 58)
12:30–1:30 PM	P–4	Ocean Blrm., Westin	Let’s Get Physical: Water, Wind, and Weather (p. 62)
12:30–1:45 PM	5–12	102 A/B, Conv. Center	Fun with Atom Building Games and the Periodic Table (p. 62)
12:30–1:45 PM	9–12	102C, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 63)
12:30–1:45 PM	9–12	104A, Conv. Center	Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 63)

Schedule at a Glance Physical Science

12:30–1:45 PM	2–6	203C, Conv. Center	It's Elementary—Light and Optics for Kids (p. 64)
1:00–1:30 PM	9–12	Pacific 2, Hilton	Building a Community Classroom: Encouraging Students to Think Globally and Act Locally (p. 65)
2:00–3:00 PM	10–12	Atlantic 2, Hilton	Performance-based Assessment in Chemistry (p. 66)
2:00–3:00 PM	9–12	Pacific 2, Hilton	Edible Chemistry (p. 66)
2:00–3:00 PM	6–C	Regency Blrm. C, Hyatt	Composing Science: Strategies for Writing to Learn in the Inquiry Classroom (p. 68)
2:00–3:00 PM	6–9	Sicilian Blrm., Renaissance	Chemical Nomenclature Rummy: Naming Compounds and Ion Combination Rules (p. 69)
2:15–3:30 PM	9–12	103B, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 70)
2:15–3:30 PM	8–C	201B, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 71)
2:15–3:30 PM	K–5	202C, Conv. Center	Ride the Wave with Bring Science Alive! (p. 71)
3:30–4:30 PM	9–12	Atlantic 2, Hilton	Water, Water, Everywhere, Not a Drop to Spare: A Chemistry Unit Using the Science and Engineering Practices (p. 74)
3:30–4:30 PM	9–12	Pacific 1, Hilton	A Story of Adoption, Implementation, and Evaluation...and the Need for More Action Research (p. 74)
3:30–4:30 PM	6–12	104C, Conv. Center	Use NASA Airborne Science Aircraft and Missions to Bring Real-Time Science to Your Classroom (p. 75)
3:30–4:30 PM	6–12	International 3, Hilton	Engineering: The Missing Piece of the Puzzle! (p. 76)
3:30–4:30 PM	4–8	Centennial Salon A, Westin	Energy Here, Energy There, Energy Everywhere! (p. 77)
4:00–4:30 PM	G	Harbor C, Hyatt	The Classroom “Without” Walls (p. 78)
5:00–6:00 PM	7–12	International 3, Hilton	The 50 Best Physics Demos to Do Before You Die... (p. 80)
5:00–6:00 PM	6–12	Pacific 2, Hilton	Lotions, Potions, and Scrubs: Polymer Science in Cosmetics (p. 80)
5:00–6:00 PM	7–12	Regency Blrm. A, Hyatt	Tiny Science to Teach Big Ideas (p. 80)
5:00–6:00 PM	6–12	Atlantic 2, Hilton	Cool Is Hot: The Electromagnetic Spectrum, IR Radiation, and IR Astronomy (p. 82)
5:00–6:00 PM	6–C	Seaview Blrm. B, Hyatt	Black Holes Suck (p. 82)
5:00–6:00 PM	3–8	Capri, Renaissance	Inquiry in Action: Investigating Matter Through Inquiry (p. 83)
5:00–6:00 PM	7–8	Sicilian Blrm., Renaissance	The 5Es (Engage, Explore, Explain, Elaborate, and Evaluate) and the NGSS for Middle School (p. 83)

Friday

8:00–9:00 AM	8–12	International 2, Hilton	Fabulous Physics (with Cheap Stuff)! (p. 87)
8:00–9:00 AM	7–8	Pacific 1, Hilton	NARST Session: Efficacy of Two Types of Multiple-Choice Items to Diagnose Student Understanding in the Classroom (p. 87)
8:00–9:00 AM	6–12	Pacific 2, Hilton	Tsunami! Understanding the Generation, Propagation, and Hazards of Tsunamis (p. 87)
8:00–9:00 AM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Problem-Solving with Think-Alouds (p. 88)
8:00–9:00 AM	5–12	Regency Blrm. E, Hyatt	Working the NGSS into Your Curriculum Through Ocean Exploration (p. 89)
8:00–9:00 AM	6–8	104C, Convention Center	ACS Middle Level Session: Matter: Solids, Liquids, and Gases (p. 89)
8:00–9:00 AM	K–8	Centennial Salon D, Westin	Hands-On STEM (p. 90)
8:00–9:00 AM	9–12	104B, Conv. Center	Active Chemistry and Active Physics: Project-Based Inquiry Science™ That Engages Students (p. 91)
8:00–9:30 AM	7–C	103C, Conv. Center	Chemistry and Biology with Vernier (p. 92)
8:00–10:00 AM	9–12	International 4/5, Hilton	ACS Session: Energy in Chemistry: A Macroscopic View (p. 93)
8:00–10:00 AM	K–12	Shoreline B, Hyatt	Crystals and the Structure of Matter (p. 93)
9:30–10:30 AM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Coming Soon to a Dwarf Planet in Your Solar System—NASA's Dawn Mission to the Asteroid Belt (p. 95)
9:30–10:30 AM	4–9	Naples III, Renaissance	Modeling and the Particle Nature of Matter (p. 97)
9:30–10:30 AM	6–8	104C, Convention Center	ACS Middle Level Session: Changes of State—Evaporation and Condensation (p. 98)
9:30–10:30 AM	K–8	Centennial Salon D, Westin	Think and Build (p. 98)

Schedule at a Glance Physical Science

9:30–10:30 AM	9–12	101A, Conv. Center	Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology (p. 99)
10:00–11:15 AM	6–8	102C, Conv. Center	Waves, Energy, and Color (p. 99)
10:00–11:15 AM	9–12	104A, Conv. Center	Flinn Scientific Presents Exploring Chemistry™: Connecting Content Through Experiments (p. 100)
10:00–11:15 AM	6–C	202C, Conv. Center	Molecular-Level Visualization and the NGSS: Promoting Conceptual Understanding (p. 100)
12 Noon–1:15 PM	9–12	101A, Conv. Center	Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software! (p. 101)
12 Noon–1:15 PM	9–12	201B, Conv. Center	Protein Modeling: A Science Olympiad Event and the NGSS (p. 102)
12 Noon–1:15 PM	4–8	203C, Conv. Center	Nasco SciQuest® Kits for Your Classrooms (p. 103)
12:30–1:00 PM	6–C	Seaview Blrm. A, Hyatt	AAPT Session: Physics in Literature (p. 104)
12:30–1:30 PM	9–12	International 3, Hilton	Solids: The Neglected “State” of Chemistry (p. 105)
12:30–1:30 PM	6–12	International 2, Hilton	Making Waves: Seismic Waves Activities and Demonstrations (p. 106)
12:30–1:30 PM	3–8	Regency Blrm. A, Hyatt	Developing Models to Make Student Thinking Visible and Revisable (p. 108)
12:30–1:30 PM	6–9	Naples III, Renaissance	Eureka! Causal Thinking About Molecules and Matter (p. 108)
12:30–1:30 PM	6–8	104C, Convention Center	ACS Middle Level Session: Density—A Molecular View (p. 108)
12:30–1:30 PM	3–12	Centennial Salon A, Westin	A Problem of Scale (p. 108)
12:30–2:30 PM	9–12	International 4/5, Hilton	ACS Session: Energy in Chemistry: A Particulate View (p. 109)
2:00–2:30 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Social Homework (p. 110)
2:00–3:00 PM	8–12	International 2, Hilton	Electricity Projects (p. 111)
2:00–3:00 PM	8	Naples III, Renaissance	Mars, <i>Common Core</i> , Modeling, and Your Classroom (p. 112)
2:00–3:00 PM	6–8	104C, Convention Center	ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (p. 113)
2:00–3:00 PM	6–8	Centennial Salon A, Westin	A Beautiful Romance! Primarily Physical Science and the CCSS (p. 113)
2:00–3:15 PM	2–6	203C, Convention Center	It’s Elementary—Light and Optics for Kids (p. 115)
2:00–3:30 PM	7–C	103C, Convention Center	Physics and Physical Science with Vernier (p. 115)
2:30–3:00 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Physical Science Course for Elementary School (p. 116)
3:00–5:00 PM	6–C	International 4/5, Hilton	ACS Session: Energy in Chemistry: An Atomic View (p. 116)
3:30–4:00 PM	9–C	Regency Ballroom F, Hyatt	“Run the Gantlet!” Challenge-based Lab Practicum for Your Physics Class (p. 116)
3:30–4:00 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: The Best Electricity and Magnetism Demos You Aren’t Doing (p. 116)
3:30–4:30 PM	7–12	Shoreline B, Hyatt	Bring the Science of Cars into the Classroom (p. 118)
3:30–4:30 PM	7–12	International 3, Hilton	Molecules, Energy Transfer, and Microbes to Promote Critical Thinking and Bridge Disciplines (p. 119)
3:30–4:30 PM	8–C	Regency Ballroom D, Hyatt	How Long Does It Take to Get to Mars? (p. 120)
3:30–4:30 PM	6–8	104C, Convention Center	ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences (p. 120)
4:00–4:30 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Transformer Basics and How “Wall-Wart” Plugs Waste Energy (p. 120)
4:00–5:15 PM	6–12	102 A/B, Conv. Center	STEM and NGSS Inquiry in Chemistry—Effective, Efficient, Economical (p. 121)
4:00–5:15 PM	6–12	102C, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 121)
4:00–5:15 PM	4–12	203 A/B, Conv. Center	STEM Engineering for Middle School and High School with TeacherGeek Rubber Band Racer (p. 122)
5:00–5:30 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: Recycled Goods as Inspiration in Learning (p. 122)
5:00–6:00 PM	7–12	Atlantic 2, Hilton	10 Activities To Invigorate Your Physics Classes (p. 123)
5:00–6:00 PM	5–12	Regency Ballroom E, Hyatt	Stellar Evolution—From Formation to Destruction (p. 124)
5:00–6:00 PM	K–12	Seaview Ballroom B, Hyatt	Developing Models That Have Explanatory and Predictive Power
5:00–6:00 PM	6–8	104C, Convention Center	ACS Middle Level Session: Chemical Change—Breaking and Making Bonds (p. 125)

Schedule at a Glance Physical Science

5:30–6:00 PM	6–C	Seaview Ballroom A, Hyatt	AAPT Session: High-Schoolers at UCLA’s Plasma Lab (p. 125)
5:30–6:00 PM	7–C	Shoreline B, Hyatt	NASA’s SOFIA Is Flying! STEM Applied in the Air, Classroom, and the Ambassador Program (p. 126)

Saturday

8:00–9:00 AM	8–12	Seaview Ballroom A, Hyatt	Physics Demonstrations and Labs: Motion and Forces (p. 127)
8:00–9:00 AM	3–8	Regency Ballroom C, Hyatt	Practicing Evidence-based Argumentation (p. 128)
8:00–9:00 AM	3–12	Seaview Ballroom B, Hyatt	Juice from Juice (p. 128)
8:00–9:00 AM	7–C	202C, Convention Center	Goo-tonian: Connecting Non-Newtonian Fluids to the NGSS (p. 129)
9:30–10:00 AM	7–12	Shoreline A, Hyatt	Creative Writing in the Science Classroom (p. 130)
9:30–10:30 AM	9–12	Seaview Ballroom A, Hyatt	Using Modeling Activities in the High School Chemistry Class (p. 132)
10:00–10:30 AM	8	Regency Ballroom A, Hyatt	<i>The Mighty Atom</i> : Integrating Close Reading Strategy with the CCSS and the NGSS (p. 133)
10:00–11:15 AM	6–12	102 A/B, Conv. Center	On Light and Color: A Most Illuminating Workshop and Demo Show (p. 133)
10:00–11:15 AM	6–8	102C, Conv. Center	Waves, Energy, and Color (p. 133)
11:00 AM–12 Noon	9–12	Shoreline B, Hyatt	Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (p. 134)

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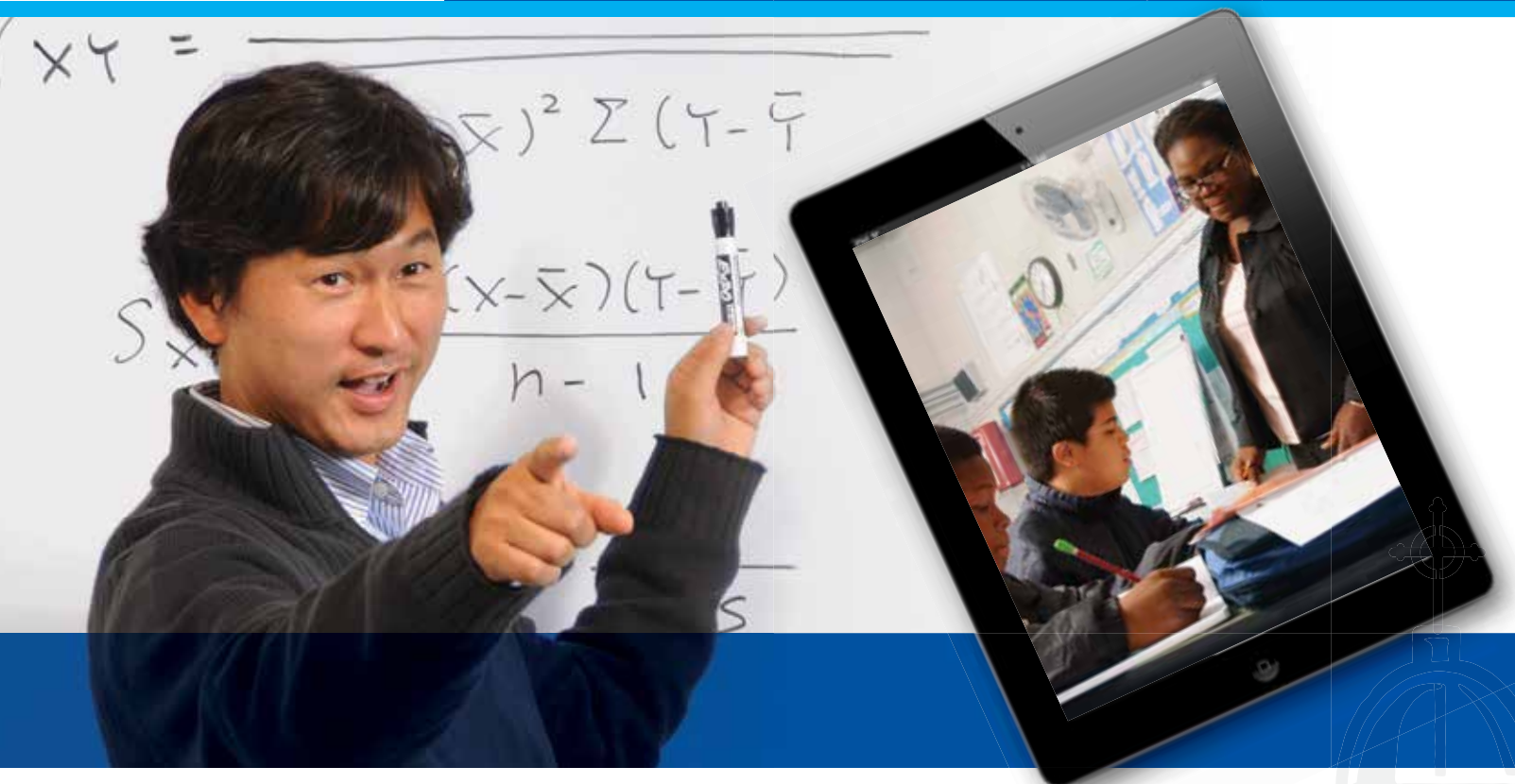
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