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STORE HOURS

Wednesday, Nov. 29 4:00 PM - 7:00 PM Thursday, Nov. 30 Friday, Dec. 1 Saturday, Dec. 2

7:30 AM - 5:30 PM 7:30 AM - 4:00 PM 8:00 AM - 12:00 PM



We have the latest resources for science teachers, including new releases and bestsellers!

iss - Next Uer science Standards

- Purchase fun NSTA-branded gearunique hats, shirts, mugs, and more.
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- Ask about our NSTA gift cards great gift idea!

Download the conference app or follow #NSTA17 for special giveaways, contests, and more throughout the conference!

Visit www.nsta.org/store to make a purchase today, or call 800-277-5300.





Inspired by the Inductees of the National Inventors Hall of Fame, our preschool through 9th grade programs are designed to impact young minds through fun, hands-on activities infused with the spirit of innovation!

Come visit us at Booth #218!



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NSTA 2017 Area Conference on Science Education Celebrate Science: Inspire, Integrate, Innovate

New Orleans, Louisiana • November 30–December 2, 2017

New Orleans, LA Area Conference November 30 - December 2, 2017

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National Science Teachers Association

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

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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)



Left to right, Jean May-Brett, Nathan Cotten, and Shannon Lafont

We welcome you to New Orleans and the 2017 NSTA Area Conference "Celebrate Science: Inspire, Integrate, Innovate." The conference strands of Inspire Our Young Learners, Integrate Science Education for ALL, and Innovate Science Education for Tomorrow, as well as our keynote and featured speakers will deliver a rich educational experience that will be matched by the wonderful food and music we hope you encounter before departing for home. With Louisiana science teachers implementing a new set of standards during this academic year, it is an opportune time for us to open our doors and have science education stakeholders join us for discussions on best practices, lessons learned in both formal and informal settings, policy issues, and advocacy strategies related to STEM learning for ALL students.

Whether you are an NSTA conference first-timer or a veteran conference participant, the conference speakers, workshops, sessions, field experiences, meetings, and Exhibit Hall are guaranteed to deliver a wide array of instructional ideas and strategies with a focus on being re-energized. Participants who attend the specially planned Chemistry, Engineering, and Physics Day events are assured of leaving with a wealth of information, ideas, and contacts. We believe you will leave this conference experience wishing there was at least one more day for networking and sharing.

New Orleans is an exciting city. We take great pride in our culture, food, music, STEM community resources, and local environment. Hopefully, many of you will find time to visit our internationally known National World War II Museum; our highly ranked Audubon Nature Institute Aquarium, Insectarium, and Zoo; and the ever-growing Louisiana Children's Museum.

Welcome to our celebration of science. Laissez les bons temps rouler!

2017 New Orleans Area Conference Committee Leaders Jean May-Brett, Shannon Lafont, and Nathan Cotten

New Orleans Conference Committee

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

Conference Chairperson

Jean May-Brett STEM Educator and NSTA/LSTA State Coordinator for Science Matters 1627 Taylor St. Kenner, LA 70062 *jam05@bellsouth.net*

Program Coordinator

Shannon Lafont Grades 7 and 8 Teacher Virtual Academy of Lafourche 2846 Bayou Blue Rd. Houma, LA 70364 shannonlafont75@gmail.com

Local Arrangements Coordinator

Nathan Cotten STEM Curriculum Specialist Terrebonne Parish School District 201 Stadium Dr. Houma, LA 70360 nathancotten@tpsd.org

Local Arrangements Committee

Guides Manager Cathie Smith Jefferson Parish Public Schools Harvey, LA

Volunteers Manager Wendy DeMers Orleans Parish Schools New Orleans, LA

Manager of Services for People with Special Needs Paulette Perrin St. Tammany Parish Public Schools Covington, LA

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Strand Leader: Innovate Science Education for Tomorrow Warren Bernard Retired Educator New Orleans, LA

Strand Leader: Integrate Science Education for ALL Cathi Cox-Boniol Lincoln Parish Schools Ruston, LA Strand Leader: Inspire Our Young Learners Jennifer C. Williams Isidore Newman School New Orleans, LA

Program Representatives

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Susannah Craig Southern University and A&M College Baton Rouge, LA

Tricia LeBlanc Audubon Nature Institute New Orleans, LA

Patrice Mire Vermilion Parish School Board Abbeville, LA

Conference Advisory Board Liaison Mary Gromko NSTA Retiring President Colorado Springs, CO

President's Welcome



Welcome to the NSTA Area Conference in New Orleans, Louisiana. New Orleans (NOLA), or better known as the "Big Easy" is one of the most culturally and historically rich cities in the United States. New Orleans is hailed as the melting pot of culture, food, and music! Be sure to explore the various districts within the city, The Garden District and French Quarter are amazing! A visit to Bourbon Street for music, food,

and fun and Café Du Monde for beignets with chicory coffee are essential for your visit to this great city.

The conference team has worked hard to bring you great speakers and sessions for this conference. The conference theme is *Celebrate Science: Inspire, Integrate, Innovate.* Along with this theme, the conference committee has planned the conference around three strands that explore topics of current significance.

The goal of the *Inspire Our Young Learners* strand is to engage our young learners in science by creating formal and informal education experiences that build upon natural inquisitiveness and use inquiry to help them understand their world. Exploring science is one of the many joys of childhood. However, many of our young students are given limited opportunities to learn science and, therefore, are missing the wonder and excitement of understanding the world around them.

The *Integrate Science Education for ALL* strand will explore ways educators can use the newest standards and research to reach ALL students, including English language learners, special education students, gifted and talented students, and underrepresented minorities. Research has shown that only a small number of students are interested in pursuing degrees or qualifying for jobs in the STEM fields. It is clear that to benefit our economy and society, our priority should be on educating and encouraging more students from all races, genders, abilities, nationalities, and socioeconomic statuses to study science.

The Innovate Science Education for Tomorrow strand expands participants' understanding of how to foster students' critical-thinking skills and facilitate their future problem solving. Students are engaged in the use of technology, but their understanding of the science and engineering behind the function of that technology is limited. PreK– 16 science instruction should emphasize the application of science to all career fields, both in theory and in practice.

I encourage you to take full advantage of this area conference to improve your knowledge on making science accessible for all students, not only through these selected strands, but also through the other featured speakers, sessions, professional learning opportunities, as well as the Exhibit Hall. Take time to find new colleagues and share ideas that you bring to this conference with others. I am sure that you will agree with me that NSTA provides a unique and exciting opportunity to hone your teaching craft and create new ideas to use with your students. I look forward to seeing you here in New Orleans!

> David T. Crowther 2017–2018 NSTA President

Sponsors and Contributors to the New Orleans Conference

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

Sponsors

Louisiana Science Teachers Association Southwest Airlines Texas Instruments Vernier Software & Technology

Contributors

American Association of Physics Teachers (AAPT) with the LIGO Science Education Center American Chemical Society Education Division American Society for Engineering Education Audubon Nature Institute Louisiana Children's Museum The National WWII Museum











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. Our conference preview is a smaller size and includes highlights for our three area conferences. As an added bonus, this new preview is more environmentally friendly, as it dramatically reduces both our print and mailing requirements.

Online Conference Information and Personal Scheduler

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

Final Conference Programs by E-Mail/Conference App

All conference pre-registrants are sent an electronic version (PDF) of the final conference program by e-mail approximately one week 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 printed on recycled paper whenever possible. In addition, Walsworth Inc., the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth works to reduce and recycle waste, use reduced- or low-VOC chemicals, increase the recycled content of raw materials, and use soy- or vegetable-based inks. Walsworth has also obtained certifications with the Sustainable Forest Initiative (SFI) and the Forest Stewardship Council® (FSC) to ensure paper products are being harvested from environmentally responsible sources.

Environmentally Friendly Exhibition Practices

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

New Orleans Convention Center's Green Practices

The Convention Center is committed to reducing the environmental impact of operations and services by providing the following:

- Energy Conservation. Along with using energy-efficient lighting, the Convention Center uses a Computerized Energy Management System in all public areas and meeting spaces.
- Water Conservation. Low-flow faucets are installed in the restrooms. Also, irrigation systems are equipped with rain sensors to prevent excessive use of water resources.
- Clean Air Practices. Environmentally preferable cleaners are used whenever possible. All air handler units and coils undergo an annual maintenance. In addition, preventative maintenance and testing is regularly performed on boilers, diesel fire pumps, and diesel generators.

"Go Green" at the New Orleans Conference!

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

Registration, Travel, and Hotels

Meeting Location and Times

The conference hotels are Hilton New Orleans Riverside (*headquarters*), Embassy Suites by Hilton New Orleans Convention Center, Hampton Inn & Suites New Orleans Convention Center, Hyatt Place New Orleans Convention Center, and Omni Riverfront Hotel. Conference registration, exhibits, the NSTA Hub, the NSTA Science Store, exhibitor workshops, and many sessions will be located at the New Orleans Ernest N. Morial Convention Center. The conference will begin on Thursday, November 30, at 8:00 AM, and end on Saturday, Dec. 2, at 12 Noon.

Registration

Registration is required for participation in all conference activities and the exhibits. The lapel badge e-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.

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

Wed., Nov. 29	5:00-7:00 PM
Thu., Nov. 30	7:00 AM-5:00 PM
Fri., Dec. 1	7:00 AM-4:00 PM
Sat., Dec. 2	7:30 AM-12 Noon

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

Purchasing Ticketed Events

The New Orleans 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 page 30 for details. Note that some events may have required advance registration.



Ground Transportation to/from Airport

A variety of ground transportation options are available to and from the Louis Armstrong New Orleans International Airport. Airport Shuttle discounted rates to and from the Central Business District hotels are \$20 one way or \$40 round-trip (*rates differ if booked less than* 24 hours before arrival or on-site at airport). Visit bit.ly/2vXgGzU for shuttle details. A fixed taxi rate of \$33 (one to two people) is charged from the airport to most areas of New Orleans. For parties of more than two, the fare is \$14 per person.

Getting Around Town

You'll find that many of New Orleans's hotels, attractions, restaurants, and nightlife are located within comfortable walking distance of each other. If you prefer not to walk, the Regional Transit Authority (RTA) operates local bus and streetcar routes. Call the RTA at 504-248-3900 or visit *www.norta. com* for more information.

Parking

Lots F and G of the Convention Center are available for public parking for \$15/day for personal vehicles and \$25/day for truck/ oversized vehicles with no in and out privileges. *Parking rates subject to change. Visit *bit.ly/lee3w38* to access a New Orleans area parking map.

In addition, conference parking is available in the "Whale" Lot across the street from The Great Hall of the Convention Center for \$15 per entry for up to 12 hours, no overnight parking. Tickets must be validated to receive the \$15 rate. Please visit the Validation Desk in the NSTA Registration Area of Hall H.

Guest parking at the Hilton has been discounted at \$30. See hotel staff for details.



Registration, Travel, and Hotels

Discounted Rental Cars

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

Enterprise 800-593-0505 16AH230

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

Airlines

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



-Photo courtesy of New Orleans Convention & Visitors Bureau



Registration, Travel, and Hotels



- Hilton New Orleans Riverside (Headquarters Hotel)
 Poydras St.
- 2. Embassy Suites by Hilton New Orleans Conv. Center 315 Julia St.
- 3. Hampton Inn & Suites New Orleans Conv. Center

1201 Convention Center Blvd.

- 4. Hyatt Place New Orleans/Conv. Center 881 Convention Center Blvd.
- **5. Omni Riverfront Hotel** 701 Convention Center Blvd.

Limited shuttle service will be provided to the Convention Center for two hotels only (Hilton New Orleans Riverside and Omni Riverfront Hotel). The other three hotels are within walking distance. Schedule details will be provided on-site at each hotel.

If you have questions or concerns regarding your housing, please contact Orchid.Events (during business hours) Monday through Friday, 8:00 AM–7:00 PM CT at 877-352-6710 (toll-free) or 801-505-4611, or e-mail *help@orchid.events.* Available Monday–Friday, 8:00 AM–7:00 PM CT. After hours and on Saturday, call 801-243-4476.

Conference Resources



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 e-mailed to you before the conference, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. Maps of the Exhibit Hall and meetings rooms will be accessible via our Conference app (see page 11). See page 103 for a complete list of exhibitors and contact information.

Exhibit Hall Hours. Located in Hall H, exhibits will be open for viewing during the following hours:

Thu., Nov. 30	11:00 AM-5:00 PM
Fri., Dec. 1	9:00 AM-4:00 PM
Sat., Dec. 2	9:00 AM-12 Noon

Did you know that NSTA offers Exclusive Exhibits Hall and Exhibitor Workshop hours?

-Photo courtesy of Mike Weiss

During the hours listed below, there are no teacher sessions scheduled and it's a perfect time to visit the exhibits or engage in an exhibitor workshop and discover all the products and services companies and organizations have to offer.

Thu., Nov. 30	11:00 AM-12:30 PM
Fri., Dec. 1	3:00-4:00 PM

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

Exhibitor Workshops. Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See page 114 for a complete listing of exhibitor workshops.

NSTA Science Store

Visit us at the NSTA Science Store to explore a wide selection of resources and gear you'll love! You'll find hundreds of books that uniquely blend accurate science content with sound teaching strategies for science educators of all grade ranges and disciplines. Not only do we have books covering a wide range of topics to help you sharpen your content knowledge and hone your teaching methods, we also carry a complete line of NSTA gear you can't find anywhere else-such as T-shirts, mugs, and classroom supplies. We offer convenient free shipping for book purchases to addresses within the United States when you place your order on-site at the conference. *Note: Free shipping is not offered to international addresses or for NSTA gear purchases. We've lined up a number of unique opportunities for conference-goers:

- Exclusive author signings and meetand-greet opportunities
 - Our latest books-including Argument-Driven Inquiry in Physics, Volume 1: Mechanics Lab Investigations for Grades 9-12; Beyond the Egg Drop: Infusing Engineering Into High School Physics; Eureka! Grade 3-5 Science Activities and Stories; Toward High School Biology; and Picture-Perfect STEM Lessons, K-2 and 3-5: Using Children's Books to Inspire STEM Learning-and our newest children's books from NSTA Kids, such as When the Sun Goes Dark, Next Time You See a Cloud, and Notable Notebooks: Scientists and Their Writings
- "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
- Daily book and gear specials, product giveaways, and more.

Conference Resources

NSTA Hub

Come by the NSTA Hub located in the lobby of Hall H to meet NSTA staff and board members to learn more about NSTA membership and become part of the group that is crafting the future of science education. Win great prizes, including airfare on Southwest Airlines to the 2018 NSTA Atlanta National Conference on Science Education. We'll be handing out our new #ONLYatNSTA tweetshirts—come by and get one while supplies last!

Meet the Presidents and Board/Council

Be sure to stop by Friday from 2:45 to 3:30 PM at the entrance to Hall H 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!

One lucky person who attends this event will be eligible to win a **\$100 gift certificate to the NSTA Science Store.** Must be present to win. Drawing will take place at 3:20 PM.

Wi-Fi in Convention Center

Complimentary Wi-Fi is available in three distinct areas of the Convention Center:

- The Atrium Café—Lobby of Hall C
- The Food Court—Lobby of Hall F
- Jazz City Café—Lobby of Hall J

Click on the Service Set Identifier (SSID): **MCCNOFREEWIFI** to access.

Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in at the Presenters/ Presiders check-in counter in the Registration Area.

Visitor Information and Restaurant Services

On The Town has been handling on-site restaurant and entertainment services for visitors to New Orleans for many years. Want to take a look at restaurant menus and make a reservation? Need visitor information? Want to book a shuttle back to the airport? Look no further than the On The Town concierge help desk in the lobby outside of Hall H of the Convention Center. They are available to help you during NSTA registration hours.

Wed.	5:00-7:00 PM
Thur.	9:00 AM-5:00 PM
Fri.	9:00 AM-4:00 PM
Sat.	9:00 AM-12 Noon

LSTA Counter

The Louisiana Science Teachers Association (LSTA) counter is located in the lobby of Hall H. The counter will have membership forms, information about the LSTA Annual Business and Awards Meeting at the WWII Museum STEM Gallery, LSTA apparel, and news about science activities and issues in Louisiana. Stop by to say hello, learn how we can keep you up to date on the current science/STEM—related happenings in our state, and pick up your commemorative item!

The NSTA Conference App

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

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

First Aid Services/Mothers Room

The First Aid room is located outside Hall H, in Medical Services Office 3. In an emergency, calls can be directed to the Public Safety dispatch at 504-582-3040, who will radio into the Medical Station.

A Mothers Room is located outside Hall H in the HSC Storage room. See the NSTA Registration Desk for entry/key for the Mothers Room.

Lost and Found

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



-Photo courtesy of National Park Service

Guided walks and other ranger programs are offered at the Barataria Preserve on a regular basis.

Conference Resources

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 lastminute 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 room:

• Show Office H117, Convention Center (located in Exhibit Hall H)

Business Services

Located in front of Hall F inside the Convention Center, the UPS Store offers a variety of services, including photocopying, scanning, faxing, use of computer work stations, and same-day shipping. During the week of the convention, hours will be

Thu.	9:00 AM-5:30 PM
Fri.	9:00 AM-5:30 PM
Sat.	9:00 AM-3:00 PM

For more information, please call 504-670-8941 or e-mail *store6216@theups store.com*.

The FedEx Office Hilton Riverside offers printing, shipping, freight and pallet service, office supplies, and more. For more infomation, contact 504-581-5892. Hours of operation are:

> Mon.-Fri.: 7:00 AM-7:00 PM Sat.: 8:00 AM-3:00 PM Sun.: 10:00 AM-5:00 PM

Graduate Credit Opportunity

Earn one (1) or two (2) graduate-level credit/s in professional development through Dominican University of California (*dominicancaonline.com*) course #EDUO 8014. To obtain credit/s, you must be registered for the 2017 New Orleans Area Conference, complete the required assignments, and pay a fee of \$95 for one credit or \$190 for two credits. An NSTA transcript is also required.

Deadline is **January 6, 2018.** For complete details, visit *bit.ly/2rZhaEQ*.

Online Session Evaluations and Tracking Professional Development

All attendees can evaluate sessions online while simultaneously tracking their professional development certification.

Help NSTA's **GREEN** efforts by visiting the conference session browser to complete session evaluations online, November 29–December 2, 2017. During the conference, session evaluations can be completed on the computers at the Presenters/ Presiders check-in counter in the Registration Area. **And this year, we're giving away an Apple iPad mini 4 Wi-Fi tablet to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

To evaluate a session, attendees should follow these steps:

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

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

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

Beginning January 3, 2018, an attendee can view his or her transcript at the NSTA Learning Center *(learningcenter.nsta.org)* by first logging on and then clicking "My Profile" under the Welcome. Here you'll find a "Certificates" tab, which you can use to access your transcript. 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.



tanks, and trucks. In the Arsenal of Democracy, you can learn about manufacturing and the Manhattan Project, plus STEM stories throughout *The Road to Tokyo* and the *Road to Berlin*.





-Photo courtesy of Louisiana Children's Museum

New Orleans Ernest N.

First Floor



Morial Convention Center



Second Floor



CITYSIDE MEETING ROOMS

Morial Convention Center



Conference Resources • Headquarters Staff

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Content Division

David Beacom, Associate Executive Director and Chief Content Officer Emily Brady, Executive Administrator/Editor, NSTA Recommends

ART AND DESIGN

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NS7A Mission Statement

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

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National Conferences on Science Education

Atlanta, Georgia March 15-18, 2018

St. Louis, Missouri April 11-14, 2019

Boston, Massachusetts April 2–5, 2020

Chicago, Illinois April 8-11, 2021

Houston, Texas March 31-April 3, 2022

7th Annual STEM Forum & Expo, hosted by NSTA

Philadelphia, Pennsylvania—July 11-13, 2018

All cities are subject to change pending final negotiation.

Area Conferences on Science Education

2018 Area Conferences

Reno, Nevada—October 11-13 National Harbor, Maryland-November 15-17 Charlotte, North Carolina—November 29-December 1

2019 Area Conferences

Salt Lake City, Utah—October 24-26 Cincinnati, Ohio-November 14-16 Seattle, Washington—December 12–14

2020 Area Conferences

Pittsburgh, Pennsylvania—October 29-31 New Orleans, Louisiana—November 19-21 Phoenix, Arizona—December 10-12

2021 Area Conferences

Portland, Oregon—October 28-30 National Harbor, Maryland-November 11-13 Los Angeles, California—December 9-11

Share Your Ideas! NSTA's CONFERENCES ON SCIENCE EDUCATION Proposal Deadline:

2

R N CI

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

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

7th Annual STEM Forum &	
Expo, hosted by NSTA	

Philadelphia, PA.....July 11-13 (2018)

018 Area Co	onferences	Proposal Deadl
eno, NV	October 11–13	1/16/201
ational Harbor, MI	DNovember 15–17	
narlotte, NC	November 29–Dec	ember 1

2019 National Conference

St. Louis, MO April 11-14

Proposal Deadline: 4/16/2018

12/4/2017

ne:





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Conference Program • Highlights



-Photo courtesy of New Orleans Convention & Visitors Bureau

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 36 for details.

Thursday, November 30 First-Timer Conference Attendees' Orientation 36 8:00-9:00 AM (Is This Your First NSTA Conference?) 9:15-10:30 AM 11:00 AM-5:00 PM Exhibits (Exclusive exhibit/exh. workshop hours: 11:00 AM-12:30 PM) ...44 2:00-3:00 PM Friday, December 1 8:00 AM-1:30 PM Middle School Chemistry Day 28 8:00 AM-2:30 PM 8:00 AM-3:00 PM 8:00 AM-3:00 PM 9:00 AM-4:00 PM Exhibits (Exclusive exhibit/exh. workshop hours: 3:00-4:00 PM) 67 9:30-10:30 AM 12:30-1:30 PM 2:45-3:30 PM Saturday, December 2 9:00 AM-12 Noon 9:30-10:30 AM

Win a round-trip Southwest ticket to the NSTA National Conference on Science Education in Atlanta.



Thanks to the generosity of

Southwest Airlines

we're giving away three round-trip tickets on Southwest Airlines for educators to attend the NSTA National Conference in Atlanta, March 15–18, 2018!



The drawings will be held at:

- 4:00 PM, Thursday
- 2:00 PM, Friday
- 10:00 AM, Saturday

Stop by the NSTA Hub for all the details! You need not be present to win.



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Inspire Our Young Learners

Exploring science is one of the many joys of childhood. However, many of our young students are given limited opportunities to learn science and therefore are missing the wonder and excitement of understanding the world around them. The goal of this strand is to engage our young learners in science by creating formal and informal education experiences that build upon natural inquisitiveness and use inquiry to help them understand their world. Young learners need quality learning experiences and activities that spark their curiosity, promote higher level thinking, and nurture a solid foundation in science. This strand will expose educators to instructional strategies that make connections between literacy and scientific concepts and build pedagogical knowledge of science teaching.

Integrate Science Education for ALL

All students need to be engaged in and have access to exemplary science classes, out-ofschool science activities, real-world work experiences, mentors, and other springboards to STEM careers. In order for the United States to remain a world leader and to advance our society, science educators need to empower students to create a future filled with scientific and technological advances. An urgency exists in the United States to develop a stronger workforce in the STEM fields. However, research has shown that only a small number of students are interested in pursuing degrees or qualifying for jobs in the STEM fields. It is clear that to benefit our economy and society, our priority should be on educating and encouraging more students from all races, genders, abilities, nationalities, and socioeconomic statuses to study science. This strand will explore ways for educators to use the newest standards and research to reach ALL students, including English language learners, special education students, gifted and talented students, and underrepresented minorities.

Innovate Science Education for Tomorrow

Students are often taught science concepts and current issues, but are rarely challenged to create innovative and practical solutions to real-world problems. Students are engaged in the use of technology, but their understanding of the science and engineering behind the function of that technology is limited. PreK–16 science instruction should emphasize the application of science to all career fields, both in theory and in practice. This strand expands participants' understanding of how to foster students' critical-thinking skills and facilitate future problem solving by students.

Conference Program • Conference Strands

Inspire Our Young Learners

Thursday, November 30

8:00-9:00 AM

Hidden in Plain Sight: Engaging Activities to Explore Camouflage for Young Learners

8:00–11:00 AM Short Course: Stretch Your Legs for Science! (SC-3: ticket required)

12:30-1:30 PM

Community Collaborative for Early Learning and Media: A New Model for Early Science Learning

2:00-3:00 PM

A River Story: A Collaborative Effort to Explore Cross-Curricular Connections to Earth Science Disciplinary Core Ideas for Second Graders

3:30–4:30 PM Project-Based Learning in an Early Elementary and Early Childhood Classroom

Friday, December 1

8:00–9:00 AM Sculpting, Building, and Movie-Making to Teach Astronomy

9:30–10:30 AM Fairy Tales of Science

11:00 AM-12 Noon

Engage and Amplify Enthusiasium in Engineering Design with Exceptional Literature

12:30-1:30 PM

Featured Presentation: A Sense of Wonder: Building on Young Learners' Natural Curiosity about Phenomena (Speaker: Carla Zembal-Saul)

Fly Me to the Moon

2:00-3:00 PM

Elementary Science with NOAA: Free K–5 Science Resources from the National Oceanic and Atmospheric Administration

Saturday, December 2

8:00–8:30 AM Inspiring and Capturing Environmentalism in Young Students

8:30-9:00 AM

Feet Wet, Hands Dirty: Engaging Students in Science Teaching and Learning with Stream Investigations

9:30-10:30 AM

Engineering Success! Exploring Engineering Practices in Your Elementary Classroom

11:00 AM-12 Noon

Story Starts to STEM: Using Children's Literature to Engage Young Students in STEM

Integrate Science Education for ALL

Wednesday, November 29

8:00 AM-4:15 PM Short Course: Marine Debris Education

and Prevention Program (SC-1: ticket required)

Thursday, November 30

8:00–9:00 AM How to Read Like Scientists!

12:30–1:30 PM Zombies Are Knocking on Your Classroom Door!

2:00-3:00 PM

Featured Presentation: STEM for All: Instructional Shifts to Promote Science and Language Learning (Speaker: Okhee Lee)

Using Evidence to Design Sails: Highlighting the Science, Mathematics, and Engineering Connections **3:30–4:30 PM** Integrating Social Studies and STEM: STEM Lessons That Support Learning About WWI and WWII

Friday, December 1

8:00–9:00 AM ELL Success in an AP Classroom

9:30–10:00 AM iPhones, Microscopes, and Protozoans

10:00–10:30 AM All Means ALL: Reaching Special Populations with Engaging, Meaningful Science Instruction

11:00 AM-12 Noon Explaining Scientific Phenomena Using Data and Evidence

12:30–1:00 PM STEM Approach to Learning in Biology

2:00-3:00 PM

Talk Moves to Encourage Academic Discourse in Elementary Science

Saturday, December 2

8:00-9:00 AM

Think STEM Is Just For The Next Innovator? Meet Some People Who Might Disagree with You On That

9:30-10:00 AM

Promising Research to Support Greater STEM Workforce Diversity

10:00–10:30 AM Science for ALL: Modeling in Secondary Science Classroom

11:00 AM-12 Noon

Using Mapping as a Global Language to Explore Community, Science, and the Environment

Innovate Science Education for Tomorrow

Wednesday, November 29

9:00 AM–4:15 PM Short Course: Crashing Black Holes, Gravitational Waves, and Your Classroom (SC-2: Ticket required)

Thursday, November 30

8:00–9:00 AM Students Assessing Community Vulnerability and Resilience

12:30–1:30 PM Implementing Engineering Design: If I Can Do It, You Can, Too!

2:00–3:00 PM Out-of-This-World Space Science

3:30–4:30 PM Feeding the World's Growing Population

Friday, December 1

8:00–9:00 AM Decoding Starlight—From Photons to Pixels to Images: Using Science and Art

9:30-10:30 AM

Featured Presentation: Learning from the Outside In: The Power of Place-Based Science Education (Speaker: Milton Chen)

Tech Ed in the Chemistry Classroom: Using Materials Science to Teach Design and Physical Science Concepts

11:00 AM–12 Noon Teaching Engineering, Motion, and Energy Through Rube Goldberg

12:30–1:30 PM Beams to Bridges: Graphing Stress-Strain Curves

2:00-2:30 PM

Environmental Monitoring with Drones

2:30–3:00 PM Creating a Coding Culture in the Classroom

Saturday, December 2

8:00-9:00 AM

A Unique Ice Core Investigation That Integrates the Three Dimensions of *NGSS* and STEM

Green STEM Your Way to a Green School

11:00 AM-12 Noon

Enabling K–6 Students to Understand the Impact of STEM and Integration of All Its Disciplines: Explorations and Problem Solving with Physical Structures and Everyday Household Objects



—Photo courtesy of The National WWII Museum

Designated by Congress as the official WWII museum of the United States, The National WWII Museum features expansive exhibits, including a new STEM Innovation Gallery, where you will see how WWII Innovators solved problems during the war. See page 13 for details about a special offer.

NSTA Press Sessions

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

Thursday, November 30

8:00-9:00 AM	Uncovering Grades 3–8 Students' Ideas About Water in the Earth System
12:30-1:30 PM	Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12
2:00-3:00 PM	Be a Winner: Get a Grant and Your Students Win, Too!
	EUREKA! Grade 3–5 Science Activities and Stories
3:30-4:30 PM	Teaching for Conceptual Understanding in Science
Friday, December 1	l
8:00–9:00 AM	Creating a STEM Culture for Teaching and Learning
9:30–10:30 AM	Uncovering Young Learners' Ideas About Science
11:00 AM-12 Noon	Argument-Driven Inquiry in Physics: Mechanics Lab Investigations for Grades 9—12
12:30-1:30 PM	Finding Science in the Outdoors and Through a Good Book



Saturday, Decembe	er 2
8:00-9:00 AM	From Flower to Fruit
9:30–10:30 AM	Argument-Driven Inquiry in Physical Science: Lab Investigations for Grades 6–8
11:00 AM–12 Noon	Uncovering Students' (and Teachers') Ideas in Science, Engineering, and Mathematics with Formative Assessment Probes and Techniques

Meetings and Networking Events

Friday, December 1

Saturday, December 2

 Discover the NGSS Train-the-Trainer Workshop By Separate Registration Camp, Hilton New Orleans Riverside8:00 AM–5:00 PM



Chemistry Day at NSTA

Sponsored by the American Chemical Society

Connecting Structure and Properties: Building and Applying Knowledge

For Grades 9–12

Friday, December 1, 8:00 AM–2:30 PM 390, Convention Center

Solutions to real-world problems involving chemistry are complex and explanations of relevant phenomena are multifaceted. A deep understanding of how the particle-level structures of substances affect their macroscopic properties is necessary if students are to develop explanations and design solutions to complex problems. Explore how to engage students in challenging problems and help them learn to collect and explore data in order to develop a scientific understanding of structure-property relationships. Demonstrate students' learning through relevantto-their-lives applications. This Day of Chemistry has been developed by the American Chemical Society High School Chemistry Professional Development Leadership Group.

8:00–10:00 AM	Relating Structure and Properties: Eliciting and Visualizing Student Initial Ideas
10:30 AM-12 Noon	Relating Structure and Properties: Constructing Science Ideas Through Exploring Data
12:30-2:30 PM	Relating Structure and Properties: Demonstrating Understanding Through Integration and Application of Knowledge

Middle School Chemistry Day

Sponsored by the American Chemical Society

Middle School Chemistry— Big Ideas About the Very Small

Friday, December 1, 8:00 AM–1:30 PM 397, Convention Center

Come to one, two, or as many sessions as you like during this day of activities and information for teaching and learning middle school chemistry. Staff from the American Chemical Society will introduce participants to the free online resource *middleschoolchemistry.com*. Each of the four 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	Solids, Liquids, Gases, and Changes of State
9:30–10:30 AM	The Water Molecule and Dissolving
11:00 AM-12 Noon	Chemical Reactions: Breaking and Making Bonds
12:30-1:30 PM	Chemical Reactions—Ocean Acidification

Conference Program • Special Programs



Engineering Day at NSTA

Sponsored by the American Society for Engineering Education Friday, December 1, 8:00 AM–3:00 PM 393, Convention Center

The American Society for Engineering Education 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 the 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

8:00–9:00 AM	Grasping with Straws: Build Your Own "Robot" Hand (Biomedical Engineering)
9:30–10:30 AM	Using Engineering and Coding to Make Science Stick
11:00 AM-12 Noon	Enhancing Prototyping with a Kit-Built Vacuum Former

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 *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)*.

12:30-1:30 PM	ASEE's K–12 Outreach—Engineering, Go For It (eGFI), Teach Engineering, Link
	Engineering, and the National Science Digital Library
2:00-3:00 PM	CARS! CARS! CARS! Force and Motion!

Physics Day at NSTA



Sponsored by the American Association of Physics Teachers with the LIGO Science Education Center

Friday, December 1, 8:00 AM–3:00 PM 388, Convention Center

The American Association of Physics Teachers offers a full day of physics content. Physics Day consists of interactive hands-on workshops and sessions covering important physics topics for today's world. Each of these workshops or sessions is organized by experienced science educators and designed to deal with innovative teaching methods or hard-to-express concepts that can be immediately applied in your classroom.

8:00-9:00 AM	Visible Spectrum Shadows	12:30-1:30 PM	Waves Here, There, and Everywhere:
9:30-10:00 AM	30 Activities in 30 Minutes		The Physics of Sound, Light, and Gravity
10:00-10:30 AM	Physics Teaching in Scotland	2:00-2:30 PM	Interference and LIGO Update
11:00–11:30 AM	Bringing Physics to Broadway: A Brief History of That Physics Show	2:30–3:00 PM	Simple Physics Demos
11:30 AM-12 Noon	PhysKids! Physics Demonstrations for Early Elementary		

Conference Program • Short Courses

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.



Marine Debris Education and Prevention Program (SC-1)

Alma Robichaux (alma@btnep.org) and Susan Bergeron (susan@btnep.org), Barataria-Terrebonne National Estuary Program, Thibodaux, La. Science Focus: ESS3, ETS1.B, INF, SEP1, SEP3, SEP4, SEP8 Level: Grades 10–College Date: Wednesday, November 29, 8:00 AM–4:15 PM Location: Off-site: Elmer's Island Ticket Price: \$45; preregistration only

In this off-site short course, take part in a citizen scientist program to determine the accumulation rate of marine debris on Elmer's Island, Louisiana. Participants will travel to Elmer's Island and learn how the students collect, record, and interpret data. Also, participants will engage in techniques to sample for microplastics in soil. Must be able to walk moderate distances as we will be walking roughly two miles. Be sure to dress for the weather (hat, sunscreen) and wear close-toed shoes. Lunch included. Travel time is 2 hours each way.

The bus will depart (load/unload) on Convention Center Blvd. at the Public Safety Drop-off (Bus Lane) at the entrance to Hall H of the Convention Center. We ask that the participants arrive at least 15 minutes prior to departure.

Crashing Black Holes, Gravitational Waves, and Your Classroom (SC-2)

William Katzman (wkatzman@ligo-la.caltech.edu), Kathy Holt (kholt@ligo-la.caltech.edu), and Tien Huynh-Dinh (tien@ligo-la.caltech.edu), LIGO Science Education Center, Livingston, La.

Science Focus: ESS1.A, ETS1.A, ETS1.B, ETS2.A, PS2.A, PS2.B, PS3.B, PS4.A, SEP2, SEP6, SEP8, CCC1, CCC3, CCC4

Level: Grades 4-College

Date: Wednesday, November 29, 9:00 AM-4:15 PM Location: Off-site, LIGO Science Education Center, Livingston, La.

Ticket Price: \$15; preregistration only

In 2015, the Laser Interferometer Gravitational-Wave Observatory (LIGO) Science Education Center detected gravitational waves from colliding black holes. Join us for this off-site short course at the observatory that detected those waves and engage with their science education center staff to see how they connect the cutting-edge science of gravitational waves with simple concepts such as pendulums, light, and vacuums. We will tour the observatory and visitor center and learn about some of the simple physical phenomena underlying the detection of gravitational waves. In addition, we will build a related hands-on science interactive project related to electricity and magnetism or gravity and energy to take back to our classrooms. Lunch is provided. For more information, visit *www. ligo.caltech.edu/LA/.* Travel time is 90 minutes each way.

NSTA wishes to thank the LIGO Livingston Science Education Center, operated by the California Institute of Technology, for sponsoring this short course.

The bus will depart (load/unload) on Convention Center Blvd. at the Public Safety Drop-off (Bus Lane) at the entrance to Hall H of the Convention Center. We ask that the participants arrive at least 15 minutes prior to departure.



-Photos courtesy of LIGO Science Education Center.





Stretch Your Legs for Science! (SC-3)

Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu*), The Cornell Lab of Ornithology, Ithaca, N.Y. Science Focus: LS, CCC, SEP Level: Grades 4–8 Date: Thursday, November 30, 8:00–11:00 AM Location: 387, Convention Center (plus walk outside Convention Center) Ticket Price: \$60

Would you like more exercise than running between sessions? Join this short course to experience the engagement of citizen science, while stretching your legs on a traveling bird count! Citizen science connects the public and professional scientists to answer questions that scientists can't answer alone. At the Cornell Lab, we welcome people to contribute data about the kinds, numbers, and behaviors of birds, which helps us understand and conserve them. After learning the basics, we'll head out for a 60–90 minute eBird count around the Convention Center and along the Mississippi. It might surprise you how many species we'll find in this urban environment! Take home resources to support classroom implementation. It is not required but recommended that you bring binoculars and a smartphone/tablet.

In addition, we will be raffling off five pairs of high-quality binoculars.

-Photo courtesy of BirdSleuth

Note: Dress for the weather and wear comfortable walking shoes. Must be able to walk 1 to $1\frac{1}{2}$ miles.

Science Standards from the GUT: Guidance for Unpacking with Teachers (SC-4)

Cathi Cox-Boniol (ccox@lincolnschools.org), Lincoln Parish School Board, Ruston, La. Missy Wooley (melissa.wooley@la.gov), Louisiana Dept. of Education, Ruston, La. Science Focus: GEN, NGSS Level: Grades K–12 Date: Friday, December 1, 2:00–5:00 PM Location: 282, Convention Center Ticket Price: \$28

New standards can be both overwhelming and confusing to educators, especially multidimensional standards that follow the format of the *NGSS*. In this short course, participants will engage in a deep dive into a new set of standards where they dissect and unpack the standards through highly engaging, interactive, and collaborative experiences that are designed to familiarize them with the overarching process of "unpacking." This will enable teachers to successfully return to their home district and state and lead other educators through a deep dive into a new set of standards. Please bring a tablet/laptop.

Association for Multicultural Science Education (AMSE)

President: Sharon Delesbore

Friday, December 1		
12:30–2:30 PM	George W. Carver Conversation Series on Diversity and Equity	389, Conv. Center
Association for Science President: Gillian Roehrig	e Teacher Education (ASTE)	
Thursday, November 30		
3:30-4:00 PM	Video Games Being Implemented Educationally in Physics and Teacher Preparation Classrooms	387, Conv. Center
Friday, December 1		
2:00-3:00 PM	Effective Science Practices in Early Childhood: Incorporating STEM and Addressing the <i>NGSS</i>	288, Conv. Center
Council for Elementary President: James T. McDonald	y Science International (CESI)	
Friday, December 1		
9:30–10:30 AM	Integrating Science and Literacy: Proven Strategies Developed from Evidence-Based Practices	288, Conv. Center
12:30-1:30 PM	Using Toys to Teach Physics	288, Conv. Center
National Association f President: Barbara A. Crawford	or Research in Science Teaching (NARST)	
Friday, December 1		
11:00 AM–12 Noon	Selecting Cognitively Demanding Science Tasks That Meet the <i>NGSS</i> Vision	288, Conv. Center
National Middle Level Co-Presidents: Terri Hebert and	Science Teachers Association (NMLSTA) d Mary Lou Lipscomb	
Thursday, November 30		
8:00–9:00 AM	Surf's Up	393, Conv. Center
Friday, December 1		
9:30–10:30 AM	Whirligigs: Watching, Wondering, Working Together—Wow!	265, Conv. Center
National Science Educa	ation Leadership Association (NSELA)	
President: Bob Sotak		
Friday, December 1		
9:30–10:30 AM	Tools for Science Leaders, Session 1	385, Conv. Center
11:00 AM-12 Noon	Tools for Science Leaders, Session 2	385. Conv. Center

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

NSTA 2017 New Orleans Area Conference Professional Learning Documentation Form

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

Beginning January 3, 2018, New Orleans transcripts can be accessed at the NSTA Learning Center (*learningcenter.nsta.org*) by logging on with your New Orleans Badge ID# and and first clicking on My Profile under the Welcome. Here you'll find a Certificates tab to access your transcript. Keep this form and use it to add the following activities to your New Orleans transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

First Name:	Last Name:	Badge ID#
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Evaluate sessions by accessing the conference session browser: www.nsta.org/neworleansbrowser. You will need your badge number to evaluate sessions. See page 12 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 an Apple iPad mini 4 Wi-Fi!

Sample Questions:

 I selected this set a. for immediate b. based on the r c. to improve my d. to improve my The session met 	ssion: classroom use. reputation of th personal pedag science conter my needs.	e speaker. gogical knowled nt knowledge.	3. 4. dge/skill. 6.	The information presented was clear and well organized. Safe practices were employed. The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press® sessions). The session should be repeated at another NSTA conference.
Sample Response I=Strongly Agree	es: 2=Agree	3=Neutral	4=Disagree	5=Strongly Disagree
Start Time	End Time	Activity	/Event Title	
Thursday, Nove Start Time	mber 30, 8: End Time) PM /Event Title	

We're giving an Apple iPad mini 4 to one lucky attendee who evaluates sessions that he or she attends. The more sessions you attend and evaluate, the more chances you have to win!

Friday, December I, 8:00 AM-6:30 PM

Start Time	End Time	Activity/Event Title
		·
Saturday, Dec	ember 2. 8:00	AM-12 Noon
Start Time	cember 2, 8:00	AM-12 Noon Activity/Event Title
Saturday, Dec Start Time	cember 2, 8:00 / End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	End Time	AM–12 Noon Activity/Event Title
Saturday, Dec Start Time	End Time	AM–12 Noon Activity/Event Title
Saturday, Dec Start Time	End Time	AM–I2 Noon Activity/Event Title
Saturday, Dec	End Time	AM–I2 Noon Activity/Event Title
Saturday, Dec Start Time	End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	Ember 2, 8:00 / End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	Ember 2, 8:00 / End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	Ember 2, 8:00 / End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	Ember 2, 8:00 End Time	AM–12 Noon Activity/Event Title
Saturday, Dec	Ember 2, 8:00 / End Time	AM-12 Noon Activity/Event Title
Three Dimensions of the Next Generation Science Standards (NGSS)

Science and Engineering Practices		Crosscutting Concepts	
SEP1	Asking Questions and Defining Problems	CCC1	Patterns
SEP2	Developing and Using Models	CCC2	Cause and Effect: Mechanism and Explanation
SEP3	Planning and Carrying Out Investigations	CCC3	Scale, Proportion, and Quantity
SEP4	Analyzing and Interpreting Data	CCC4	Systems and System Models
SEP5	Using Mathematics and Computational Thinking	CCC5	Energy and Matter: Flows, Cycles, and Conservation
SEP6	Constructing Explanations and Designing Solutions	CCC6	Structure and Function
SEP7	Engaging in Argument from Evidence	CCC7	Stability and Change
SEP8	Obtaining, Evaluating, and Communicating		
	Information		

Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science	Disciplinary Core Ideas in Earth and Space Science	Disciplinary Core Ideas in Engineering, Technology, and the Application of Science
 PSI: Matter and Its Interactions PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1.C: Nuclear Processes PS2: Motion and Stability: Forces and Interactions PS2.A: Forces and Motion PS2.B: Types of Interactions PS2.C: Stability and Instability in Physical Systems PS3: Energy PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces PS3.D: Energy in Chemical Processes and Everyday Life PS4: Waves and Their Applications in Technologies for Information Transfer PS4.A: Wave Properties PS4.B: Electromagnetic Radiation PS4.C: Information Technologies and Instrumentation 	 LS1: From Molecules to Organisms: Structures and Processes LS1.A: Structure and Function LS1.B: Growth and Development of Organisms LS1.C: Organization for Matter and Energy Flow in Organisms LS1.D: Information Processing LS2: Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS2.D: Social Interactions and Group Behavior LS3: Heredity: Inheritance and Variation of Traits LS3.A: Inheritance of Traits LS3.B: Variation of Traits LS4: Biological Evolution: Unity and Diversity LS4.A: Evidence of Common Ancestry and Diversity LS4.B: Natural Selection LS4.D: Biodiversity and Humans 	ESS1: Earth's Place in the Universe ESS1.A: The Universe and Its Stars ESS1.B: Earth and the Solar System ESS1.C: The History of Planet Earth ESS2: Earth's Systems ESS2.A: Earth Materials and Systems ESS2.B: Plate Tectonics and Large- Scale System Interactions ESS2.C: The Roles of Water in Earth's Surface Processes ESS2.D: Weather and Climate ESS2.E: Biogeology ESS3: Earth and Human Activity ESS3.A: Natural Resources ESS3.B: Natural Hazards ESS3.C: Human Impacts on Earth Systems ESS3.D: Global Climate Change	ETS1: Engineering Design ETS1: Defining and Delimiting an Engineering Problem ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution ETS2: Links Among Engineering, Technology, Science, and Society ETS2.A: Interdependence of Science, Engineering, and Technology ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World

Disciplinary Core Ideas



Ochsner Island on the east side of the Audubon Park is a prime spot for bird watching, especially water birds like this anhinga.

8:00–9:00 AM Presentations

WIDA Session: Doing and Talking Science with ELLs

(Grades 3-8)

269, Convention Center

Science Focus: GEN, NGSS

Rita MacDonald (*rkmacdonald@wisc.edu*), Wisconsin Center for Education Research, Madison

Join me for video examples and discussion on how to implement discourse facilitation moves to strengthen students' reasoning and complex language, in ways fully inclusive of English language learners.

Nurturing Curious Minds: Exploring the Science Encountered in the Young Child's World and Inspiring Sustained Curiosity, Interest, and Learning

(Grades P–6) 283, Convention Center Science Focus: GEN, NGSS

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

Join me as I model how to create opportunities for children to explore and manipulate materials and variables, and to examine the myriad examples of science in their everyday world, to ignite curiosity and a love of science.

Elementary STEM Response to Intervention

(Grades 3–5) 284, Convention Center Science Focus: ESS1, ETS1, ETS2.B, SEP1, SEP3, SEP8 Darrell McDaniel (@dmcdaniel5253; darrell.mcdaniel@ cpsb.org), Kristina Benoit (kristina.benoit@cpsb.org), Crystal Shelton Trail (crystal.shelton@cpsb.org), and Belinda Sargent (belinda.sargent@cpsb.org), Calcasieu Parish School Board, Lake Charles, La.

Get the details behind the pilot year of Elementary STEM RTI implementation in Louisiana's Calcasieu Parish School District. Hear how you can replicate and modify the program.

Polymers: Basics for the Science Classroom

(Grades 7–12)

Science Focus: PS1

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

288, Convention Center

Simple demonstrations, labs, and activities bring STEMrelevant polymers into your curriculum. Concepts include formation, classification, structure, and properties. *NGSS* correlations will be shared as well as a CD of activities/ information. 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 119, 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

NGSS

See page 33 for a complete list of the *NGSS* codes used in this program.

Strands

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



Inspire Our Young Learners

Integrate Science Education for ALL



The following icons will be used throughout this program.

NSTA Press® Sessions

3D 3-D Learning Forum Sessions

INF Sessions highlighting STEM learning experiences that occur in out-of-school environments.

Chemistry: A Bonding Experience

(Grades 9–12) 289, Convention Center Science Focus: PS1.B, PS3.C, CCC2, CCC4, CCC5, SEP2, SEP3, SEP4

Aliza Zivic (@alizamstein; *alizazivic*@u.northwestern.edu), Northwestern University, Evanston, Ill.

Joshua Rappuhn (*jrappuhn@district100.com*), Belvidere High School, Belvidere, Ill.

Experience a high school chemistry unit that values ALL students' voices by focusing on student-driven knowledge building and hands-on modeling to engage all learners.

NSTA Press® Session: Uncovering Grades 3–8 Students' Ideas About Water in the Earth System

(Grades 3–8) 291/292, Convention Center Science Focus: ESS2

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

Experience how formative assessment probes are used to uncover student ideas about freshwater, oceans, watersheds, the water cycle, and weathering and erosion and inform next steps for instruction.

Cycles, Sinks, and Solutions

(Grades P-5)

Science Focus: GEN, NGSS

(Grades 5–9) 299, Convention Center Science Focus: ESS3, ETS, PS, CCC, SEP

Christine Geerer *(jcgeerer@comcast.net)*, Parcells Middle School, Grosse Pointe Farms, Mich.

Measure school yard trees to calculate carbon sinks, create Excel graphs to analyze ice data, and engineer wind turbines in this *NGSS*-focused climate change unit.

8:00–9:00 AM Hands-On Workshops

Launching an Elementary Science Program

265, Convention Center

Kim Stilwell @kimstilwellNSTA; *kstilwell@nsta.org*), Manager, New Business Development, NSTA, Arlington, Va. Need ideas for where to start with building an elementary STEM program or enhancing your current program? The initial steps in building an elementary STEM program can be an overwhelming thought. I'll share success stories and how using *Picture-Perfect Science* resources became part of the foundation to a successful implementation. Leave with links to helpful resources and ideas on how to start an elementary STEM program.

College Science Teaching and Student Success

383, Convention Center

Science Focus: GEN, NGSS

(College)

Elizabeth Allan (eallan@uco.edu), University of Central Oklahoma, Edmond

Come join members of the College Science Teaching Committee to learn how to get involved with NSTA as we discuss the challenges of teaching science at the college level. Bring your strategies for student success and join us!

Authors Wanted! How to Get Published in an NSTA Journal

(General) Science Focus: GEN 385, Convention Center

266. Convention Center

Linda Froschauer (*fro2@me.com*), Field Editor, *Science & Children*, and 2006–2007 NSTA President, Pasadena, Calif. Patty McGinnis (*pattymcginnis1@gmail.com*), Field Editor, *Science Scope*, and Arcola Intermediate School, Eagleville, Pa. Meet with NSTA's journal editors to learn how to successfully prepare and submit an article for publication.

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

(General) 394–396, Convention Center Science Focus: GEN

NSTA Board and Council

Feeling overwhelmed by all there is to see and do at an NSTA conference on science education? Join us for an interactive exploration through the program, the conference app, and NSTA's social media. By the end of the session, you will know just how to get the most from your conference experience in addition to building new networks with science colleagues.

Let's Get Wet: Water and Weather

(Grades P–3) Science Focus: ESS1, ESS2

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

Juliana Texley (*texlelj@cmich.edu*), 2014–2014 NSTA President, and Central Michigan University, Mount Pleasant Don't look now, but the *CCSS* asks that you teach Earth science as early as kindergarten, and the *NGSS* have 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!

Creating Teachable Moments for Elementary Science with Literature

(Grades P-4) 290, Convention Center Science Focus: GEN, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP8

Chris Campbell (@UTeachTech; ctc@latech.edu) and Diane Madden (dmadden@latech.edu), UTeachTech at Louisiana Tech University, Ruston

Having trouble fitting in the required content? Running out of time before you get to science? Come learn how to create teachable moments for STEM through self-guided reading and hands-on investigation stations. ELA resources provided.



(Grades P–3) 293, Convention Center Science Focus: LS2.A, CCC6, SEP7

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

Alisa Wickliff (*abwickli@uncc.edu*), The University of North Carolina at Charlotte

Come join us for engaging classroom activities. Through innovative strategies, we'll explore how and why organisms use camouflage.

Need help navigating?

Feeling overwhelmed by all there is to see and do at an NSTA conference on science education? Join other first-time attendees for an interactive exploration through the conference program, the conference app, and NSTA's social media. By the end of the session, you will know just how to get the most from your conference experience in addition

to building new networks with science colleagues.

First-Timer Attendee Session O Thursday, November 30, 8:00–9:00 AM 394–396, New Orleans Ernest N. Morial Convention Center

Exhibit Hall

Vational

cience



Students Assessing Community Vulnerability and Resilience

(Grades 9–College) 294, Convention Center Science Focus: GEN, INF, SEP3

Summer Dorcik, Coast Episcopal School, Long Beach, Miss.

Jessica Kastler (*jessiekastler@gmail.com*) and **Aaron Lamey** (*aaron.lamey@usm.edu*), Gulf Coast Research Laboratory, Ocean Springs, Miss.

Cooper Kimbrell (ckimbrell@pgsd.ms), Gautier High School, Gautier, Miss.

During this presentation, we'll describe and practice a problem-based learning lesson that caps a classroom and field curriculum on coastal resilience.

How to Read Like Scientists!

295, Convention Center

Science Focus: GEN

(Grades 4-10)

(Grades 1-12)

Ann Berg (*aberg@c-ischools.org*), Cambridge Middle School, Cambridge, Minn.

Explore strategies through interactive activities and discussion that support success in reading science nonfiction and, most importantly, scientific inquiry.

How to Provide Focus in a Science Professional Learning Community (PLC)

296, Convention Center

Science Focus: GEN, NGSS

Marilyn Decker (mjrdecker@gmail.com), Decker STEM Consultants, Stratham, N.H.

Discover how to design your PLCs so that they emphasize research-based instructional practices and the science and engineering practices from the *NGSS*.

Harnessing a Powerful Synergy: Engaging All Students in the Primary Classroom with Science-Based Literacy Experiences for Younger Children

(Grades K–8) 298, Convention Center Science Focus: GEN, SEP8

Carolyn DeCristofano (@STEMCarolyn; *carolyn*@ *bhstemed.us*), Blue Heron STEM Education, Inc., Plympton, Mass.

Patricia Newman (@PatriciaNewman; *newmanbooks*@*live. com*), Author, Sacramento, Calif.

Jennifer Swanson (@JenSwanBooks; *jennifer@jennifer-swansonbooks.com*), Author, Jacksonville, Fla.

Three acclaimed science nonfiction authors demonstrate the synergistic power of literacy and science to pique everyone's curiosity and stimulate inquiry in the (primarily) primary classroom.

Physics-Driven Engineering Design and 3D Printing: Putting It All Together!

(Grades 8–12) 386, Convention Center Science Focus: ETS1, PS, SEP2, SEP4, SEP6

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

See how engineering design and 3D printing of lab equipment help students explore physics relationships and bring focus to printing and meaning to engineering design.

NASA Journey to Mars

388, Convention Center

Science Focus: ESS, SEP

(Grades 5-8)

Steve Culivan (stephen.p.culivan@nasa.gov), NASA Stennis Space Center, Stennis Space Center, Miss.

Explore Mars and NASA's plans for the first human missions to Mars. Investigate NASA STEM education resources to integrate into your classroom Journey to Mars.

Engineering Design for All

(Grades P–5) 390, Convention Center Science Focus: ETS1.B, ETS1.C, SEP2, SEP6

Ana Appel (ana.appel@ascendlearning.org), Ascend Learning, Brooklyn, N.Y.

Engineering on a budget? Eco-friendly classroom? Learn how to blend the engineering design with upcycled materials for all scholars. Case studies from urban classrooms used.

NMLSTA-Sponsored Session: Surf's Up

(Grades 4–8) 393, Convention Center Science Focus: ESS2, CCC

Liz Martinez (emartinez@imsa.edu), Illinois Mathematics and Science Academy, Aurora

Topography of the ocean floor from a surfing perspective will be explored through graphing and modeling.

Power Pendulums

Science Focus: PS2, PS3

(Grades 3-5)

397, Convention Center

Angela Stanford (agstanford@saumag.edu), Kaitlin Taylor (kltaylor5695@muleriders.saumag.edu), and Evelyn Escamilla (eescamilla8010@muleriders.saumag.edu), Southern Arkansas University, Magnolia

Challenge elementary students to explore multiple openended investigations centered around the fascinating scientific phenomenon of pendulums.

8:00–9:00 AM Exhibitor Workshops

Martian Genetics: An Electrophoresis Exploration

(Grades 6–College) 270, Convention Center Science Focus: ETS, LS Sponsor: Edvotek, Inc.

Brian Ell (*info@edvotek.com*), Tom Cynkar, and Maria Dayton, Edvotek Inc., Washington, D.C.

Explore genetics with our "out of this world" workshop! Imagine being the first scientist to explore Mars and discovering extraterrestrials. How would you use biotechnology to learn about the Martians? Discover how DNA technology can be used to explore the relationship between genotype and phenotype. Fluorescent dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving classroom time!

How to Argue in a Middle School Science Class

(Grades 5–8) 271, Convention Center Science Focus: GEN, SEP7

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Help students develop scientific argumentation skills by making claims based on observable evidence. Put these skills into practice with lessons from Delta Science Modules, as we prove (or disprove) fundamental science concepts. Leave with readers, equipment, and a lesson.

Ten Minutes to Improving Science Achievement

(Grades K–8)

Science Focus: GEN

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

272, Convention Center

"Assessment" can strike fear and trepidation into the hearts of teachers and students. Join FOSS developers to learn how assessment can be transformed into an integrated teaching tool that teachers and grades 3–8 students can embrace to create a classroom culture that motivates effort and growth to improve achievement.

CPO Science Biology Energy QUEST: Teaching Cell Energy Pathways

(Grades 5–12) 273, Convention Center Science Focus: LS Sponsor: CPO Science/School Specialty Science

Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

Get ENERGIZED about teaching energy pathways with our latest LINK supplementary learning module, amplified by cutting-edge Augmented Reality. Through collaborative gameboard play, a content-rich digital curriculum, and by manipulating smartphone-ready 3D imagery with a swipe of a finger, students will be clamoring to earn 32 ATP and synthesize C6H12O6 molecules.

NGSS Waves: Protect Your Eyes!

(Grades 6–8) 278/279, Convention Center Science Focus: PS4.A, PS4.B, CCC1, CCC6, SEP2, SEP3, SEP4, SEP5

Sponsor: Lab-Aids, Inc.

Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, S.C. Investigate wave properties before gathering evidence that energy varies with different colors of light. Start with tubes to investigate sound and then use a light station to explore light. Finally, experiment with colors and energy levels using a phosphorescent material.

8:00–11:00 AM Short Course Stretch Your Legs for Science! (SC-3)

Trades 4 8) Tishets Bequired: \$60 387 C

(Grades 4–8) Tickets Required; \$60 387, Conv. Center Science Focus: LS, CCC, SEP

Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu*), The Cornell Lab of Ornithology, Ithaca, N.Y.

For description, see page 31.

9:15–10:30 AM General Session Science Is a Verb—Exploring, Engaging, and Expanding Thinking

(General) New Orleans Theater Section B, Convention Center Science Focus: GEN



Debbie Silver (@DrDebbieSilver; *debbie@debbiesilver.com*), Speaker, Author, and Humorist, Melissa, Tex.

Presider and Introduction: David Crowther, NSTA President, and University of Nevada, Reno

Platform Guests: Debbie Silver; David Crowther; Mary Gromko, NSTA

Retiring President, Colorado Springs, Colo.; Christine Anne Royce, NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.; Jean May-Brett, Chair, NSTA New Orleans Area Conference, and NSTA/LSTA State Coordinator for Science Matters, Kenner, La.; Shannon Lafont, Program Coordinator, NSTA New Orleans Area Conference, and Virtual Academy of Lafourche, Houma, La.; Nathan Cotten, Local Arrangements Coordinator, NSTA New Orleans Area Conference, LSTA President, and Terrebonne Parish School District, Houma, La.; David Evans, NSTA Executive Director, Arlington, Va.; Sheila Smith, NSTA Director, District VII, and K–12 Mississippi Schools, Ridgeland

Join Debbie Silver as she celebrates science educators who inspire, integrate, and innovate with active student-centered practices. She provides an entertaining and informative look at how science can be used as a natural springboard for engaging learners from preK through 12 and beyond. An experienced science educator, Debbie understands how to inspire high flyers, struggling students, and everyone inbetween. Laced with humor and practical suggestions, she will have you laughing, thinking, and ready to champion science students at every level.

Debbie Silver brings a wealth of expertise as an award-winning educator with 30 years of experience as a classroom teacher, staff development instructor, and university professor. Her numerous recognitions include being named the 1990 Louisiana State Teacher of the Year and the 2007 Distinguished Alumnus from the College of Education at Louisiana Tech University.

Speaker, author, humorist—Debbie's style has been described as "where laughter and learning collide." She has written several books, including Fall Down 7 Times, Get Up 8: Teaching Kids to Succeed and Drumming to the Beat of Different Marchers: Finding the Rhythm for Differentiated Learning.

9:30–10:30 AM Exhibitor Workshops

Year-Round Solutions for Success in AP Chemistry from Flinn Scientific

260/261, Convention Center

(Grades 9–12) Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Marvel (*mmarvel@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Join Flinn as we share AP Chemistry demonstrations, labs, inquiry activities, and more! Come learn about new ways to engage your advanced students. Our activities are aligned to the learning objectives and skills your students need to be successful. Prepare your students for the first day of class with FlinnPREPTM, a new online review of foundational chemistry concepts. Handouts and door prizes. AP is a trademark of the College Board.

Science Storylines and the Driving Question Board: Keeping NGSS Curricula Student Driven

(Grades K–12) 263, Convention Center Science Focus: GEN, CCC6, SEP2

Sponsor: Activate Learning

Heather Milo (*hmilo@activatelearning.com*), Activate Learning, Greenwich, Conn.

What if K–12 lessons could both meet the standards and leverage student curiosity about the natural world? Join us for an engaging workshop on storyline coherence as a means to not only have pedagogy meet the *NGSS*, but also build on students' wonderment questions using the Driving Question Board. Uses IQWSTTM unit, How Can I Smell Things from a Distance?

Keep Your Head Above Water with Magnetic Water Molecule Models

(Grades 4–College) 264, Convention Center Science Focus: ESS2, ESS3, ETS, LS1, LS4, PS1, PS2, CCC, SEP

Sponsor: 3D Molecular Designs

Gina Vogt (vogt@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

ENGAGE students by modeling chemical and physical properties of water using hands-on/minds-on magnetic water molecules. EXPLORE common water phenomena such as density, erosion, and weathering. EXPLAIN the phases of water density and solubility. ELABORATE on the water cycle and its impact on the ecosystem. EVALUATE student learning with models.

INF New Standards: Project-Based STEM Engineering by WhiteBox Learning

(Grades 6–12) 268, Convention Center Science Focus: ETS, INF Sponsor: WhiteBox Learning

Graham Baughman (graham@whiteboxlearning.com), WhiteBox Learning, Louisville, Ky.

Engage your students in the complete engineering design process. Meet the new science standards with WhiteBox Learning's project-based STEM Learning System. Students can research, design, analyze, and simulate (iterate) their designs, and compete "virtually," all around the world, from any browser. An integrated learning management system (LMS) is included during this hands-on workshop.

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

(Grades 9–College) Science Focus: LS 270, Convention Center

271, Convention Center

Sponsor: Edvotek, Inc.

Maria Dayton (*info@edvotek.com*), Tom Cynkar, and Brian Ell, Edvotek Inc., Washington, D.C.

Explore the relationship between genotype and phenotype using Phenylthiocarbamide (PTC). Some think PTC tastes bitter, while others find it tasteless. The ability to taste PTC has been linked to variations in a taste receptor gene. Join us to learn how to use PCR to distinguish between PTC alleles. Free gift for attendees!

Makerspaces with Options for All Students

(Grades 4–8)

Science Focus: ETS

Sponsor: Delta Education and Frey Scientific

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

For students to develop the proper range of skills required of "makers", a makerspace should provide tools and resources to help them grow as scientists. Many makerspaces now include supplemental curriculum options that give students who are curious about science the resources designed for exploring classroom concepts in a maker setting.

What Does Argumentation Look Like in an Elementary Classroom?

(Grades K–5) 272, Convention Center Science Focus: GEN, SEP7

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

Join FOSS Next Generation Program developers to learn about science practices within the context of active investigations. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson. Find out about transitioning to FOSS Next Generation.

CPO's Wind Turbine: A STEM Approach to Engineering and Design

(Grades 5–12) 273, Convention Center Science Focus: ETS, SEP

Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

CPO's Link Wind Turbine learning module lets students learn in a real-time digital platform and engineer 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 and demonstrate understanding.

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

275/276, Convention Center

Science Focus: LS Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

(Grades 9-12)

Ready for a forensic dissection that is on the cutting edge? Engage students and revitalize your mammalian structure and function lessons with a real classroom autopsy. Participants dissect a Carolina's Perfect Solution pig by modeling the protocols of a professional forensic pathologist. Come experience our exclusive Perfect Solution preserved specimens.

The Power of Modeling in K-8 Classrooms

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

Sophia Lambertsen and **Rebecca Abbott**, The Lawrence Hall of Science, University of California, Berkeley How can students create and use models to enhance, explain, and expand their thinking? Experience a variety of ways students deepen and demonstrate their understanding of scientific phenomena through the use of models. Engage with K–8 exemplars from Amplify Science, the new *NGSS*-designed curriculum from The Lawrence Hall of Science.

277, Convention Center

NGSS Ecology: Modeling the Introduction of a New Species

(Grades 6–8) 278/279, Convention Center Science Focus: LS2.B, LS2.C, CCC4, CCC5, SEP2 Sponsor: Lab-Aids, Inc.

Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, S.C. How does a new species affect the flow of matter and energy in an ecosystem? This card sort—style activity models the introduction of a new species with special attention to the effect on existing predators and producers. From the new SEPUP middle level Ecology unit, revised and updated for the *NGSS* and published by Lab-Aids. Take home free samples of the activity.

Hurricanes, Earthquakes, and Volcanoes Are Now Online!

(Grades 5–12) 280/281, Convention Center Science Focus: ESS2.B, ESS2.D

Sponsor: Simulation Curriculum Corp.

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

Join us as we use the acclaimed Layered Earth Geology and Meteorology with interactive lessons to learn about hurricanes, earthquakes, and volcanoes. And best of all, you can now access these complete curricula online using your Chromebooks and tablets, as well as using regular Windows and Mac computers.

11:00 AM-12 Noon Exhibitor Workshops Putting the "E" in STEM: Engineering in the Middle School Science Classroom

(Grades 6–9)	260/261, Convention Center
Science Focus: ETS, SEP	
Sponsor: AEOP	

Alexandra Wakely, eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

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

Many science teachers are working on bringing engineering (the E in STEM) into their science classes. But with limited time, state requirements, and plenty of science content to cover, it can be a challenge. Discussion centers on the value of integrating engineering into your science classes and tips on how to make the integration seamless. There will also be an explanation of the online STEM competition eCYBERMISSION and how it relates to engineering in the science classroom.

Literacy in the Context of Science in the Middle School Classroom

263, Convention Center

Science Focus: GEN, NGSS

(Grades 5-8)

Sponsor: Activate Learning

Ellen Mintz (*emintz621@gmail.com*), Charleston County School District, Charleston, S.C.

Experience a lesson that demonstrates the integration of literacy strategies in the context of science. This includes the incorporation of academic language in written responses in science notebooks and oral discourse in conjunction with investigations using an interactive word wall.

5 E'sy Ways to Investigate Enzymes!

(Grades 8–College) 264, Convention Center Science Focus: LS1, LS3, LS4, PS1, PS2, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: 3D Molecular Designs

Gina Vogt (vogt@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

ENGAGE students in investigating enzyme structure/ function using multiple modeling strategies. EXPLORE and EXPLAIN catabolism, anabolism, and competitive/ noncompetitive inhibition with hands-on/minds-on instructional materials. ELABORATE on insecticide inhibition at an enzyme active site resulting in unintended consequences. EVALUATE student learning with an enzyme molecular story. Handouts.

Science Classroom Theater: A Cross-Curricular Bonanza

(Grades P–12) Science Focus: GEN, CCC 268, Convention Center

Sponsor: Southern Science Supply

Brod Bagert, Author, New Orleans, La.

Get free access to hundreds of previously unpublished content-poems, dramatic monologues/dialogues, and plays written by author Brod Bagert. The material is organized by grade level and can easily be correlated to a variety of curriculum standards. Access includes license to print the material for student, classroom, and home use.

Left at the Scene of the Crime: Introduction to Forensic Science

(Grades 6–College) Science Focus: LS

270, Convention Center

Sponsor: Edvotek, Inc.

Brian Ell (*info@edvotek.com*), Maria Dayton, and Tom Cynkar, 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 gift for attendees!

OK, Class, Please Open Your Science Notebooks...

(Grades K–8) 271, Convention Center Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Experience the feeling of starting with a blank notebook and filling it with new ideas as you make sense of the world around you. Leave with ideas and strategies to improve student notebooking in your own classroom.



-Photo courtesy of Mike Weiss

What Does Conceptual Modeling Look Like in Grades K-5 Classrooms?

272, Convention Center

Science Focus: GEN, CCC

(Grades K-5)

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 explore how students construct models about phenomena. Experience active investigations from two grade levels and create models about physical science concepts. Find out how student models can be used to guide future instruction within the FOSS program.

CPO's LINK Genetics Learning Modules: Crazy Traits and Crazy Chromosomes

(Grades 5–12) 273, Convention Center Science Focus: LS

Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

CPO Science's LINK learning modules for genetics use *NGSS* strategies in a real-time digital learning environment. Students can study the relationship between DNA, genes and mitosis, meiosis, traits, alleles, phenotypes, and genotypes. Heredity will come alive as you use hands-on models to create crazy creatures in a unique collaborative program.

Coding with First Graders? The Smithsonian Says YES!

(Grades K–5) 275/276, Convention Center Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Join us for an engaging hands-on workshop with investigations for teaching coding to young children. From the new Smithsonian Science for the ClassroomTM series, the "How Can We Send a Message Using Sound?" module is designed to use the *NGSS* practices that make the standards come alive.

Space Docking Failure: Phenomena and 3-D Instruction for Grades 6–8

(Grades 6–8) 277, Convention Center Science Focus: PS2, CCC, SEP Sponsor: Amplify

Sophia Lambertsen and **Rebecca Abbott**, The Lawrence Hall of Science, University of California, Berkeley Experience how students investigate a failed spacecraft docking while figuring out principles of force and motion and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 6–8, engaging with this new *NGSS*-designed curriculum from The Lawrence Hall of Science.

NGSS Reproduction: Breeding Critters—More Traits

(Grades 6–8) 278/279, Convention Center Science Focus: LS1, LS3, CCC1, CCC2, SEP2, SEP6 Sponsor: Lab-Aids, Inc.

Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, S.C. Students model and explain additional patterns of inheritance as they explore cause-and-effect relationships for additional traits of the critters. These patterns help them model and explain the wide variation that can result from sexual reproduction. This activity provides an opportunity to assess student work related to MS-LS3-2.

Using Maggots, Flies, and Flesh to Solve a Mystery!(Grades 6-12)280/281, Convention Center

Science Focus: GEN Sponsor: Texas Instruments

Stacy Thibodeaux, Southside High School, Youngsville, La. **Jeffrey Lukens,** Sioux Falls (S.Dak.) School District A decomposing corpse is found in a field. Four possible miss-

ing persons fit the description. But who is it? Using clues near the scene will help determine identity. Forensic anthropologist Diane France helped to develop this free middle school and high school forensic science lesson.



—Photo courtesy of MikeWeiss

11:00 AM-5:00 PM Exhibits

Hall H, Convention Center As you enter the exhibit hall, enjoy music performed by Grace King High School Band of Jefferson Parish Public Schools under the direction of Connor Murphy, Music Director.

Did you know that NSTA offers exclusive exhibit hall and exhibitor workshop 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.

12:30–1:30 PM Presentations

Celebrate and Communicate: Music as Motivation and Curriculum in STEM

(Grades P–12) Science Focus: GEN 265, Convention Center

Juliana Texley (*texlelj@cmich.edu*), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant Music is motivation, mathematics, and a pathway to STEM literacy. We will play, sing, and explore the psychology of truly integrating music into the classroom. Join me for a bit of research and free sample lessons and ideas.

NSTA's Online Resources and Communities

(General)

269, Convention Center

Science Focus: GEN, NGSS **Flavio Mendez** (@fljmendez; *flavio_m@nsta.org*), Assistant Executive Director, Learning Center, NSTA, Arlington, Va. The NSTA Learning Center and the NGSS@NSTA Hub provide educators with thousands of free resources and opportunities—as well as a professional peer community that support professional learning and classroom instruction. Get a free SciPack. NSTA gift cards will be raffled!

AstroMATH: Classroom Activities to Improve Quantitative Skills Using Astronomy

(Grades 6–College) 283, Convention Center Science Focus: ESS **Timothy Slater** (timslaterwyo@gmail.com), University of Wyoming, Laramie **Stephanie Slater** (@caperteam; sslaterwyo@gmail.com), CAPER Center for Astronomy & Physics Education Research, Laramie, Wyo.

The universe is big and best described using numbers. Better engage your students with activities that use quantitative reasoning rather than mindless calculation.

EDUCATION GRANT FUNDING OPPORTUNITY: Advancing Scientific and Environmental Literacy in Children and Youth

\$3 million available to support projects up to 24 months

Purpose: The Gulf Research Program seeks to increase the scientific and environmental literacy and problem-solving skills of children and youth with a focus on service-, project-, or problem-based learning opportunities on topics relevant to the Gulf Research Program's initiatives. Proposed projects should engage children and youth to develop the next generation of informed citizens, scientists, engineers, and decision-makers with an understanding of the socio-environmental challenges and opportunities in their communities and a capacity to address them.

Eligibility: Applications will be accepted from nonprofit, state, and local entities that support educational, service, and/or coordination activities for children and youth in the K-12 grade range. Academic researchers/institutions are eligible to apply but are encouraged to seek a non-academic partner with programmatic experience serving children and youth.

Details: Request for Applications opens December 13, 2017 www.nas.edu/gulf/grants/education-2018

Submit a Letter of Intent by February 14, 2018

The National Academies of Academies of MEDICINE

GULF RESEARCH PROGRAM

hoto: SeaWiFS Project, NASA/GSFC, ORBIMAGE

Make a Difference: Practical Tools and Strategies for Science Education Advocacy

(General) 284, Convention Center Science Focus: GEN, NGSS

Kenn Heydrick (@kheydrick; *kheydrick@att.net*), Retired Research Professor, Austin, Tex.

Jodi Peterson (@stemedadvocate; jodi_peterson@verizon. net), Assistant Executive Director, Legislative and Public Affairs, NSTA, Arlington, Va.

As NSTA members, it is crucial that we reach out to those who craft policies at the local, state, and national levels. We will share how to focus on practical tools, strategies, and perspectives for communicating with various audiences.

Watershed Education and Service Learning Using Oysters or Clams

(Grades 6–12) 288, Convention Center Science Focus: LS1.A, LS2.B, LS2.C, INF, SEP2, SEP3 **Tina Miller-Way** (*tmiller-way@disl.org*), Dauphin Island Sea Lab, Dauphin Island, Ala.

Don't shuck this session. Join in for a discussion on a watershed education program that integrates the study of filter feeding bivalves, hands-on water quality measurements, and service learning through living shoreline construction.

Solids: The Neglected "State" of Chemistry

(Grades 9–12)

289, Convention Center

Science Focus: PS1

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

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

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

(Grades 9–12) 291/292, Convention Center Science Focus: LS, CCC, SEP

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

Learn about Argument-Driven Inquiry and how it can help students use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.



(Grades P-2)293, Convention CenterScience Focus: ETS1.A, ETS1.B, PS1, PS2, INF, CCC1,CCC2, CCC4, SEP1, SEP2, SEP3, SEP4, SEP5, SEP8

Devon Steven (*devon.tutak@gmail.com*), Corporation for Public Broadcasting, Washington, D.C.

Aaron Morris (@aaronleemorris; *almorris@pbs.org*), Public Broadcasting Service, Arlington, Va.

Maggie Stevenson (@Mesonly1), Mississippi Public Broadcasting, Jackson

Parthenia Fields (@partheniaCS_STO; parthenia@springboardto.org), Springboard To Opportunities, Jackson, Miss. The CPB-PBS Ready To Learn initiative, under the U.S. Department of Education, is supporting science for children ages 2–8 through free research-based content and a new collaborative model of community engagement. Representatives from the Jackson, Mississippi, collaborative will discuss how they've developed their partnership and demonstrate free resources and tools to better serve the early learning needs of families in two affordable housing communities.

Science and Literacy in the K-5 Classroom

299, Convention Center

Science Focus: GEN, NGSS

(Grades K-5)

Leisa Clark, Assistant Executive Director, e-Products, NSTA, Arlington, Va.

Engage in science and literacy—learn about the practices and crosscutting concepts of three-dimensional learning while engaging your elementary students in science and literacy through e-books. This session will simultaneously demonstrate how to use digital multimedia to enhance student learning of science, English language arts, and mathematics.

Using a 3D Printer in the High School Science Classroom—From Application to Creation

(Grades 6–12) 391, Convention Center Science Focus: ETS, LS, PS, SEP

An Tam Vu (atvu@ndsj.org) and **Dianne Foote** (dfoote@ ndsj.org), Notre Dame High School, San Jose, Calif.

We will provide resources and tips for integrating the use of a 3D printer into a molecules unit (chemistry) and human evolution unit (biology).

3D Three-Dimensional Learning Forum Session: Designing and Using Classroom Assessments to Support Meaningful 3-D Investigations

(Grades K–12) 393, Convention Center Science Focus: GEN, NGSS

Philip Bell (@philiplbell; pbell@uw.edu) and Deb Morrison (@educatordeb; educator.deb@gmail.com), University of Washington, Seattle

Embedding formative assessment sequences into instruction helps gauge progress in student understanding and also surfaces learning assets students bring to the classroom. Through assessment examples and sample student responses, we'll explore how to design and interpret cognitive assessments of three-dimensional learning, as well as cultural formative assessments of student and community interests and funds of knowledge. STEM teaching tools that support 3-D science implementation will be shared.

12:30–1:30 PM Hands-On Workshops

Successful STEM-Rich Making Practices That Benefit Underserved Students

(General)

266, Convention Center

Science Focus: GEN, NGSS

Jerry Valadez (jvaladez@csufresno.edu), SAM Academy, Inc., Sanger, Calif.

Experience STEM and "making" activities and learn how the California Community Science Workshops' successful program model creates STEM and environmental learning environments accessible to all kids.

NESTA Session: Data Collecting: Getting to Know Your Piece of the Planet!

(Grades 3–8) 290, Convention Center Science Focus: ESS, CCC2, SEP

Wendy DeMers (2ydnew2@gmail.com), Science Curriculum Consultant, New Orleans, La.

How do we get our students interested and excited about data? Exploring the Earth, Moon, and Sun system is a great place to start!

Implementing Engineering Design: If I Can Do It, You Can, Too!

(Grades 4–8) 294, Convention Center Science Focus: ETS1, CCC, SEP

Debra Thompson (thompson_d@cneschools.org), Clermont Northeastern Middle School, Batavia, Ohio

Receive practical, hands-on methods on how to implement the engineering design process using real-world examples you can take back to your students next week!



Zombies Are Knocking on Your Classroom Door! (Grades 7–12) 295, Convention Center Science Focus: GEN, SEP2, SEP4, SEP5 Jeffrey Lukens (jeffreylukens0613@gmail.com), Sioux Falls

(S.Dak.) School District

When zombies knock, let them into your classroom and then battle them with STEM strategies! The zombies don't stand a chance.

Increase Science Engagement and Achievement Through Content Literacy

(Grades 3–8) Science Focus: GEN

is: GEN

298, Convention Center

Linda Linnen, Retired Teacher, Aurora, Colo

In this interactive presentation, participants will experience how to integrate reading, writing, speaking, and listening, as well as *CCSS* strategies, into daily science lessons.

Describing Data Using Central Tendencies, Graphs, and Statistics in AP and IB

(Grades 9–College) 386, Convention Center Science Focus: LS3, SEP4, SEP5, SEP8

Kristen Daniels Dotti (kristen.dotti@catalystlearningcurricula.com), Verde Valley School, Sedona, Ariz.

Collect data on groups of "mice" and use these sample sets to guide students to making good choices in the use of statistical parameters.

Hands-On Universe

388, Convention Center

389, Convention Center

Science Focus: ESS1

(Grades 5-12)

Jenifer Perazzo (@elimu_safari; *jperazzo*@*lbl.gov*), Pleasanton (Calif.) Unified School District

Stacey Holder (*sholder*@*pleasantonusd.net*), Fairlands Elementary School, Pleasanton, Calif.

Investigate the universe while applying concepts from science, math, and technology. Use modern tools and resources to engage students in international scientific projects.

\$40 a Year—Early Childhood STEM Activities on a Budget

(Grades P–1) Science Focus: GEN, NGSS

Erin Pollyea-Lane and **Stephanie Zimny** (@MadisonRoom11; *zimnys*(@skokie69.net), Madison Elementary School, Skokie, Ill.

Do you want to provide *NGSS*-focused STEM activities, but have a strict budget? Simply use everyday items to help engage and enrich your students!

Using Hands-On Performance Assessment in Grades 3–5 Classrooms: Assessing Student Mastery of the Science Practices, Disciplinary Core Ideas, and CCSS

(Grades P–9) 390, Convention Center 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.

Explore hands-on performance assessment and its relationship to students' mastering the *CCSS* and *NGSS* while engaging in a hands-on performance task.

Analysis of Supernova Remnants Using X-Ray Spectroscopy with NASA Data and STEM Tools

(Grades 9–12) 397, Convention Center Science Focus: ESS1.A, PS4.B, PS4.C

Donna Young (*dlyoung.nso@gmail.com*), NASA NSO STEM Coordinator, Bullhead City, Ariz.

Identify elements in the spectra of supernova remnants to determine the properties of collapsed and exploded stars using NASA X-ray data and image analysis tools.

12:30–1:30 PM Exhibitor Workshops

Out-of-School STEM Enrichment: AEOP Program Design Collaboration

(Grades K–12) 260/261, Convention Center Science Focus: GEN, NGSS Sponsor: AEOP

Jarod Phillips, GEMS Project Manager, NSTA, Arlington, Va.

Come learn about what AEOP can do for your students' STEM enrichment outside of school time! This workshop is hosted by the Army Educational Outreach Program (AEOP), sponsor of out-of-school programs across the nation for K–12 students. Join in to get a chance to work with colleagues in developing your ideal (fictional) program and seeing how it stacks up to the programs offered by AEOP!

Structuring Discussion to Be Equitable and Rigorous

(Grades K–12) 263, Convention Center Science Focus: PS2, SEP2, SEP6, SEP7, SEP8 Spansor, Activate Learning

Sponsor: Activate Learning

Heather Milo (*hmilo@activatelearning.com*), Activate Learning, Greenwich, Conn.

The *Framework* promotes learning as a fundamentally social endeavor supported by collaborative and communicative norms. Yet, sustaining these norms requires teachers to examine and support K–12 students' ways of talking so they all are able to articulate, make sense of, and evaluate each other's ideas. Walk away with ready-to-use tools that foster and assess productive talk. Uses IQWST unit, How Will It Move?

Getting Students Through the Cellular Membrane

(*Grades* 6–*College*) 264, *Convention Center* Science Focus: LS1, PS1, PS2, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: 3D Molecular Designs

Gina Vogt (vogt@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

Support three-dimensional learning with materials that engage your students in an exploration of rare chemical and physical properties of water and the membranes that separate cells from their surrounding environment. Construct a model to explain diffusion, osmosis, and active and passive transport of molecules across the cell membrane.

Cancer Investigators: Medical Diagnostics in Your Classroom

(Grades 9-College) Science Focus: LS Sponsor: Edvotek, Inc. 270, Convention Center

Brian Ell (info@edvotek.com), Tom Cynkar, and Maria Dayton, Edvotek Inc., Washington, D.C.

Cancer contributes to almost one in every four deaths in the United States. Fortunately, innovations in biomedical research have improved our understanding of the differences between normal and cancer cells. In this hands-on workshop, participants use microscopy and electrophoresis to explore the hallmarks of cancer. Free gift for attendees!

What in the World Are Crosscutting Concepts?

(Grades K-8) 271, Convention Center Science Focus: GEN, CCC

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Crosscutting concepts may be the most misunderstood dimension of the NGSS. Come be a student and experience Delta Science Module lessons that unleash the power of the crosscutting concepts and give them the attention they deserve. Leave with materials and strategies that you can use in your classroom next week.

Wave Properties and Information Transfer

(Grades 6-8) 272, Convention Center Science Focus: PS4, CCC, SEP

Sponsor: Delta Education/School Specialty Science-FOSS Jessica Penchos, The Lawrence Hall of Science, University of California, Berkeley

Engage in activities using lasers and optical fibers in the new FOSS Next Generation Waves Course for middle school. Explore properties of refraction and reflection that allow information transfer by fiber-optic technology, and identify connections to the three dimensions of NGSS.

Modular Robotics for Elementary and Middle **School: CUBELETS!**

(Grades 3-8) 273, Convention Center Science Focus: ETS

Sponsor: Frey Scientific/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

Encourage students to be inquisitive and unlock their inner inventor! Learn about types of robotic operations: THINK, SENSE, and ACT in a hands-on hour using Cubelets, blocks that can instantly connect and perform robot functions. What sensory input is needed? What output is generated? How many classroom applications are there?

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

(Grades 9-12) 275/276, Convention Center Science Focus: PS Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking for lab activities that work every time, not just periodically? Explore easy, engaging, and safe chemistry activities that can produce a reaction from your students. Whether you're new to chemistry or feeling out of your element, learn ways to create excitement with hands-on labs, digital content, and demonstrations.

Puppet Theater Engineering: Phenomena and 3-D Instruction for Grades K and 1

277, Convention Center

(Grades K-1) Science Focus: PS, CCC, SEP Sponsor: Amplify

Sophia Lambertsen and Rebecca Abbott, The Lawrence Hall of Science, University of California, Berkeley Experience how students design shadow scenery and sound effects while figuring out principles of light and sound and engaging in three-dimensional learning. Get a hands-on dive into Amplify Science for grades K-1, engaging with this new K-8 NGSS-designed curriculum from The Lawrence Hall of Science.

(Grades 6-8)

NGSS Biomedical Engineering: Get a Grip!

278/279, Convention Center Science Focus: ETS, LS, SEP4, SEP6

Sponsor: Lab-Aids, Inc.

Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, S.C. Use the approach of biomimicry to design, test, evaluate, and redesign a mechanical gripping device to meet criteria. An iterative process is used to optimize the device by investigating the relationship between structure and function and applicable technology.

Are You Moody?

(Grades 6-12) 280/281, Convention Center Science Focus: ETS, PS, CCC2, SEP5, SEP6

Sponsor: Texas Instruments

Stacy Thibodeaux, Southside High School, Youngsville, La.

Fred Fotsch, Texas Instruments, Dallas

We will bring science and coding together as participants learn to do some basic coding (no experience necessary) while developing their own mood ring! The science of color mixing is explored while determining the right body temperature thresholds. Is fuchsia flirty? Should green be groovy? It's up to you!

Help us with your feedback...and get a chance for a free Apple iPad mini 4

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

into a drawing for a chance to win an Apple iPad mini 4 Wi-Fi tablet courtesy of the NSTA Conference Department.

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2:00–3:00 PM Featured Presentation STEM for All: Instructional Shifts to Promote Science and Language Learning

(General) 286/287, Convention Center Science Focus: GEN, NGSS



Okhee Lee (@LeeOl16; *olee*@*nyu*. *edu*), Professor, Steinhardt School of Culture, Education, and Human Development, New York University, New York

Presider: Cathi Cox-Bernard, Strand Leader, NSTA New Orleans Area Conference, and Lincoln Parish Schools, Ruston, La.

The Next Generation Science Standards offer a vision of rigorous standards across K–12 classrooms. As these standards offer both learning opportunities and demands, educators must make instructional shifts to achieve the vision. Okhee Lee will highlight how the instructional shifts associated with the NGSS and the language instructional shifts based on a range of registers and multiple modalities (e.g., physical replica, diagram, text, and computational model) are mutually supportive in promoting both science and language learning for all students. Using classroom examples, she will highlight what educators can do to ensure that all students are supported in learning STEM while developing language.

Okhee Lee is a professor in the Steinhardt School of Culture, Education, and Human Development at New York University. Her research areas include science education, language and culture, and teacher education. Okhee's current research involves the scale-up of a curricular and teacher professional development intervention to promote science learning and language development of English language learners.

Okhee was a member of the writing team to develop the Next Generation Science Standards (NGSS) and leader for the NGSS Diversity and Equity Team through Achieve, Inc. She is also a member of the Steering Committee for the Understanding Language Initiative at Stanford University. A 2009 Fellow of the American Educational Research Association (AERA), Okhee received the Distinguished Career Award from the AERA Scholars of Color in Education in 2003, and was awarded a 1993–1995 National Academy of Education Spencer Postdoctoral Fellowship.



NSTA Press® Session: Be a Winner: Get a Grant and Your Students Win, Too!

265, Convention Center

Science Focus: GEN

(Grades P-12)

Kitchka Petrova (*dr.k.petrova@gmail.com*), Florida State University, Tallahassee

Patty McGinnis (@patty_mcginnis; *pattymcginnis1@gmail. com)*, Arcola Intermediate School, Eagleville, Pa.

Join two experienced grant proposal writers to learn how to write successful grant proposals, fund your classroom projects, and enhance your students' learning.

STEM and Literacy: Strange Bedfellows

(Grades P-8/College) 269, Convention Center Science Focus: GEN

J. Carrie Launius (@janetcarrie; *janetcarrie@gmail.com*), NSTA Director, District XI, Saint Louis, Mo.

Emily Brady (*ebrady@nsta.org*), Executive Administrator, and Editor, *NSTA Recommends*, NSTA, Arlington, Va.

Juliana Texley (*texlelj@cmich.edu*), 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant Wondering how to add literacy to your STEM lessons? Come learn about NSTA's new initiative, Best STEM Books, and how to use these books in your classroom.

Cars: A Fundamental Look at How They Work and the Science Involved

(Grades 7–College) 283, Convention Center Science Focus: ETS2, PS1, PS2, PS3, CCC2, CCC4, CCC5, CCC6, SEP2, SEP3, SEP4

Andrew Nydam (andrewnydam@hotmail.com), Polymer Ambassador, Olympia, Wash.

Students love cars and tolerate school. Complex science concepts can be introduced and explored using the automobile as the focus (energy transformations, chemical reactions, gas laws, and solutions).

Promoting Innovation and Creativity Through Problem-Based Learning

284, Convention Center

Science Focus: GEN

(Grades 3-12)

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

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

Discover how to use Problem-Based Learning to promote authentic research, creativity, and innovation opportunities for students of all ages.

Meet the Standards and Enhance Your Chemistry **Classroom with Other People's Money**

(Grades 9-12) 289, Convention Center Science Focus: PS, CCC, SEP

Kenetia Thompson and Karen Kaleuati (k_kaleuati@)

acs.org), American Chemical Society, Washington, D.C. Hear about grant opportunities available to high school chemistry teachers (including those from the American Chemical Society) and the process for writing a fundable proposal.

A River Story: A Collaborative Effort to Explore **Cross-Curricular Connections to Earth Science Disciplinary Core Ideas for Second Graders**

(Grades P-3) 293, Convention Center Science Focus: ESS2.A, ESS2.C, ESS3.A, ESS3.C, INF, CCC2, CCC7, SEP1, SEP2, SEP6

Sarah Sterling-Laldee (*patersonstem*@gmail.com), Paterson (N.J.) Public Schools

Nakeia Wimberly (ms.nakeiawimberly@gmail.com) and Norma Menchon (nmenchon@ppsstaff.org), Paterson School No. 2, Paterson, N.J.

Elizabeth Nunez (nunezelizabeth0218@yahoo.com), Rosa Parks Community School, Paterson, N.J.

Kelly Wenzel (*kelly.wenzel@njaudubon.org*), New Jersey Audubon, Bernardsville

This collaborative effort of formal and informal educators sought to deepen second-grade teacher confidence in NGSS disciplinary core ideas and science and engineering practices through placebased learning and cross-curricular connections.

Enabling All Students to Investigate, Explore, Inquire, Participate, and Achieve Success

(Grades K-6) 383, Convention Center Science Focus: GEN, NGSS

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

I'll provide the fundamentals of differentiation in the K-6 science classroom. Discussion centers on strategies for differentiating effectively, making science accessible to ALL, and maximizing participation and learning. Handouts.

Do This, Not That!

(Grades P-5)

385, Convention Center

Science Focus: GEN, SEP

Mary Smith (@eduleadconsults; msmith@eduleadconsultants.net), Educational Leadership Consultants, Houston, Tex.

Sherri Smith (*sherri.smith*@*cfisd.net*), Cypress-Fairbanks ISD, Houston, Tex.

Discussion centers on best practices for creating the science classroom you, your students, and your administrators dream of.

High School Teachers: Birds of a Feather

(Grades 9-12) 387, Convention Center Science Focus: GEN

Carrie Jones (*ncscienceteacher*@yahoo.com), Middle Creek High School, Apex, N.C.

Facilitated by NSTA's High School Committee, join in to discover NSTA resources, participate in discussions, as well as share high school needs/concerns in your state. How can we help?

Watch the Delta Grow: Interactive Data-Based Earth Science Lessons

(Grades 7-9) 388, Convention Center Science Focus: ESS2.A, ESS2.C, ESS3, ETS1, SEP

Pamela Blanchard (pamb@lsu.edu), Louisiana State University, Baton Rouge

Dani Dilullo (@LASeaGrant; ddiiullo@lsu.edu), Louisiana Sea Grant, Baton Rouge

Learn about Wax Lake Delta, a living laboratory in delta formation in southern Louisiana. Lessons focus on data analysis and how a delta changes over time/space.

Start with a Book!

(Grades K-4)

399. Convention Center

Science Focus: GEN, NGSS

Sandra Leiterman (@saleiterman; saleiterman@gmail.com), University of Arkansas at Little Rock

Integrate science into your K-4 language arts lessons. Find out how to incorporate inquiry learning starting with a trade book.

2:00–3:00 PM Hands-On Workshops

Linking Science and Literacy for Improved Student Outcomes

(Grades K–6) Science Focus: GEN

266, Convention Center

Bill Badders (@baddersb; *baddersb*@*roadrunner.com*), 2013–2014 NSTA President, Cleveland Heights, Ohio Come explore strategies for linking science and literacy that support students' abilities to read, write, and discuss in the context of science and inquiry-based learning using fiction and nonfiction texts. Hands-on examples of how science supports literacy and literacy supports science will be used.

Energy Games, Chants, and Plays: Increasing Energy Literacy in Your Elementary Classroom

(Grades K-5) 290, Convention Center Science Focus: GEN, CCC, SEP1, SEP2, SEP3, SEP4, SEP8 **Amy Truemper** (@NEED_Project; @ms.truemper; *atruemper@sd308.org*), Bednarcik Junior High School, Aurora, Ill.

Attention K–5 teachers, join in energy-themed, literacyfocused activities designed to keep students engaged and familar with particular buzzwords disguised through fun playful songs and plays!

NSTA Press[®] Session: EUREKA! Grade 3–5 Science Activities and Stories

(Grades 3–5) 291/292, Convention Center Science Focus: GEN, NGSS

Julie Thomas (julie.thomas@unl.edu), University of Nebraska–Lincoln

At this workshop, participate in some of the 27 lessons linking nonfiction historical trade books and science content for grades 3–5.



Out-of-This-World Space Science

(Grades 6–8) 294, Convention Center Science Focus: ESS1, CCC1, CCC2, CCC3, SEP3, SEP4, SEP6, SEP7

Taylor Fusinatto (@tfusinatto1210; fusinattot@district65. net), Dr. Bessie Rhodes School of Global Studies, Skokie, Ill. Emily Stankovic (@Stankovic_NMS; stankovice@district65.net), Nichols Middle School, Evanston, Ill.

Come learn how to apply *NGSS* and 21st-century skills to astronomy by using lessons to facilitate student understanding of space, magnetism, NASA missions, and the nature of science. Using Evidence to Design Sails: Highlighting the Science, Mathematics, and Engineering Connections

(Grades 4–9) 295, Convention Center Science Focus: ETS, PS2, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Augusto Macalalag, Jr. (@macalalaga; macalalaga@ arcadia.edu), Arcadia University, Glenside, Pa.

Barbara Johnson (johnsob@lmsd.org), Belmont Hills Elementary School, Bala Cynwyd, Pa.

Joseph Johnson (@DrJohnson88; *jjohnson@mercyhurst. edu*), Mercyhurst University, Erie, Pa.

We will focus on the use evidence from a scientific investigation to design sails, as well as use data to explain and revise the model.

Inquiry Through Creepy-Crawlies

(Grades 9–College) 296, Convention Center Science Focus: LS

Jody Hubbell (jody.hubbell@gmail.com), Campbell High School, Smyrna, Ga.

Get the latest buzz on using insects and other arthropods as teaching tools, primarily with a focus on scientific inquiry in the high school classroom.

Drop, Stop, but Don't Pop!

(Grades 4–8) 298, Convention Center Science Focus: ETS1, ETS2.A, CCC4, SEP1, SEP2, SEP3, SEP6

Dennis Engle (@amstiguy; dennis.engle@athens.edu), AMSTI-Athens, Ala.

Angela Balkcom (*abalkcom@troy.edu*), AMSTI-Troy, Ala. Feeling like a daredevil? Students use the engineering design process to build a safe amusement park ride with maximum thrill! Get ready to drop!

Science in the Sky

(Grades K–1) 389, Convention Center Science Focus: ESS1.B, CCC1, CCC4, SEP1, SEP2, SEP6, SEP8

Stacey Holder (*sholder*@*pleasantonusd.net*), Fairlands Elementary School, Pleasanton, Calif.

Jenifer Perazzo (*jperazzo@lbl.gov*), Pleasanton (Calif.) Unified School District

Come explore the many facets of teaching and understanding patterns of the Sun and Moon using representations, models, literature, group talk, demonstrations, and journaling.

Large K Equilibrium

(Grades 7–College) 390, Convention Center Science Focus: LS, PS1, SEP3, SEP4

Gregory Dodd (gbdodd@gmail.com), Retired Educator, Pennsboro, W.Va.

Join this workshop on Large K Equilibrium and learn methods to overcome common student misconceptions. Participants will take part in a hands-on equilibrium lab.

Using Kinesthetic Models to Implement NGSS Life Science Learning for English Language Learners

(Grades 6–12) 391, Convention Center Science Focus: LS2.D, CCC2, SEP2

Virginia (Gini) Oberholzer Vandergon (virginia.vandergon@csun.edu), Brian Foley (bfoley@csun.edu), and Dorothy Nguyen-Graff (dng@csun.edu), California State University, Northridge

Join us for kinesthetic models demonstrating different scenarios of survivorship in populations. Emphasis will be placed on using models with ELL students in science classrooms.

3D Three-Dimensional Learning Forum Session: Better Science for All

(Grades K–12)

393, Convention Center

Science Focus: GEN, NGSS

Aneesha Badrinarayan (abadrinarayan@achieve.org), Achieve, Inc., Washington, D.C.

Implementation of the *NGSS* should focus on advancing science education for all students and doing this successfully means catalyzing strategic change within your school and district. Explore how to leverage existing Achieve tools to address concrete needs (selecting instructional materials, evaluating assessments, etc.) while simultaneously building long-term capacity to advance science instruction. This session is designed for leaders who are (or want to be) thinking strategically about *NGSS* implementation and are looking for ideas of how to move forward.

Testing Look-Alike Liquids

(*Grades* 3–6) 397, *Convention Center* Science Focus: PS1, CCC1, CCC6, SEP2, SEP3, SEP4, SEP6 **Patricia Galvan**, American Chemical Society, Washington, D.C.

Conduct simple tests on four identical-looking clear colorless household liquids. Testing reveals interesting differences elementary students will discover! Complete instructions will be provided and are available at *www.inquiryinaction.org*.

2:00–3:00 PM Exhibitor Workshops Flipping AP Biology with FlinnPREPTM

(Grades 9–12) Science Focus: LS, SEP

260/261, Convention Center

Sponsor: Flinn Scientific, Inc.

Meg Griffith (*mgriffith@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Flipping your AP Biology class can help create an engaging and active classroom, focused on mastering the science practices. Learn how FlinnPREP, a supplemental digital curriculum with assessment solution, can ease your transition by providing video, images, and written content in a condensed form. Learn to use this tool to assess student understanding and as a jumping-off point for teaching modeling. Free resources and door prizes. AP is a trademark of the College Board.

Communicating Science Through Lab Notebooking

(Grades 9–College) 262, Convention Center Science Focus: GEN

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Maintaining a proper lab notebook is key to communicating processes and findings to build on your results. It can also be the difference between winning a patent or not. Learn about critical elements for good documention and rubrics for assessment of student notebooks.

Project-Based Inquiry Science[™] (PBIS): Creating "Coherence and Science Storylines" for Middle School Science

263, Convention Center

Science Focus: GEN, NGSS

(Grades 6-8)

Sponsor: Activate Learning

Mary Starr (*mary@starrscience.com*), Michigan Mathematics and Science Centers Network, Plymouth

STEM learning requires integration! Powerful questions and coherent storylines help solve the integration challenge. PBIS is built around interesting and meaningful Big Questions and Big Challenges, supporting the integration of science and engineering, engaging ALL students in high-quality STEM learning, and embracing the vision of the *Framework* and *NGSS*.

270, Convention Center

Engaging Your Anatomy Students: Building Muscles in Clay

(Grades 5–College) 268, Convention Center Science Focus: LS1.A

Sponsor: ANATOMY IN CLAY® Learning System.

Chuck Roney (roney.charles@gmail.com), Retired High School Teacher, Haddonfield, N.J.

In this workshop, we will revisit the basic rules of muscle form and function in a unique way that engages all learning styles for maximum retention. We will build muscles in clay on a "living skeleton" model, showing the importance of good framework and synergy of the human body. This inquirybased learning system is a great way to integrate *NGSS* and STEAM practices into your classroom.

Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 9–College) Science Focus: LS

Sponsor: Edvotek, Inc.

Maria Dayton (*info@edvotek.com*), Brian Ell, and Tom Cynkar, Edvotek Inc., Washington, D.C.

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



Boosting the Makerspace Experience for Young Scientists!

271, Convention Center

(Grades K–3)

Science Focus: ETS

Sponsor: Delta Education and Frey Scientific

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Makerspaces are popping up everywhere, providing a creative space to explore questions and solve problems. But for younger students, tackling STEM-related challenges requires a foundation in science investigation. Help young scientists build the skills needed for independent exploration in their makerspaces with programs like SCIENCE IN A NUTSHELL.

Identifying Energy Transfers in Motors and Generators

(Grades 6–8) 272, Convention Center Science Focus: PS3, CCC, SEP

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

Dissect a motor to identify its components and make claims about energy transfers in the new FOSS Next Generation Electromagnetic Force Course for middle school. Compare the motor components to those of a generator and consider sustainability of energy sources. Identify connections to the three dimensions of *NGSS*.

Solving the Mystery of STEM Using Forensic Science

(Grades 5–12) 273, Convention Center Science Focus: GEN

Sponsor: Frey Scientific/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

Conduct STEM-focused beginner forensic activities that connect the scientific investigations to analysis and investigative skills. Solve "cases" involving fingerprinting, blood spatter, and document or fabric analysis. Using a digital learning environment with simple supplies, we will apply basic mathematic principles, plus integrate reading and writing strategies with Frey Scientific's Forensics Kit.

Introduction to Wisconsin Fast Plants®

275/276, Convention Center

Science Focus: LS

(Grades K-12)

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants engage students, suit all learning levels, and let you integrate plant development, life cycle, environmental effects, genetics, and evolution into your instruction. Learn the basics for successful planting, flower dissection, and pollination.

Chemical Batteries

(*Grades* 6–8) 278/279, *Convention Center* Science Focus: PS1.B, PS3.B, PS3.C, PS3.D, CCC2, CCC5, SEP1, SEP2, SEP3, SEP4

Sponsor: Lab-Aids, Inc.

Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, S.C. Although we live a battery-powered lifestyle, most of us (students included) have no idea how batteries actually work. In this hands-on workshop, we will engage in an activity from *Issues and Physical Science* from Lab-Aids. 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 in the waste stream.

Plate Tectonics Made Easy

(Grades 5–12) Science Focus: ESS2.B 280/281, Convention Center

Sponsor: Simulation Curriculum Corp.

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

Join us as we use Simulation Curriculum's innovative "The Layered Earth" with interactive lessons to investigate continental drift and the theory of plate tectonics. Best of all, you can now access this classroom-ready curriculum online using your Chromebooks and tablets, as well as traditional Windows and Mac computers.

3:30–4:00 PM Presentation

ASTE-Sponsored Session: Video Games Being Implemented Educationally in Physics and Teacher **Preparation Classrooms**

(Grades 6-College) 387, Convention Center Science Focus: PS1, PS2, PS3

Berkil Alexander (berkil.ray@gmail.com), Kennesaw Mountain High School, Kennesaw, Ga.

David Rosengrant (rosengrant@mail.usf.edu) and Kelly Doyle (kmdoyle@mail.usf.edu), University of South Florida St. Petersburg

Phil Money (pmoney777@gmail.com), River Ridge High School, Woodstock, Ga.

Learn ways to implement video games educationally into your classroom. The games act as hooks but also achieve critical-thinking skills.

3:30–4:30 PM Presentations

Linking K-3 Literacy and STEM

(Grades K-3)

265, Convention Center

Jen Gutierrez (@jengutierrez18; jengutierrez63@gmail. com), integratedSTEMk12, LLC, Chandler, Ariz.

Discover hands-on and time-saving approaches to support greater literacy gains while simultaneously preparing students for active participation in science, technology, engineering, and math concepts.

NSTA District Support

Science Focus: GEN, SEP

(Grades K-12) Science Focus: GEN 269, Convention Center

John Putnam (jputnam@nsta.org), Assistant Executive Director, Professional Programs, NSTA, Arlington, Va.

Kim Stilwell (@kimstilwellNSTA; kstilwell@nsta.org), Manager, New Business Development, NSTA, Arlington, Va. Find out how NSTA can support your district with science PD opportunities that combine access to national thought leaders with high-quality NSTA products.

Data Is Not a Four-Letter Word: Use NOAA Resources to Build Student Proficiency in Data Analysis

(Grades 5-12) 283, Convention Center Science Focus: GEN, NGSS

June Teisan (june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Scientists at the National Oceanic and Atmospheric Administration collect a stunning array of data in their work. Learn



how to access this treasure trove of archived and real-time data, and explore NOAA's data-rich resources, lesson plans, and visualization tools to help you build student proficiency in scientific data analysis.

NSTA Press® Session: Teaching for Conceptual Understanding in Science

291/292, Convention Center

Richard Konicek-Moran (*rkonicek@gmail.com*), Professor Emeritus, UMass Amherst, Mass.

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

Explore what teaching for understanding means and leave with techniques for teaching and learning.

Project-Based Learning in an Early Elementary and Early Childhood Classroom (Grades P-4)

293, Convention Center

Science Focus: GEN, NGSS

(General)

Science Focus: GEN

Byron Gilliland (@byron_gilliland; byron.gilliland@ winona.k12.mn.us), Jefferson Elementary STEM School, Winona, Minn.

Walk away with strategies to successfully meet standards and integrate STEM educational experiences with Project-Based Learning in an early elementary and early childhood classroom.

Thursday, 3:30-4:30 PM

Design Thinking and Writing in the Science Classroom

(Grades P–12) 299, Convention Center Science Focus: GEN, NGSS

Lisa Swenson (lisaswenson@newmanschool.org) and Oskie Creech (oskiecreech@newmanschool.org), Isidore Newman School, New Orleans, La.

Discussion centers on a design thinking and writing approach to the science curriculum: what it is, how it works, and how it fits into today's differentiated science classroom.

Astronomy Is a Verb: Authentic Scientific Investigations Using Online Data

(Grades 8–College) 383, Convention Center Science Focus: ESS

Timothy Slater (@caperteam; *timslaterwyo@gmail.com*), University of Wyoming, Laramie

Stephanie Slater (@caperteam; *sslaterwyo@gmail.com)*, CAPER Center for Astronomy & Physics Education Research, Laramie, Wyo.

Looking for astronomy research projects to do with your students? We will show you how TO DO astronomy in your classroom using online data.

Digital Story Telling Is Elementary!

6

(Grades K-4) 399, Convention Center Science Focus: GEN, SEP1, SEP6, SEP8

Sandra Leiterman (@saleiterman; saleiterman@gmail.com), University of Arkansas at Little Rock

Catch up with the young digital natives! Learn about free web 2.0 tools you can use in your elementary science classroom.

Evaluate Your Sessions Online!

This year, we're giving away an Apple iPad mini 4 Wi-Fi tablet to one lucky attendee who completes a session evaluation!

Remember, the more sessions you attend and evaluate, the more chances you have to win! (See page 12 for details.)

3:30–4:30 PM Hands-On Workshops

Evidence and Explanations: Energy Changes and Transformations in a Bouncing, Flashing Ball

(Grades 3–8) 266, Convention Center Science Focus: PS3.A, PS3.B, CCC5, SEP3

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

Come play with a bouncing, flashing ball to make observations as evidence to explain types of energy changes and transfers.

Inspiring a Focus on Science Practices in the Next Generation: A Support Model for Elementary Teacher Candidates

(Grades K—5, College) 290, Convention Center Science Focus: ETS1, LS4.C, PS1.A, PS2.A, PS2.B **Mary Stein** (*stein@oakland.edu*), and **Betty Crowder** (@bjc913; *crowder@oakland.edu*), Oakland University, Rochester, Mich. Explore a model that is used to support authentic practicebased teaching experiences for teacher candidates. Lesson examples, the model, and K—5 teaching results are shared.

Integrating Social Studies and STEM: STEM Lessons That Support Learning About WWI and WWII

(Grades 4–8) 295, Convention Center Science Focus: ETS1, CCC, SEP

Cheri Jones (*cheri_jones@gwinnett.k12.ga.us*), Chattahoochee Elementary School, Duluth, Ga.

Amanda Meadows (@WES_STEM; ameadows@forsyth. k12.ga.us), Whitlow Elementary School, Cumming, Ga.

Make learning about history hands on with integrated STEM lessons. Find out how to support social studies standards through the engineering design process.

Maury Project Module: Wind-Driven Ocean Circulation

(Grades 6–8) 296, Convention Center Science Focus: ESS2.C

Ann Robichaux (@ayrobichaux; arobichaux@htdiocese.org), Vandebilt Catholic High School, Houma, La.

Immerse your students in learning about surface currents, ocean gyres, and global ocean circulation. Come watch a demonstration, perform an investigation, and take home lesson guides.



—Photo courtesy of Mike Weiss

Engaging Students in the Engineering Design Process Beyond Trial and Error

(Grades 4–9) 298, Convention Center Science Focus: ETS1, PS2, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Augusto Macalalag, Jr. (@macalalaga; macalalaga@ arcadia.edu), Arcadia University, Glenside, Pa.

Joseph Johnson (@DrJohnson88; jjohnson@mercyhurst. edu), Mercyhurst University, Erie, Pa.

Barbara Johnson (johnsob@lmsd.org), Belmont Hills Elementary School, Bala Cynwyd, Pa.

Engage in the design of butterfly wings by using data from investigations to develop, test, evaluate, explain, and revise your engineering models.

3-2-1 Blast Off!

(Grades K–12) Science Focus: ETS1 386, Convention Center

Seth Johnson and **Marci Rogers** (marci.g.rogers@nasa. gov), NASA Office of Education, Stennis Space Center, Miss. This hands-on STEM activity will show you how NASA designs, builds, tests, and launches satellites into outer space using its engineering design process!

Beyond Spaceship Earth

(Grades 3–7)

390, Convention Center

Science Focus: ESS, SEP1, SEP3, SEP6

Becky Wolfe (*beckyw@childrensmuseum.org*), The Children's Museum of Indianapolis, Ind.

Explore classroom STEM investigations related to the International Space Station. Human exploration of space integrates STEM disciplines from science research in microgravity to engineering life support systems for space travel. Feeding the World's Growing Population (Grades 8–10) 391, Convention Center

Science Focus: GEN, SEP

Ann Smart (*asmart@cabrinihigh.com*), Cabrini High School, New Orleans, La.

Get fully equipped for your soil science unit and challenge students to discover ways to increase food production for the world's growing population.

3D Three-Dimensional Learning Forum Session: Selecting Phenomena to Motivate Student Sensemaking

(Grades K–12) 393, Convention Center Science Focus: GEN, NGSS

Tricia Shelton (@tdishelton; *tshelton*@*nsta.org*), Standards Implementation Specialist, NSTA, Arlington, Va.

The right phenomena are a key ingredient in successful threedimensional teaching and learning. Emphasis will be placed on what makes some phenomena better than others and how to use them successfully in the classroom.

What's the Science Behind the Yeti Technology?

(Grades 6–College)	397, Convention Center
Science Focus: ETS, SEP	

Stacy Thibodeaux (@stacythib; *svthibodeaux@gmail.com*), Southside High School, Youngsville, La.

Participants will analyze various materials as insulators and build the newest model of the famous Yeti cup.

3:30–4:30 PM Exhibitor Workshops

Science Bits: 5E Made EASY!

(Grades 6–8) 260/261, Convention Center Science Focus: GEN, NGSS

Sponsor: Science Bits

April Anderson, Technical Training Aids, Birmingham, Ala.

Science Bits is the most awarded science curriculum featuring a high-quality curriculum designed to meet state standards. Science Bits curriculum is organized following the 5E format featuring an incomparable array of interactive multimedia. We are all about learning by doing, providing a unique experience that leads to real student engagement.

Enzymes: Technology Inspired by Nature

(Grades 9–College) 262, Convention Center Science Focus: LS

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

With rising greenhouse gases, scientists look to nature for a biofuel solution. Cellobiase enzyme, an engine for cellulosic biofuel production, takes center stage. Use an inquiry-based approach to extract enzyme, test activity, and design experiments to study how pH, temperature, and concentrations affect reaction rates.

Literacy in the Context of Science in the Elementary Classroom

(Grades K–5)

263, Convention Center

268, Convention Center

Science Focus: GEN, NGSS Sponsor: Activate Learning

Ellen Mintz (*emintz621@gmail.com*), Charleston County School District, Charleston, S.C.

Experience a lesson that demonstrates the integration of literacy strategies in the context of science. This includes the incorporation of academic language in written responses in science notebooks and oral discourse in conjunction with investigations using an interactive word wall.

Simple Ways to Bring Biotech into Your Classroom

(Grades 7–12)

Science Focus: ETS, LS

Sponsor: miniPCR

Ezequiel Alvarez-Saavedra, miniPCR, Cambridge, Mass.

Rebecca Fisher and **Stephanie Messina**, Ochsner Clinic Foundation, New Orleans, La.

Join miniPCR and Ochsner Academic Outreach to learn about low-cost opportunities to teach hands-on biotech and

hear from Ochsner's partner teachers about practical implementation of biotech in the classroom. Learn about Genes in SpaceTM, the free STEM competition where winners can fly their DNA experiments to the International Space Station.

Environmental Toxicology Using Edvotek's New EZ-elegans

(Grades 9–College) Science Focus: LS Sponsor: Edvotek, Inc. 270, Convention Center

Maria Dayton (info@edvotek.com), Brian Ell, and Tom Cynkar, Edvotek Inc., Washington, D.C.

Model organisms allow scientists to investigate biological questions that cannot be studied in humans. Learn how Edvotek's EZ-elegans simplifies culturing *C. elegans* in your classroom. Then, explore effects of environmental factors on *C. elegans* using a simple locomotion assay. Integrate STEM concepts with data collection and statistics. Free gift for attendees!

How to Argue in the Elementary Science Class

(Grades K-4) 271, Convention Center

Science Focus: GEN, SEP7

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Help students develop scientific argumentation skills by making claims based on observable evidence. Put these skills into practice with lessons from Delta Science Modules, as we prove (or disprove) fundamental science concepts. Leave with readers, equipment, and a lesson.

Evolutionary Evidence in the Fossil Record

(Grades 6–8) 272, Convention Center Science Focus: LS4, CCC, SEP

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

What does the fossil record tell us about how life has changed over time? Explore evolutionary history through hands-on activities from the new FOSS Next Generation Heredity and Adaptation Course for middle school, and identify connections to the three dimensions of *NGSS*.

CPO Science LINK Learning Module: Chemistry and the Periodic Table

(Grades 5-12) 273, Convention Center Science Focus: PS Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

CPO Science's new LINK Chemistry learning module is an NGSS approach that lets students experience innovative activities to learn about atomic structure and the periodic table. Use a digital learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, energy levels, and periodicity. Door prizes.

Collecting Evidence: How Does an Owl Get All That **Energy?**

(Grades K-5) 275/276, Convention Center Science Focus: LS, CCC, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Join us to experience a lesson from Carolina's Building Blocks of Science® elementary curriculum. The lesson uses modeling to solve the problem, "Which animals provide energy for owls?" Leave with a set of ideas for using modeling with your students.

Investigating a Cliff Model

(Grades 6-8) 278/279, Convention Center Science Focus: ESS2.C, CCC4, CCC7, SEP2, SEP3, SEP4, SEP6

Sponsor: Lab-Aids, Inc.

Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, S.C. Engineer a coastal breakwater (from the Issues and Earth Science "Erosion and Deposition" unit from Lab-Aids) and analyze the trade-offs of the design. Explore how the natural world is influenced by our engineered world, creating more societal issues that must be solved through science and engineering. See how SEPUP embeds the practices and uses real issues to powerfully deliver content learning.

Zombie Apocalypse!

(Grades 6-12) Science Focus: GEN 280/281, Convention Center

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District

Be part of a zombie apocalypse! Learn about disease-spread modeling using simulations and fun storylines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies with its exciting Hollywood themes used to engage students in learning science!



A signature architectural feature of the New Orleans French Quarter are the many balconies with decorative ironwork.

8:00–9:00 AM Presentations

Student Research to Drive STEM Discovery

(Grades 9–12) Science Focus: GEN, SEP

Lane Smiley, STEM Academy, San Antonio, Tex.

Discover how student-driven research with unique projects prepares students for exploring science topics, plus builds critical thinking and communication skills.

PolyWhat? Application of STEM Using Polymers

(Grades 5–12) 288, Convention Center Science Focus: ETS, PS, CCC, SEP

Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Deepen your students STEM experience by adding various polymer inquiry/engineering design challenges. Take "traditionally fun" polymer activities and turn them into *NGSS* investigations to create more critical thinkers in the classroom.

NSTA Press[®] Session: Creating a STEM Culture for Teaching and Learning

(General)

Science Focus: GEN, NGSS

291/292, Convention Center

Jeffrey Weld (@IowaSTEM; *jeff.weld@uni.edu*), Iowa Governor's STEM Advisory Council, Cedar Falls

Hot off NSTA Press, this book is for teachers, administrators, business partners, community members, parents, scholars, and policymakers who seek to be up-to-speed on the many elements of STEM, from curriculum to professional development to assessment to partnerships to licensing and more.

8:00–9:00 A Hands-On Workshops

Integrating Technology for Greater Student Success(Grades 4-8)289, Convention Center

Science Focus: ETS, SEP

Cheryl McDonough, Ferryway School, Malden, Mass. Discussion centers on helpful strategies that integrate technology to increase student engagement and achievement in *NGSS* curriculum, creating authentic connections to collaboration.



283, Convention Center

ELL Success in an AP Classroom

(Grades 9–12) 295, Convention Center Science Focus: GEN, SEP3, SEP7, SEP8

Drew Bueno-Potts (*gumbogarcon@gmail.com*), Ocean View High School, Huntington Beach, Calif.

Join in for strategies, activities, techniques, projects, and methods that promote success for English language learners in an AP science classroom.

Corrosion Chemistry: Redox Is Everywhere!

(Grades 6–12) 389, Convention Center Science Focus: PS, CCC, SEP

Andrew Nydam (andrewnydam@hotmail.com), Polymer Ambassador, Olympia, Wash.

Join me for real-world examples using labs, demonstrations, and examples that make reactivity, oxidation/reduction, and corrosion exciting, practical, and easy to teach and learn. STEM connections will be shared as well as a CD of information.

Smorgasbord of Technology Tips and Tricks

(General) 399, Convention Center

Science Focus: ETS, CCC

Kris Clements (krisclements@gmail.com), Caddo Parish Magnet High School, Shreveport, La.

Google Chrome shortcuts, apps, extension, some Google Drive (docs, forms, sheets), and add-ons are shared. Three other captivating (perhaps life-changing!) items will be demonstrated, too.

Decoding Starlight—From Photons to Pixels to Images: Using Science and Art

(Grades 7–12) 294, Convention Center Science Focus: ESS1.A, PS4.B, PS4.C

Donna Young (*dlyoung.nso@gmail.com*), NASA NSO STEM Coordinator, Bullhead City, Ariz.

Produce a photon intensity image of a supernova remnant using NASA X-ray data and then convert the image into a public release image with this STEAM activity.

Reaching More Learners Through Collaborative Teaching

(Grades 5–8) 296, Convention Center Science Focus: ETS1, INF, SEP

Emma Banay (@expand_school), ExpandED Schools, New York City, N.Y.

Dawn Waka (dwaka@is234.org), J.H.S. 234 Arthur W. Cunningham, Brooklyn, N.Y.

Chezare Martinez (chezarem1981@hotmail.com) and Diego Rodriguez (diego.rodriguez923@gmail.com), Kingsbridge Heights Community Center, Bronx, N.Y.

Latoya Braswell (latoya.braswell@gmail.com), Highland Park Community School, Brooklyn, N.Y.

This session will share strategies for fostering collaboration between formal and informal educators to spark STEM interest and engagement among ALL learners.

Students With Inquiring Minds Are Scientists: The S.W.I.M.A.S. Approach to Student-Driven Inquiry

(Grades K–8) 298, Convention Center Science Focus: PS1.A, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8 Linda Cook (@sciencecook; lcook@coppellisd.com), Coppell (Tex.) ISD

Malachi Ewbank (@S_W_I_M_A_S; *mewbank*@coppellisd. com), Cottonwood Creek Elementary School, Coppell, Tex. Experience the S.W.I.M.A.S. model for student-driven inquiry, which includes deep alignment with the standards, pre-assessment, student conferences, individual student menus, student-generated questions, post-assessment, and goal setting.This has been implemented in grades K–5 within our school district and is also appropriate for secondary science classes.

AAPT Session: Visible Spectrum Shadows

(Grades 4–9) 388, Convention Center Science Focus: PS4.B

Kathy Holt (*kholt@ligo-la.caltech.edu*) and Tien Huynh-Dinh (*tien@ligo-la.caltech.edu*), LIGO's Science Education Center, Livingston, La.

Engage in hands-on investigations of shadows (and colored shadows) using a LEGO® "brick" activity.

Sculpting, Building, and Movie-Making to Teach Astronomy

(Grades 3–7)

391, Convention Center

INF Science Focus: ESS1.B, INF, SEP2 Linda Schaffer (@lcschaf; lschaffer@curtisschool.org), Curtis

School, Los Angeles, Calif. Children are capable of learning abstract astronomy concepts when multiple ways of modeling are used. Come learn creative modeling strategies, and make a stop animation.

Real-World Science at The National WWII Museum

(Grades 5–12) 392, Convention Center Science Focus: GEN, CCC

Robert Wallace (@robert_rwallace; *iamrobwallace*@gmail. *com*), The National World War II Museum, New Orleans, La. The National WWII Museum offers programs and resources to inspire the next generation of STEM experts. Hands-on activities connected to history is our specialty—let us share it with you.

ASEE Session: Grasping with Straws: Build Your Own "Robot" Hand (Biomedical Engineering)

(Grades 5–8) 393, Convention Center Science Focus: ETS

Michelle Sanchez (@TU_K12_STEM; sanchez@tulane. edu; k12stem@tulane.edu) and Nicole Moody (@TU_K12_ STEM; nmoody2@tulane.edu; k12stem@tulane.edu), Tulane University, New Orleans, La.

Imagine how cool it would be to build a robot hand that could grasp a ball or pick up a toy. In this Biomedical Engineering project, you will learn how to use drinking straws, string, and tape to make a remarkably useful and fun hand. What will you design your hand to do? It is up to you!

ACS Middle Level Session One: Solids, Liquids, Gases, and Changes of State

(Grades 6-8)

Science Focus: PS

397, Convention Center

James Kessler, American Chemical Society, Washington, D.C.

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

8:00–9:00 AM Exhibitor Workshops

Research and Inquiry-Based STEM Program from Flinn Scientific

(Grades 6–College) Science Focus: GEN 260/261, Convention Center

Sponsor: Flinn Scientific, Inc.

Meg Griffith (*mgriffith@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Flinn presents interactive activities that showcase the features and benefits of the FlinnSTEM powered by IMSA Fusion curriculum modules! Created by educators from the internationally recognized Illinois Math and Science Academy, IMSA Fusion is a teacher professional development and research-based inquiry program that ignites student interest.

How to Use Pop Culture in Your Life Science Class

(Grades 9–College) 262, Convention Center Science Focus: LS

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Use popular science to engage high school and college students in your classroom. See how popular TV and movies connect to real-world science discoveries and issues. Learn to use examples like DNA fingerprinting to make gel electrophoresis the foundation of a fun hands-on lab that increases student involvement and understanding.

Elephants: Ecology, Evolution, Biotechnology, and the Ivory Trade

(Grades 8–College) 263, Convention Center Science Focus: LS2.C, LS3, LS4.B, CCC1, CCC2, CCC4, SEP4, SEP7

Sponsor: HHMI BioInteractive

Keri Shingleton (kerishingleton@gmail.com), Holland Hall, Tulsa, Okla.

Changes in elephant populations that result from the pressures of the ivory trade present a unique and engaging opportunity for student learning in a thematic unit. Come explore free HHMI BioInteractive resources that allow students to explore diverse topics in biology, including forensics, population sampling, and natural selection.



PTC Taster Lab—From Genotype to Phenotype

(Grades 6–College) 268, Convention Center Science Focus: LS1, LS3, LS4, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Sponsor: miniPCR

Robert Dennison (*robert@minipcr.com*) and **Sebastian Kraves** (*seb@minipcr.com*), miniPCR, Cambridge, Mass.

A single nucleotide change in your DNA can make you a supertaster. Join in to explore the molecular genetics of taste using PCR and gel electrophoresis. Learn how to amplify and analyze your own genes, linking your PTC taste receptor DNA sequence to your own taster phenotype.

Integrating Chromebook with Vernier Data-Collection Technology

(Grades 3–College)	270, Convention Center			
Science Focus: ETS, PS, SEP				
Sponsor: Vernier Software & Technology				
David Carter (info@vernier com) V	Vernier Software & Tech			

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. In this hands-on workshop, learn how Vernier supports teachers who use Chromebook devices in their classrooms. Experiments such as "Boyle's Law," "Grip Strength Comparison," and "Ball Toss" will be conducted.

Friday, 8:00-9:00 AM

Science Teacher/STEM Teacher: What's the Difference?

(Grades K–12) 271, Convention Center Science Focus: GEN, SEP

Sponsor: STEMscopes

Judy Zimny (*jzimny@NISE.institute*), Accelerate Learning, Inc., Houston, Tex.

Distinguishing between science and STEM is important as teachers integrate STEM into their practice. Join us to discuss the unique nature of STEM, the research-based instructional strategies necessary to support its outcomes, and a STEM certification pathway that encourages self-reflection and growth in STEM teaching.

Ideas for Teaching About Earthquakes and Earth Structure

(Grades K–12)

272, Convention Center

Science Focus: ESS2.B

Sponsor: Pearson Learning Services

Michael Wysession, Washington University in St. Louis, Mo.

Join geophysics professor Michael Wysession as he discusses exciting new discoveries about earthquakes and the structure of Earth and provides examples of activities that can be directly incorporated into *NGSS*-focused curricula. Also, receive an overview of many of the K–12 educational tools developed at Incorporated Research Institutions for Seismology (IRIS).

Untangling Electric Circuits: STEM Activities from Essential Physics

(Grades 7–12) 273, Convention Center Science Focus: PS3.A, PS3.B, PS3.D, CCC2, CCC6, SEP3, SEP4, SEP7

Sponsor: PASCO scientific

Dawn Warren, W.R. Hatfield Elementary School, Justin, Tex.

Students are often confused when learning the basics of circuits because they cannot directly observe the phenomenon, or they become lost in tangled wires. There is a simpler way for students to learn the basics of circuits and have the freedom to easily explore their circuit designs to gain a deeper understanding of electrical concepts. Get hands on with new technology to discover a better way to teach circuits!

Hands-On Science with Classroom Critters

275/276, Convention Center

Science Focus: LS

(Grades K-12)

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Add action and excitement to your science class with live organisms! Discover fun hands-on activities with pill/sow bugs, termites, bessbugs, and butterflies you can use in your labs. Learn about care and handling, as well as easy ways to introduce inquiry. Additional resources available online.

Photosynthesis and Respiration Shuffle

(Grades 9–12) 278/279, Convention Center Science Focus: LS1.C, LS2.B, PS3.D, CCC2, CCC4, SEP2, SEP6

Sponsor: Lab-Aids, Inc.

Donna Parker, Dublin Coffman High School, Dublin, Ohio Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding matter and energy, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, a hands-on activity, and notebooking/discussion strategies, expose student thinking—all from SEPUP's new *Science & Global Issues: Biology* program from Lab-Aids.

When Zombies Attack!

(Grades 6–12) 280/281, Convention Center Science Focus: ETS, LS, PS, SEP5, SEP6 Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District Fred Fotsch, Texas Instruments, Dallas

After the apocalypse, you must use any resources available to survive. In this session, survivors will use a little coding (no experience necessary), a simple speaker, and a flashlight to construct a zombie repulsion device. Using the science of sound and hearing, you may just find a way to stop the ZOMBIE ATTACK!

8:00–10:00 AM Hands-On Workshop

ACS High School Session One: Relating Structure and Properties: Eliciting and Visualizing Student Initial Ideas

(Grades 8–12) 390, Convention Center Science Focus: PS, CCC, SEP

Chad Bridle (cbridle1@gpsbulldogs.org), Grandville High School, Grandville, Mich.

Jennifer Keil (jenniferkeill1@gmail.com) and Marta Gmurczyk (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Rebecca Stober (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts, Denver, Colo.

Kimberly Duncan (@chemduncan; *k_duncan*(@acs.org), American Association of Chemistry Teachers, Washington, D.C.

Saul Trevino (*srt0589@gmail.com*), Houston Baptist University, Houston, Tex.

Discover how to elicit and explore students' initial ideas and models of chemical compounds by using engaging phenomena in relevant contexts.

8:00 AM-5:00 PM Meeting

Discover the NGSS Train-the-Trainer Workshop

(By Preregistration Only) Camp, Hilton This workshop gives teacher leaders a solid understanding of the NGSS, tools for conducting teacher training, and the confidence they need to be leaders.

9:00 AM-4:00 PM Exhibits

Hall H, Convention Center

388, Convention Center

Did you know that NSTA offers exclusive exhibit hall and exhibitor workshop hours today from 3:00 to 4:00 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

9:30–10:00 AM Presentation

iPhones, Microscopes, and Protozoans

(Grades 8–12) 295, Convention Center Science Focus: LS1, LS2, LS4, SEP2, SEP3, SEP4

Evelyn Alexander (@scienceinnyc; ealexander@pcs-nyc. org), Professional Children's School, New York, N.Y.

Freshwater and saltwater protozoans may seem insignificant, but when used appropriately, they can be used to teach a varying grades, English levels, and even different concentrations of science!

9:30–10:00 AM Hands-On Workshop

AAPT Session: 30 Activities in 30 Minutes

(General) Science Focus: PS

William Katzman (@LIGOLA; wkatzman@ligo-la.caltech. edu) and Kathy Holt (kholt@ligo-la.caltech.edu), LIGO's Science Education Center, Livingston, La.

We will share 30 activities in 30 minutes...using simple, inexpensive materials to explain complex science concepts.



9:30–10:30 AM Featured Presentation Learning from the Outside In: The Power of Place-Based Science Education

(General) Science Focus: ESS3, LS



Milton Chen (@miltonchen2), Senior Fellow and Executive Director Emeritus, George Lucas Educational Foundation (Edutopia), San Rafael, Calif.

286/287, Convention Center

Presider: Warren Bernard, Strand Leader, NSTA New Orleans Area Conference, and Retired Educator, New Orleans, La.

As the United States grapples with educating its diverse students to higher levels, creative science educators are taking them beyond the four walls of their classrooms. In "nature nearby" in school gardens, extending to more than 400 national parks, students come alive in outdoor classrooms, studying air and water quality, climate change, endangered species, and habitat restoration. They often learn alongside scientists and naturalists of all ages in experiences ranging from single-day field trips to immersive weeklong classes. Online platforms, such as *iNaturalist.org*, enable students to record, verify, and deepen understanding of species they encounter. Place-based experiential learning can lead students to deeper reflection on their own lives, propelling their educations forward with purpose and passion.

Milton Chen is a senior fellow and executive director emeritus at the George Lucas Educational Foundation (GLEF), a foundation producing Edutopia.org. He also has the unique honor of being named a Jedi Master on his 50th birthday by George Lucas. Milton's 2010 book, Education Nation: Six Leading Edges of Innovation in Our Schools, was listed as one of the year's best education books by the American School Board Journal.

Previously, he was founding director of the KQED Center for Education (PBS) in San Francisco; director of research at Sesame Workshop in New York; and an assistant professor at the Harvard Graduate School of Education. During 2007–2008, Milton was one of 35 Fulbright New Century Scholars.

9:30–10:30 AM Presentations

Assistance from Retiree Committee

(General) 269, Convention Center Science Focus: GEN

Lloyd Barrow, Professor Emeritus, University of Missouri, Columbia

Join me for suggestions from the NSTA Retiree Committee as you plan your retirement.

Mastering Those Tough Soft Skills

(Grades 9–12) 284, Convention Center Science Focus: GEN, SEP1, SEP3, SEP4, SEP6, SEP8 **Briana Richardson** (briana.richardson@wchcs.org), Washington High School, Washington Court House, Ohio **Scott Spohler** (homebase22@gmail.com), Global Impact STEM Academy, Springfield, Ohio

Discovery how using university engineering-style "weekly meetings" helps students learn to publicly share ideas, lead class discussions, and take more ownership of the class.

NSTA Press® Session: Uncovering Young Learners' Ideas About Science

(Grades K–2) Science Focus: GEN, SEP 291/292, Convention Center

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

Experience how formative assessment probes developed for use at the primary level from the award-winning *Uncovering Primary Students' Ideas in Science* elicit K–2 students' ideas, engage them in productive talk, and inform next steps for instruction.

Science Teachers to Science Teacher Educators: How Graduate Study Promotes Science Learning Opportunities for All

(General)

Science Focus: GEN, NGSS

299, Convention Center

Benjamin Herman (hermanb@missouri.edu), University of Missouri, Columbia

Find out how advanced graduate study in science education has facilitated science teachers to understand, research, and implement inclusive research-based practices that meet the *NGSS*.
Darwin and Evolution: Using Historical Critiques and Responses to Address Student Misunderstanding

(Grades 8–College) 383, Convention Center Science Focus: LS4, SEP1, SEP2, SEP4, SEP7, SEP8

Gregory Macklem (gmacklem@nd.edu), University of Notre Dame, Ind.

Erik Peterson (elpeterson@ua.edu), The University of Alabama, Tuscaloosa

Charles Pence (@pencechp; charles@charlespence.net), Louisiana State University, Baton Rouge

Discuss how 19th-century criticisms of Darwin's evolutionary theory map relate to student misconceptions and how the history of Darwin's theory can be used to clarify important concepts.

Coral Reefs: Fragile Wonders Under Threat: Bring Vibrant Environmental Stewardship Lessons to Your Students with Free NOAA Resources

(Grades 5–12) 384, Convention Center Science Focus: ESS3, CCC

June Teisan (*june.teisan@noaa.gov*), NOAA Office of Education, Washington, D.C.

Coral reefs are a unique and stunning global treasure, but these fragile ecosystems are under increasing threat from pollution, harmful fishing practices, and ocean acidification (OA). Even areas far from coasts can impact marine health. Incorporate coral reefs into your existing curriculum—biology, chemistry, climate studies, art, and more—using lesson plans, demos, labs, activities, and multimedia from the National Oceanic and Atmospheric Administration (NOAA).

NSELA-Sponsored Session: Tools for Leaders Session 1

(Grades K–12) 385, Convention Center Science Focus: GEN

Larry Plank, Hillsborough County Public Schools, Tampa, Fla.

The National Science Education Leadership Association welcomes you to join science leaders from around the nation who will share successful tools and best practices for leaders in science education. These tools can be curricular, instructional, or managerial in nature.

Do You Need a New Science Lab?

(Grades 6–12) 387, Convention Center Science Focus: GEN

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

Win a Shell Science Lab Makeover (\$20,000 value) for your school! Are you a middle school or high school science teacher in need of a science lab makeover? Attend this session and learn how you can apply to win the Shell Science Lab Makeover! You will have an opportunity to actually begin to complete the application and have your questions answered.

Video Communication: Bringing the World into Your Classroom

(Grades K–12) 391, Convention Center Science Focus: LS4.A, LS4.B, LS4.C, CCC6, SEP1, SEP4, SEP7, SEP8

Ami Dobelle (adobelle@paramus-catholic.org), Paramus Catholic High School, Paramus, N.J.

Teachers have the world at their fingertips! By connecting students to scientists around the world, teachers can bring real-life Problem-Based Learning into the classroom.

9:30–10:30 AM Hands-On Workshops

NMLSTA-Sponsored Session: Whirligigs: Watching, Wondering, Working Together—Wow!

(Grades 4–8) 265, Convention Center Science Focus: ETS, PS, SEP

Mary Lou Lipscomb (*mllscience@aol.com*), National Middle Level Science Teachers Association, Naperville, Ill.

Rebecca Haub Knipp, Retired Educator, West Harrison, Ind.

Construct different-sized whirligigs (paper helicopters) and collect data on the flight of each. This is the introduction to the opportunity for independent student exploration.

Children's Literature and the Weather: Integrating the *NGSS* and Geography

266, Convention Center

Science Focus: ESS3.A, ESS3.C

(Grades 3-5)

Christine Anne Royce (@caroyce; *caroyce*@aol.com), NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.

Dive into intermediate-grade investigations that help explore the weather concepts and the impact of weather on local communities. Activities are paired with literature-based connections for integrated learning opportunities.

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

(Grades K–5) Science Focus: GEN, SEP 288, Convention Center

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

Bill Badders (@baddersb; *baddersb@roadrunner.com*), 2013–2014 NSTA President, Cleveland Heights, Ohio Find out how to integrate science with literacy and walk away with 33 proven instructional strategies to use in your classroom right away.

Measuring Sea Level from Space

(Grades 6–8) 289, Convention Center Science Focus: ESS

Candice Autry (cautry@sheridanschool.org), Sheridan School, Washington, D.C.

Analyze and interpret ocean depths to plot sea surface height. Participants will practice making two-dimensional data become three-dimensional; in turn, bolstering visualspatial conception skills.

Using Mitotic Division to Introduce Statistics in AP and IB Biology

(Grades 9–College) 290, Convention Center Science Focus: LS1.A, LS1.B, LS1.C, SEP4, SEP5, SEP8 Kristen Daniels Dotti (kristen.dotti@catalystlearningcur-

ricula.com), Verde Valley School, Sedona, Ariz.

Turn the root tip mitosis lab into an opportunity to teach the test of correlation and chi-squared so students are prepared to analyze more complex data.

Fairy Tales of Science

(Grades P-12)

293, Convention Center

Science Focus: GEN, SEP **Robert Wallace** (@robert_rwallace; *iamrobwallace*@gmail. *com*), The National World War II Museum, New Orleans, La. Societies use fairytales to teach important values and principles. Learn the fairytales of science and see how to use them with supporting materials to teach students about the practices of scientists and engineers.

Tech Ed in the Chemistry Classroom: Using Materials Science to Teach Design and Physical Science Concepts

(Grades 8–12) Science Focus: PS3, SEP 294, Convention Center

Allison Antink-Meyer (*aameyer@ilstu.edu*) and Ryan Brown (*rbrown@ilstu.edu*), Illinois State University, Normal Find out how to create a materials testing design challenge for your students and experience three examples of protocols for materials tests.

Planes, Trains, and Automobiles

(Grades 3–5) 296, Convention Center Science Focus: PS2

Angela Stanford (agstanford@saumag.edu), Sarah Adams (sgadams4982@muleriders.saumag.edu), Jasmine MohdZain (jamohdzain7007@muleriders.saumag.edu), and Jennifer Louden (jtlouden@saumag.edu), Southern Arkansas University, Magnolia

Challenge elementary students to investigate various technological advances through the progression of transportation. STEM career fields will be promoted as well as the scientific and mathematical principles supporting the technology.

Connecting Forest Ecology and Wildfires to STEM Careers by Studying Authentic Community Issues

(Grades 3–8) 298, Convention Center Science Focus: GEN

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

Forest ecology and wildfires provide a context for in/ outdoor language-rich science strategies to learn about STEM and related careers and to investigate authentic community issues. Participate in engaging strategies and review student work.

iPad: Data Collection, Analysis, and Student Lab Reporting

(Grades 7–College) 386, Convention Center Science Focus: GEN, SEP3, SEP4

Gregory Dodd (gbdodd@gmail.com), Retired Educator, Pennsboro, W.Va.

Join this hands-on workshop demonstrating the enormous potential of iPads for data collection, analysis, and student lab reporting in your science laboratory. Handouts.

How to Build a Better Muscle

(Grades 7–College) 392, Convention Center Science Focus: LS1.A, CCC1, CCC2, CCC6, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7

Stacy Thibodeaux (@stacythib; *svthibodeaux@gmail.com*), Southside High School, Youngsville, La.

Investigate muscle structure, collect data on muscle fatigue, and build a better muscle based on structure following function in anatomy and physiology.

ASEE Session: Using Engineering and Coding to Make Science Stick

(Grades 5–9) 393, Convention Center Science Focus: ETS1, ETS2.A, PS, SEP1, SEP2, SEP5, SEP6, SEP8

Stephanie Zeiger (*stephanie.zeiger@harpethhall.org*) and **Becky Smith** (*becky.smith@harpethhall.org*), Harpeth Hall, Nashville, Tenn.

Come learn how a traditional science curriculum has been transformed into a progressive problem-solving course with-

9:30–10:30 AM Exhibitor Workshops

Cool! Can We Do That Again?!

(Grades 2–9) 260/261, Convention Center Science Focus: PS1.A, PS1.B, PS4.A

Sponsor: Educational Innovations, Inc.

Jeffrey Feidler, Consultant, Wilmington, Del.

Tired of hearing "Do we have to do that!?" from your students? Come check out some of the coolest activities involving polymers, color, and light. Your students will be asking if they can do that again—and again! Door prizes, freebies, and fun!

Get That Grant Money!

(Grades 9–College) Science Focus: GEN

262, Convention Center

Sponsor: Bio-Rad Laboratories

Leigh Brown (*leigh_brown@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Successful grant writing isn't rocket science, but it can take your teaching to new heights. We will show you how to get organized and find resources. Experienced grant writers will share their powerful tips to get you to the next level. out sacrificing science teaching by incorporating engineering and coding!

ACS Middle Level Session Two: The Water Molecule and Dissolving

(Grades 6–8) Science Focus: PS 397, Convention Center

James Kessler, American Chemical Society, Washington, D.C.

Explore the polarity of the water molecule and identify substances based on their solubility using hands-on activities and molecular animations from the free website *middleschool-chemistry.com*.

Explore Global Climate and Biodiversity with HHMI BioInteractive Apps

(Grades 6–College) 263, Convention Center Science Focus: ESS2.A, ESS2.C, ESS2.D, ESS2.E, ESS3.A, ESS3.C, ETS2.A, LS2.A, LS2.B, LS2.C, LS4.D, CCC1, CCC2, CCC4, CCC5, CCC7, SEP1, SEP2, SEP4, SEP7, SEP8

Sponsor: HHMI BioInteractive

Ryan Reardon (*treardon71@gmail.com*), Shades Valley High School, Irondale, Ala.

Developed for the iPad, HHMI BioInteractive's BiomeViewer and EarthViewer are flexible apps that facilitate exploration and inquiry, allowing students to recognize patterns in nature. Learn the functions of the apps, explore the correlation between climate and biodiversity, and then devise your own investigation.

DNA Structure and Function with a Twist of Dynamic DNA

(Grades 8–College) 264, Convention Center Science Focus: ETS, LS, CCC1, CCC2, CCC6, CCC7, SEP3, SEP6

Sponsor: 3D Molecular Designs

Gina Vogt (vogt@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

Support three-dimensional learning with engaging instructional materials that introduce DNA as a double-stranded helical molecule and as information that encodes proteins. Physical models allow students to explore DNA structure and function. A paper bioinformatics exercise focuses on the beta subunit of hemoglobin and the sickle cell disease mutation.

Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery!

(Grades 8–College) 267, Convention Center Science Focus: LS Sponsor: MiniOne Systems

Richard Chan (*info@theminionesystems.com*), MiniOne Systems, San Diego, Calif.

Come learn and get hands-on experience on how to teach gel electrophoresis and DNA fingerprinting in a 60-minute classroom session. You will pour, load, and run a gel; capture a gel image; analyze the results; and deduce a probable conclusion for a whale of a forensic mystery.

INF New Standards: Project-Based STEM Engineering by WhiteBox Learning

(Grades 6-12)

268, Convention Center

Science Focus: ETS, INF Sponsor: WhiteBox Learning

Graham Baughman (graham@whiteboxlearning.com), WhiteBox Learning, Louisville, Ky.

Engage your students in the complete engineering design process. Meet the new science standards with WhiteBox Learning's project-based STEM Learning System. Students can research, design, analyze, and simulate (iterate) their designs, and compete "virtually," all around the world, from any browser. An integrated learning management system (LMS) is included during this hands-on workshop.

Chemistry with Vernier

(Grades 9-12)

270, Convention Center

Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, learn how Vernier supports chemistry teachers who want their students to use probeware. A variety of experiments from our popular chemistry lab books will be conducted. Learn how our innovative datacollection technology works across multiple platforms such as LabQuest 2, computer, Chromebook, and iPad.

STEMrangers—Making Science Night Meaningful

271, Convention Center

Science Focus: ESS2, INF

Sponsor: STEMscopes

(Grades 3-8)

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

STEMscopes has partnered with EarthEcho International to develop Science Nights for schools that turn learning into action. Come see how you can both learn new science content and help save Earth's most valuable resource. Leave with the tools to make your campus science night an unforgettable event for students and families.

Incorporating the NGSS Crosscutting Concepts into Your Teaching

(Grades K–12) 272, Convention Center Science Focus: GEN, CCC

Sponsor: Pearson Learning Services

Michael Wysession, Washington University in St. Louis, Mo.

NGSS organizing team member and co-author, Michael Wysession, will discuss ways that teaching can align with best practices concerning the *NGSS* Crosscutting Concepts (CCCs). The CCCs are often seen as the most challenging of the three dimensions of the *NGSS*, requiring increased coordination across and within grades, but implemented well, the CCCs can provide students with the deep and intuitive understanding of science that is the goal of the *NGSS*.

Understanding Photosynthesis: A Lab-Based Approach

(Grades 6–12) 273, Convention Center

Science Focus: LS1.A, LS1.C, LS2.B

Sponsor: PASCO scientific

Dawn Warren, W.R. Hatfield Elementary School, Justin, Tex.

How can you clear up student misconceptions about respiration only occurring in the dark, or that only green light is used for photosynthesis? With data! Collect data on plant pigments, light reactions, and carbon cycling to create a better conceptual model that students can synthesize for a complete understanding of photosynthesis.

Shifting to the Five Innovations: How Do We Transform Instruction?

(Grades 6–8) 275/276, Convention Center Science Focus: PS1, CCC, SEP Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience the five innovations with the Smithsonian's new STC-Middle School "Matter and Its Interactions" module. This thought-provoking hands-on workshop will demonstrate three-dimensional learning using phenomena. Leave with a better understanding of how the five innovations enhance science instruction.

Integrate Instruction and Assessment in Three Dimensions Using Learning Progressions

(Grades K–8) 277, Convention Center Science Focus: GEN, NGSS

Sponsor: Amplify

Rebecca Abbott and **Sophia Lambertsen**, The Lawrence Hall of Science, University of California, Berkeley

Explore how learning progressions may be used to organize a coherent sequence of instruction for a unit, define the focus and timing of assessments, and enable actionable inferences about students' progress. Engage with K–8 exemplars from Amplify Science, the new *NGSS*-designed curriculum from The Lawrence Hall of Science.

What Is a Species?

(Grades 9–12) 278/279, Convention Center Science Focus: LS4.A, CCC1, CCC2, SEP6, SEP7, SEP8 Sponsor: Lab-Aids, Inc.

Donna Parker, Dublin Coffman High School, Dublin, Ohio In this activity from the SEPUP high school biology program, learn about conditions that lead to speciation, including isolation due to temporal, geographical, and behavioral factors and more. Then determine whether selected animal or plant pairs are in the early, mid, or late stages of speciation.

The Chemistry of Glow Sticks

280/281, Convention Center

Science Focus: PS

(Grades 6-10)

Sponsor: Fisher Science Education

April Fischione (*april.fischione@thermofisher.com*), Fisher Science Education, Pittsburgh, Pa.

Relive your childhood by making your own glow stick. You may have wondered what happens when you snap a glow stick that causes it to glow. Join us for a fun chemistry experiment where you will create a glowing chemical reaction.



10:00–10:30 AM Presentations

All Means ALL: Reaching Special Populations with Engaging, Meaningful Science Instruction

(Grades K-12)

295, Convention Center

388, Convention Center

Science Focus: GEN

Rhonda Kerr (@kaec_science; *rhonda.kerr@knoxschools. org*), Knoxville Adaptive Education Center, Knoxville, Tenn. It is possible for special needs students to participate in rigorous science instruction! Emphasis will be placed on strategies for challenging the special populations in your science classroom and including them in the inquiriy process.

AAPT Session: Physics Teaching in Scotland

(Grades 3–College) Science Focus: PS

William Katzman (@LIGOLA; *wkatzman@ligo-la.caltech. edu)*, LIGO's Science Education Center, Livingston, La. Hear about two teachers who visited Scotland in conjunction

with an NSF-funded Baton Rouge Area Foundation- and LIGO-facilitated trip.

10:30 AM–12 Noon Hands-On Workshop

ACS High School Session Two: Relating Structure and Properties: Constructing Science Ideas Through Exploring Data

(Grades 8–12) 390, Convention Center Science Focus: PS, CCC, SEP

Jennifer Keil (jenniferkeil11@gmail.com) and Marta Gmurczyk (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Rebecca Stober (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts, Denver, Colo.

Chad Bridle (@sciencebridle; *cbridle1@gpsbulldogs.org*), Grandville High School, Grandville, Mich.

Kimberly Duncan (@chemduncan; k_duncan@acs.org), American Association of Chemistry Teachers, Washington, D.C.

Saul Trevino (*srt0589@gmail.com*), Houston Baptist University, Houston, Tex.

Experience strategies for engaging students in analyzing and interpreting data to discover the structural factors that affect the solubility of ionic compounds.

11:00–11:30 AM Presentation

AAPT Session: Bringing Physics to Broadway: A Brief History of That Physics Show

(General) 388, Convention Center Science Focus: PS, INF, SEP8

David Maiullo (maiullo@physics.rutgers.edu), Rutgers University, Piscataway, N.J.

Hear from a teacher who joined with a Broadway producer to develop an off-Broadway version of his physics demonstration show.

11:00 AM–12 Noon Presentations

Equity in Science Education Roundtable

(General) 266, Convention Center Science Focus: GEN

Natacia Campbell (@NataciaCampbell; ncampbell@joliet86. org), Joliet (Ill.) Public Schools District 86

Join us in sharing equity concerns and resources for enhancing equity and access in science education programs. Learn what NSTA is doing to support equity nationwide.

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

(Grades K–12) 269, Convention Center Science Focus: GEN, NGSS

Acacia McKenna (amckenna@nsta.org), Director, Competitions, NSTA, Arlington, Va.

Hear about various NSTA competitions and discover how they can bring STEM and the *NGSS* into the classroom, as well as give students and teachers a chance to earn recognition and prizes. Free food and a gift bag will be distributed to each participant.

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

(Grades 9–12) 291/292, Convention Center Science Focus: PS2, PS3, CCC, SEP

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

Learn about Argument-Driven Inquiry and how it can help students learn to use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.



Engage and Amplify Enthusiasum in Engineering | Design with Exceptional Literature

(Grades K–6) 293, Convention Center Science Focus: ETS1, SEP

Nicholas Bourke (nbourke@aum.edu) and Michelle Tharpe (mtharpe2@aum.edu), Auburn University at Montgomery, Ala.

Lee Barranco (*lbarranco@montgomerycatholic.org*), Montgomery Catholic Preparatory School, Montgomery, Ala. Explore creative research-based ways to use trade books to enhance your STEM curriculum as we share ideas from Ansberry and Morgan's *Picture-Perfect* books.

Explaining Scientific Phenomena Using Data and Evidence

(Grades 6–12) 295, Convention Center Science Focus: LS, SEP

Shawna Jaggi (spayton-edmonds@sandi.net), Lincoln STEAM Middle College, San Diego, Calif.

Explore phenomena through investigation, modeling, and explanation. Use data and evidence to support a scientific claim about the phenomena.

Engage and Motivate All Students with Differentiated Instruction

(General) 299, Convention Center Science Focus: GEN, SEP1, SEP7, SEP8

Aaron Daffern, Arlington Classics Academy, Arlington, Tex.

Experience proven teaching strategies that promote positive feelings, attention and interest, connectedness and relevancy, and self-efficacy in students.

Helping Students to Think Like a Scientist!

(Grades 5–12) Science Focus GAN, NGSS 383, Convention Center

Susan Koppendrayer, Calvin Christian School, Minneapolis, Minn.

Science fairs and the *NGSS* are a perfect pair. Learn how the science fair provides students with an established outlet for hands-on inquiry and real science and engineering practices that integrates *CCSS* and *NGSS*.

NSELA-Sponsored Session: Tools for Leaders Session 2

(Grades K–12) 385, Convention Center Science Focus: GEN

Bob Sotak (*bobsotak@gmail.com*), Science/STEM Education Consultant, Edmonds, Wash.

Larry Plank, Hillsborough County Public Schools, Tampa, Fla.

The National Science Education Leadership Association welcomes you to join science leaders from around the nation who will share successful tools and best practices for leaders in science education. These tools can be curricular, instructional, or managerial in nature.

Collaborative Conversation in the Classroom

(Grades 2–5) 387, Convention Center Science Focus: GEN, SEP1, SEP6, SEP7, SEP8

Angela Stanford (agstanford@saumag.edu), Southern Arkansas University, Magnolia

Janie Hill, STEM Magnet School, Hot Springs, Ark. Get introduced to a research-based discussion progression technique that uses students' speaking and listening skills to enhance their depth of science knowledge.

Using NGSS to Design Interdisciplinary Lessons for Elementary School Students

(Grades K–5) Science Focus: CEN_NCSS 389, Convention Center

Science Focus: GEN, NGSS Kitchka Petrova (dr.k.petrova@gmail.com), Florida State

University, Tallahassee

NGSS are a powerful tool for navigating the interdisciplinary lesson design process. Join me for information and practical experience on how to do that.

Greenway Case Study Puts Students in the Decision-Making Role: Using Technology and Maps to Inform Development Decisions

(Grades 9–College) 391, Convention Center Science Focus: ESS2.C, ESS3.A, ESS3.C, LS2.A, LS2.C, LS2.D, CCC5,

Jenna Hartley (@JHartleySTEM; *hartley.jenna@epa.gov*), ASPPH, Hillsborough, N.C.

Students generate an opinion and justification for whether they support a proposed greenway route using maps and web-based interactive tools from EnviroAtlas.

11:00 AM–12 Noon Hands-On Workshops A Picture-Perfect Approach to Connecting Literacy and Science

(Grades P–5)

265, Convention Center

Science Focus: GEN, NGSS

Kim Stilwell (@kimstilwellNSTA; kstilwell@nsta.org), Manager, New Business Development, NSTA, Arlington, Va.

Need ideas to connect literacy and science? Never before has it been so easy to interest students in reading and science. *Picture-Perfect Science Lessons* combine the appeal of children's picture books with standards-based science content. Leave with ideas on how to begin the integration in your classroom.

NARST-Sponsored Session: Selecting Cognitively Demanding Science Tasks That Meet the NGSS Vision

(Grades 6–12) 288, Convention Center Science Focus: GEN, NGSS

Miray Tekkumru-Kisa (mtekkumrukisa@fsu.edu), Florida State University, Tallahassee

Teachers' selection of science tasks will be critical to achieving the *NGSS* vision. In this workshop, by using a researchbased tool, we will analyze science tasks based on their cognitive demand levels and the ways in which they can position students to engage in science practices.

Using Puzzling Phenomena and Modeling for All Learners

(Grades 9–12) 289, Convention Center Science Focus: GEN, NGSS

Kat Lucido, Wendell Phillips Academy High School, Chicago, Ill.

Participants will be led through the planning, implementation, and assessment of a unit planned around the *NGSS* and puzzling phenomena. Teaching methods learned here work for students of all levels and backgrounds.

Teach Evolution with the World's Most Extravagant Birds

(Grades 7–12) 290, Convention Center Science Focus: LS4, CCC1, CCC2, CCC4, CCC6, CCC7 Jennifer Fee, The Cornell Lab of Ornithology, Ithaca, N.Y. Watch out Darwin's finches, a brighter bird is the new biology teacher in town! Learn to teach evolution and natural selection through the birds-of-paradise.



Teaching Engineering, Motion, and Energy Through Rube Goldberg

(Grades 1–10)

294, Convention Center

Science Focus: ETS, PS, SEP Elaine Sevin (elainesevin@newmanschool.org), Isidore Newman School, New Orleans, La.

This introduction to STEM for elementary, secondary, or special education classrooms will allow participants to explore motion and energy while creating their own Rube Goldberg machine using found objects.

Guided Science

(Grades 3-5)

296, Convention Center

Science Focus: ESS2, PS1

Sandy Handrick (@SandyHandrick; *sandy.handrick@yahoo.com*), Leander ISD, Cedar Park, Tex.

Regina Erwin (@iregina; *iregina*@me.com), Discovery Communications, Inc., Silver Spring, Md.

Struggling to meet the needs of students with specific science concepts? Walk away with interactive strategies to implement in your classroom next week using differentiated instruction.

Connecting Families Through STEM Events

(Grades P–8) 298, Convention Center Science Focus: ETS, INF, CCC2, CCC6, SEP1, SEP2, SEP3, SEP6

Rebecca McDowell (@BeTheChnge; *beckymmcdowell*@ *gmail.com*) and **Elizabeth Nelson** (@STEM220; *enelson*@ *barrington220.org*), Barrington (Ill.) 220 School District Partner with families by hosting fun yet educational family STEM events. Navigate through the logistics and then team up to complete one or more STEM challenges.

Designing and Evaluating Hands-On Activities to Engage All Learners

(Grades K–12) 386, Convention Center Science Focus: GEN, NGSS

John Loehr (*jfloehr@soinc.org*), Science Olympiad, Oakbrook Terrace, Ill.

Learn how to create and evaluate hands-on activities that engage all learners using a framework from Science Olympiad.

Take Force and Motion Beyond Cars and Coasters

392, Convention Center

(Grades K–5)

Science Focus: PS2.A, SEP

Holly Mentillo (*mentillo@earthlink.net*), Ocean Breeze Elementary School, Melbourne, Fla.

Betty Bigney (*bettybigney@hotmail.com*), Blue Creek Elementary School, Jacksonville, N.C.

Tired of the same car and ramp activities? Over roller coasters? Want something new? Come experience other hands-on science that will excite you and your students!

ASEE Session: Enhancing Prototyping with a Kit-Built Vacuum Former

(Grades 9–College) 393, Convention Center Science Focus: ETS1.B, INF

Heath Tims (@HeathTims; htims@latech.edu) and Mike Swanbom (mswanbom@latech.edu), Louisiana Tech University, Ruston

Come learn how to use a kit-built vacuum former for prototyping new designs beyond modern prototyping 3D printers.

11:00 AM–12 Noon Exhibitor Workshops

Science Bits: 5E Made EASY!

(Grades 6–8) 260/261, Convention Center Science Focus: GEN, NGSS

Sponsor: Science Bits

April Anderson, Technical Training Aids, Birmingham, Ala.

Science Bits is the most awarded science curriculum featuring a high-quality curriculum designed to meet state standards. Science Bits curriculum is organized following the 5E format and features an incomparable array of interactive multimedia. We are all about learning by doing, providing a unique experience that leads to real student engagement.

Become a GMO Investigator

(Grades 9–College) 262, Convention Center Science Focus: LS Sponsor: Bio-Rad Laboratories Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Labora-

tories, Hercules, Calif.

Regardless of where you stand in the GM debate, wouldn't it be interesting to know which foods you eat are GM foods? This hands-on workshop teaches basics of DNA extraction, PCR, and electrophoresis and how they are used to test grocery store food products for the presence of GM foods.

ACS Middle Level Session Three: Chemical Reactions: Breaking and Making Bonds

(Grades 6–8) 397, Convention Center Science Focus: PS

James Kessler, American Chemical Society, Washington, D.C.

Explore the production of a gas and a precipitate, and changes in temperature through hands-on activities and molecular model animations from the free online resource *www.middleschoolchemistry.com*. Participants will receive a handout of the lessons.

Got Lactase? Exploring Genetics with HHMI BioInteractive Resources

(Grades 9–12) 263, Convention Center Science Focus: LS1.A, LS1.D, LS3, LS4.A, LS4.B, LS4.C, CCC1, CCC6, CCC7, SEP4, SEP5, SEP6

Sponsor: HHMI BioInteractive

Sydney Bergman (*bergmans@hhmi.org*), Howard Hughes Medical Institute, Chevy Chase, Md.

Lee Ferguson (mrsleeferg@gmail.com), Allen High School, Allen, Tex.

Why can some people digest milk and others can't? Trace the genetics and evolution of lactose tolerance using free HHMI BioInteractive resources. This exploration, which links classical and molecular genetics, is appropriate for all levels of biology learners.

Of All the Nerve: Exploring Neuronal Communication Through 3-D Learning

(Grades 9–College) 264, Convention Center Science Focus: ETS, LS1, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: MSOE Center for BioMolecular Modeling

Gina Vogt (vogt@msoe.edu), 3D Molecular Designs, Milwaukee, Wis.

Engage students by exploring response to neuronal stimuli and incorporating three-dimensional learning and hands-on/ minds-on models. Construct a neuronal synapse model with a sodium-potassium pump and calcium, sodium, and potassium channels. Model resting and action potentials and neurotransmitter release. Develop explanations of ways drugs and toxins disturb neuronal communication. Handouts.

Viral Amplification: From One to a Billion Copies in 20 Minutes

(Grades 10–College) 267, Convention Center Science Focus: LS Sponsor: MiniOne Systems

Richard Chan (info@theminionesystems.com), MiniOne Systems, San Diego, Calif.

Experience how engaging and accessible classroom biotechnology can be! Amplify sections of the Lambda phage genome using fast and robust PCR. You will set up the reaction, program and monitor the MiniOne PCR System from a tablet app, and then separate and analyze your PCR products on the MiniOne Electrophoresis System.

Bringing the World into Your Classroom with National Geographic Explorers

(Grades K–5) 268, Convention Center

Science Focus: GEN

Sponsor: National Geographic Learning | Cengage

Pam Caffery (*pam.caffery@cengage.com*), National Geographic Learning | Cengage, Boston, Mass.

Your students will be inspired when they connect with National Geographic Explorers and National Geographic Learning! Discover great ideas on how to use National Geographic Learning's program and the Explorers to bring real-world exploration to your classroom.

Biology with Vernier

(Grades 9-12)

270, Convention Center

Science Focus: ETS, LS, SEP

Sponsor: Vernier Software & Technology

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, learn how Vernier supports biology teachers who want their students to use probeware. A variety of experiments from our popular biology lab books will be conducted. Learn how our innovative data-collection technology works across multiple platforms such as LabQuest 2, computer, Chromebook, and iPad.

Using Argumentation for Discussing Phenomena and Increasing Student Voice About STEM

(Grades K-12)271, Convention CenterScience Focus: GEN, SEP7Sponsor: STEMscopes

Heather Wilde (wilde@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.

Reduce teacher talk and increase purposeful student talk as we model consensus building through argumentation around intriguing science phenomena that matter. ELA skills and the 21st-century skills of communication and collaboration are a must in the STEM classroom!

Cultivating a Culture of Argumentation in Your Classroom

(Grades K–8) 272, Convention Center Science Focus: GEN, SEP7

Sponsor: Pearson Learning Services

Zipporah Miller, NSTA Professional Learning Communities Institute, Arlington, Va.

Critical thinking, communication, collaboration, creativity, and innovation are skills that allow students to compete in today's global economy. Cultivating a culture of argumentation in the classroom affords students with opportunities to develop these skills. We will model techniques that help encourage students to formulate explanations based on evidence, in an effort to defend their ideas or challenge a classmate's ideas, as well as challenge the status quo based on evidence.

Evaporative Cooling: Visualizing Matter so It Makes Sense!

(Grades 6–12) Science Focus: PS1 Sponsor: PASCO scientific

273, Convention Center

Dawn Warren, W.R. Hatfield Elementary School, Justin, Tex.

Why does perspiration make you feel cooler? How is cooling related to molecular properties? Help your students understand the process of evaporation by measuring the temperature difference when a substance changes from liquid to gas. Look at the process from a molecular perspective to understand how bonding and shape affect cooling.

Carolina's Young ScientistTM Dissections with Carolina's Perfect Solution® Specimens

(Grades 6–12) 275/276, Convention Center Science Focus: LS Sponsor: Carolina Biological Supply Co. Carolina Teaching Partner

Transform your students into young scientists by bringing these simple hands-on dissections into your classroom. Come dissect our new, exclusive Perfect Solution squid and discuss adaptations while relating structure and function. Compare your observations with the anatomy of a Perfect Solution frog and take a sample back to your lab!

Implementing Argumentation: Evidence, Claims, Reasoning, and Science Seminars in Grades 6–8

277, Convention Center

(Grades 6–8) Science Focus: GEN, NGSS Sponsor: Amplify

Sophia Lambertsen and **Rebecca Abbott**, The Lawrence Hall of Science, University of California, Berkeley Participate in The Lawrence Hall of Science's argumentationrich curricular approach that supports students as they gain expertise using evidence and reasoning to support claims. Engage in a science seminar, getting a glimpse of what the authentic and robust use of argumentation can look like in your classroom.

Cell Differentiation and Gene Expression

(*Grades* 9–12) 278/279, *Convention Center* Science Focus: LS1.A, LS1.B, LS2, LS3, LS4, CCC1, CCC4, CCC6, SEP2, SEP6

Sponsor: Lab-Aids, Inc.

Donna Parker, Dublin Coffman High School, Dublin, Ohio Students often have trouble conceptualizing how selective gene expression works. We will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the new *Science* & *Global Issues: Biology* program from SEPUP and Lab-Aids. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue.

Should Pluto Be a Planet Again?

(Grades 5–College) 280/281, Convention Center Science Focus: ESS1.B Sponsor: Simulation Curriculum Corp. Herb Koller, Simulation Curriculum Corp., Minnetonka, Minn.

Some scientists want to make Pluto a planet again. Let's use the interactive lessons in Simulation Curriculum's award-winning Starry Night to help us decide. And best of all, Starry Night can now be accessed online using your Chromebooks and tablets, as well as regular Windows and Mac computers.



11:30 AM–12 Noon Presentation

AAPT Session: PhysKids! Physics Demonstrations for Early Elementary

388, Convention Center

(Grades K-2)

Science Focus: PS, CCC, SEP

Kathy Holt (kholt@ligo-la.caltech.edu), LIGO's Science Education Center, Livingston, La.

Jessica Graber (jgraber@xula.edu), Xavier University of Louisiana, New Orleans

Demonstrations and associated resources provide physics content appropriate for pre-reading early elementary students.

12:30–1:00 PM Presentations

STEM Approach to Learning in Biology

(Grades 9-12) 295, Convention Center Science Focus: LS3

Lane Smiley (smilelm@gmail.com), STEM Academy, San Antonio, Tex.

Angela Vercher (angela.vercher@apsb.org), Dutchtown High School, Gonzales, La.

STEM programs with PBLs built around inquiry provide a student engagement that solidifies understanding. This session gives tools for biology teachers to lead successful PBLs.

NGSS and UDL: A Powerful Partnership

(Grades 6-8) 384, Convention Center Science Focus: GEN, SEP

Sarah Haines (shaines@towson.edu), Towson University, Towson, Md.

Review findings from a collaborative partnership between a teacher preparation program and a local school district focused on providing ongoing, intensive professional development for general and special educators in high-needs middle schools.

12:30–1:30 PM Featured Presentation A Sense of Wonder: Building on Young Learners' Natural Curiosity about Phenomena

(Grades P-5)

286/287, Convention Center Science Focus: GEN, NGSS



Carla Zembal-Saul (@czem; czem@psu.edu), Professor, Science Education, Penn State, University Park

Presider: Jennifer Williams, Strand Leader, NSTA New Orleans Area Conference, and Isidore Newman School, New Orleans, La.

Young children are naturally curious about how the world works and are capable of sophisticated thinking and reasoning. In the age of an ambitious new framework and standards in science education, there is a compelling emphasis on young children-nurturing their wonder about natural phenomena and equipping them to engage in scientific discourse and practices for investigating the natural world. Carla will share the approaches that elementary teachers are using to leverage children's natural curiosity in early grades to support three dimensional learning in science. Special attention will be given to literacy practices for science.

Carla Zembal-Saul is a professor of science education, co-director of elementary teacher education, and Kahn Professor of STEM Education at Penn State University. A former middle school science teacher with a background in biology, she is co-author of the book, What's Your Evidence? Engaging K-5 Students in Constructing Explanations in Science.

Her research investigates instructional practices and tools that support preservice and practicing elementary teachers in engaging children productively in science practices and discourse with an emphasis on sense-making about natural phenomena. Carla is deeply invested in practitioner inquiry and video analysis of practice as mechanisms for advancing teacher learning and development.

In 2015, she served on the National Academies of Sciences consensus panel that produced the report, Science Teachers' Learning: Enhancing Opportunities, Creating Supportive Contexts.

12:30–1:30 PM Presentations

Eureka! Science Trade Books—Good as Gold!

269, Convention Center (General) Science Focus: GEN, NGSS

Emily Brady (ebrady@nsta.org), Executive Administrator and Editor, NSTA Recommends, NSTA, Arlington, Va. Need great books for student learning? Explore and use NSTA Recommends and the Children's Book Council Outstanding Science Trade Books. Door prizes...books, of course!

Instructional Design Process: Mapping Your Way ANCELEC to a Successful Year

(Grades K-6) 283, Convention Center Science Focus: GEN, NGSS

Ashley Jennings, French Academy, Decatur, Ill. You will be provided with ideas and strategies to teach to your

students' likes and interests, while meeting all standards, using the instructional design process.

Can Inclusive STEM Schools Reduce Gender and **Ethnicity Gaps in the Pipeline?**

(Grades 9-12) 284, Convention Center Science Focus: GEN, NGSS

Melanie LaForce (@melanielaforce; *laforce*@uchicago. edu) and Elizabeth Noble (enoble@uchicago.edu), Outlier Research & Evaluation, Chicago, Ill.

We will examine the implementation of strategies used in inclusive STEM high schools and how they impact student interest and confidence in STEM across gender/ethnicity groups.

INF Teach Gen Z the Sciences via VaPA

(Grades K-5)

Science Focus: INF

297, Convention Center

Jonathan Schwartz, The Winston School, Del Mar, Calif. Walk away with strategies and materials that tap into your young students' love for the Visual and Performing Arts (VaPA) to teach the sciences. I'll demonstrate the VaPA materials and methodology I developed to teach the basics of the engineering and physics involved in the Apollo 13 flight.

Authentic LEARN-ing and Teaching

(Grades 3–12) 299, Convention Center Science Focus: GEN, SEP

Alexandra Stroukoff (astroukoff @ou.edu), The University of Oklahoma, Norman

We will share an authentic learning lesson database, LEARN, that connects research-based strategies with content and process standards.



–Photo courtesy of Jacob Slaton

The National Parks: America's Best Idea and Best Classroom

383, Convention Center (Grades 4-12) Science Focus: INF

Mike Mihalik (@mmihalik24; mmihalik24@gmail.com), Emmaus High School, Emmaus, Pa.

Laura Witman (@laurawitman; lwitman@eastpennsd.org), East Penn School District, Emmaus, Pa.

Hear how America's national parks can be a classroom to inspire learners to become more involved in nature, as well as learn about science and themselves.

AAPT Session: Waves Here, There, and Everywhere: The Physics of Sound, Light, and Gravity

(General) 388, Convention Center

Science Focus: PS4 **Marco Cavaglià** (cavaglia@olemiss.edu), The University of

Mississippi, University, Miss.

Discover the basics of sound waves, light waves, and gravitational waves.

Story-Based STEAM: Active Learning Through Narratives

(Grades P-12) 398, Convention Center Science Focus: GEN, NGSS

Nathan Robinson (@natezenmaster; nvrobinson@utep.edu), The University of Texas at El Paso

Stories create powerful imagery, thought, and curiosity. How can you use that cohesively to deliver STEM content with reasoning and art? Come find out.

12:30–1:30 PM Hands-On Workshops

Integrating Engineering and Science in the Elementary Classroom

265, Convention Center

(Grades K–3) Science Focus: ETS1, SEP

Jen Gutierrez, integratedSTEMk12, LLC, Chandler, Ariz. Come investigate how science is used throughout the engineering design process and experience the distinctions and relationships between engineering, technology, and applications of science.

Sing, Dance, and Celebrate Science

(General) 266, Convention Center Science Focus: GEN, NGSS

Juliana Texley, 2014–2015 NSTA President, and Central Michigan University, Mount Pleasant

Sing with Pete Seeger, dance, enjoy poetry, and celebrate with the Innovation Collaborative. Join me for some effective practices research and free lessons for all ages.

CESI-Sponsored Session: Using Toys to Teach Physics

(Grades K–8) 288, Convention Center Science Focus: PS3.A, PS3.B, SEP

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

Bill Badders (@baddersb; baddersb@roadrunner.com), 2013–2014 NSTA President, Cleveland Heights, Ohio

Karen Ostlund (@karen_ostlund; *klostlund@utexas.edu*), 2008–2009 NSTA President, and The University of Texas at Austin

Betty Crocker (*betty.crocker@unt.edu*), Retired Educator, Denton, Tex.

Tinker with how toys can be used to teach physics to increase student motivation, excitement, and interest. Handouts.

Noble Research Institute Science Exploration Trunks: A Free Lab-Based Resource for Teachers

(Grades 6–12) 289, Convention Center Science Focus: ESS2.C, ESS3.A, ESS3.C, LS2.B, PS1.A Jennifer Scott (@nobleresinst; jmscott@noble.org), Noble Research Institute, Ardmore, Okla.

Inquiry-based 5E (Engage, Explore, Explain, Elaborate, and Evaluate) labs focusing on science and agriculture that integrate the national standards can be sent to you free of charge with most materials needed to complete the lab.

Using Informational Texts and High-Quality Digital Media to Help Young Children Acquire and Apply Science Knowledge

(*Grades 1–2*) 290, *Convention Center* Science Focus: LS1, PS2, CCC2, CCC5, CCC6, SEP1, SEP2, SEP3, SEP4, SEP7, SEP8

Jean Crawford (jbcrawford@pbs.org), PBS, Arlington, Va. Jeanne Paratore (jparator@bu.edu), Boston University, Boston, Mass.

Alicia Poulin, Devotion School, Brookline, Mass.

Discover how to create engaging lessons by combining informational texts and digital media from PBS KIDS, including the free creative coding app PBS KIDS ScratchJr.

NSTA Press® Session: Finding Science in the Outdoors and Through a Good Book

(Grades 2–5) 291/292, Convention Center Science Focus: LS

Christine Anne Royce (@caroyce; *caroyce*@aol.com), NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.

Steve Rich (@bflyguy; *bflywriter*@*comcast.net*), University of West Georgia, Carrollton

Engage in lessons that connect literacy-based selections with activities to incorporate outdoor science themes.



Fly Me to the Moon

293, Convention Center

(Grades 1–4) Science Focus: ESS

Kelly Chaney, University of Arkansas at Little Rock Use children's literature to tie ELA standards to Earth and space science to create a rich learning environment for your students. Activities, methods, and take-home materials let you teach lessons right away! Door prizes provided.

Beams to Bridges: Graphing Stress-Strain Curves

(Grades 9–12) 294, Convention Center Science Focus: ETS1, PS2, SEP2, SEP4, SEP5

Briana Richardson (briana.richardson@wchcs.org), Washington High School, Washington Court House, Ohio Scott Spohler (homebase22@gmail.com), Global Impact

STEM Academy, Springfield, Ohio

A hands-on beam lab produces graphs critical to understanding beam properties for engineering. Emphasis will be placed on making, interpreting, and teaching the graphs in a classroom.

Opportunities for Anti-Bias Education Within the NGSS

(Grades 5–9) 386, Convention Center Science Focus: GEN, NGSS

Lindsay Stewart, Woodland School, Portola Valley, Calif. Want to learn how to align anti-bias education within a science context? This workshop will incorporate issues of oppression, race, gender, and sexuality into existing science lessons.

Batteries and Bulbs

(Grades 3–5) 391, Convention Center Science Focus: PS3, SEP1, SEP2, SEP3, SEP6

Chris Campbell (@UTeachTech; ctc@latech.edu) and Diane Madden (dmadden@latech.edu), UTeachTech at Louisiana Tech University, Ruston

Plug into a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plan model while trying to get your bulb to light!

Exploring Strange New Worlds

(Grades 6–9) 392, Convention Center Science Focus: ESS, SEP

Steve Culivan (*stephen.p.culivan@nasa.gov*), NASA Stennis Space Center, Stennis Space Center, Miss.

Explore NASA space telescopes searching for planets beyond the solar system. Investigate how to use real NASA data to identify planets orbiting stars beyond our own.

ASEE Session: ASEE's K–12 Outreach: Engineering, Go For It (eGFI); Teach Engineering; Link Engineering; and the National Science Digital Library

(Grades P–12) 393, Convention Center Science Focus: ETS, SEP

Becky Smith (*becky.smith@harpethhall.org*), Harpeth Hall, Nashville, Tenn.

The American Society for Engineering Education (ASEE) and its K–12 division will share innovative ways to introduce engineering into the K–12 classroom.

ACS Middle Level Session Four: Chemical Reactions— Ocean Acidification

(Grades 6–8) 397, Convention Center Science Focus: PS

James Kessler, American Chemical Society, Washington, D.C. Explore how excess carbon dioxide in the atmosphere makes water more acidic through hands-on activities from the free website *www.middleschoolchemistry.com*. Participate in simple and inexpensive experiments that show how excess carbon dioxide can contribute to ocean acidification and receive a handout of the lesson.

12:30–1:30 PM Exhibitor Workshops

Exploring Gene Expression with HHMI BioInteractive Resources

(Grades 9–College) 263, Convention Center Science Focus: LS1.D, LS3, SEP2, SEP6

Sponsor: HHMI BioInteractive

Keri Shingleton (kerishingleton@gmail.com), Holland Hall, Tulsa, Okla.

Biology's central dogma describes the flow of genetic information from DNA to RNA to protein. Mutations in DNA sequences can affect the resulting protein, possibly causing disease. Come learn about the latest free HHMI BioInteractive resources that teach gene expression, mutations, and ways to treat genetic diseases.

Take a Walk Through the Molecular World with Watercolor Landscapes

(Grades 9–College) 264, Convention Center Science Focus: LS1, LS3, PS1, CCC3, CCC4, CCC6, SEP1, SEP2

Sponsor: MSOE Center for BioMolecular Modeling

Tim Herman (*herman@msoe.edu*), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

Use vibrant watercolor landscapes to explore the molecular world in the cellular context within which proteins function. David Goodsell's Tour of the Human Cell Panorama traces the production and secretion of antibodies. His new Flu Fight: Immunity & Infection Panorama illustrates how antibodies work to block the influenza infection cycle.

Integrating Chromebook with Vernier Data-Collection Technology

270, Convention Center

(Grades 3–College) Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. In this hands-on workshop, learn how Vernier supports teachers who use Chromebook devices in their classrooms. Experiments such as "Boyle's Law," "Grip Strength Comparison," and "Ball Toss" will be conducted.

Demystifying STEM: Earthquake-Proof Towers and Engineering Design

(Grades 3–12) 271, Convention Center Science Focus: ESS3.C, PS4, SEP

Sponsor: STEMscopes

Suzan Morris (smorris@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.

While investigating the phenomenon of waves through the three dimensions of the *NGSS*, we will design and build earthquake-proof towers that can withstand the devastating horizontal S waves. Using models, simulations, and tower engineering, we will demystify the standards for waves, the practices of engineering design, and how best to teach them through STEM.

Using Problem-Based Learning to Up Your NGSS Game

(Grades K—12) Science Focus: GEN, NGSS

272, Convention Center

Sponsor: Pearson Learning Services

Michael Padilla, 2005–2006 NSTA President, and Professor Emeritus, University of Georgia and Clemson University Clemson, S.C.

A major shift with *NGSS* is the focus on more scenario- and Problem-Based Learning. When students solve problems and see the fit with their daily lives, they are better prepared for next steps in school and career.

Exploring Misconceptions: What Is pH?

(Grades 6–12) 273, Convention Center Science Focus: PS1.A, CCC3, CCC1, SEP2, SEP5 Sponsor: PASCO scientific

Dawn Warren, W.R. Hatfield Elementary School, Justin, Tex.

What is pH and why is the scale 0–14? Help students develop an understanding of the logarithmic pH scale by creating serial dilutions in this hands-on workshop. Using the Wireless pH sensor and universal indicator, your students will be able to analyze and visualize what pH actually means and measures!

Arriving on the Scene: Collect and Analyze Evidence Like the Pros

(Grades 9–12)

275/276, Convention Center

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Thinking about incorporating forensic science into your classroom? Expose your students to the fascinating world

of forensics by using real-world techniques practiced by law enforcement agencies. Keep your students captivated by analyzing and documenting evidence to recreate a crime scene.

Disappearing Jaguars and Sloths: Phenomena and 3-D Instruction for Grades 2–5

277. Convention Center

(Grades 2–5) Science Focus: GEN, NGSS Sponsor: Amplify

Rebecca Abbott and **Sophia Lambertsen**, The Lawrence Hall of Science, University of California, Berkeley

Experience how students investigate declining jaguar and sloth populations while figuring out principles of ecosystems and engaging in three-dimensional learning. Get a hands-on dive into Amplify Science for grades 2–5, engaging with this new *NGSS*-designed program from The Lawrence Hall of Science.

pH Scale

(Grades 9–12) 278/279, Convention Center Science Focus: PS, SEP4, SEP5

Sponsor: Lab-Aids, Inc.

David Ziegler, Valor Christian High School, Highlands Ranch, Colo.

What does pH actually measure? Measure pH indirectly using indicators and absorption using the Lab-Master. Using your data, generate a graph of absorbance versus pH. This graph can be used to determine the pH of solutions, within the measured pH range. Join us for this activity from *A Natural Approach to Chemistry* program.

Drought in Africa Inspires Students to Invent a Smart Irrigation System

(Grades 6–12) 280/281, Convention Center Science Focus: ESS, ETS, CCC1, CCC2, CCC5, CCC7, , SEP1, SEP2, SEP3, SEP4, SEP5, SEP6

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District Fred Fotsch, Texas Instruments, Dallas, Tex.

Come learn how to create a project-based camp or classroom lesson that enables students to apply concepts, such as photosynthesis and the water cycle, to design a smart irrigation system. Inspired by real-world events, students are motivated to apply problem-solving skills and learn some basic programming to come up with innovative solutions to the drought situation in southern Africa.

12:30–2:30 PM Hands-On Workshops

AMSE-Sponsored Session: George W. Carver Conversation Series on Diversity and Equity

(General)

389, Convention Center

Science Focus: GEN

Chelia McCoo Dogan (@CheliasTwins09; *crmccoo*@ *ga.aliefisd.net*), Elsik High School, Houston, Tex.

The life of George Washington Carver exemplifies excellence in spite of circumstances. Dialogue and plan for equitable actions to create opportunities for ALL students.

ACS High School Session Three: Relating Structure and Properties: Demonstrating Understanding Through Integration and Application of Knowledge (Grades 8–12) 390, Convention Center

Science Focus: PS, CCC, SEP

Jennifer Keil (jenniferkeil11@gmail.com) and Marta Gmurczyk (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Rebecca Stober (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts, Denver, Colo.

Chad Bridle (cbridle1@gpsbulldogs.org), Grandville High School, Grandville, Mich.

Kimberly Duncan (@chemduncan; *k_duncan@acs.org*), American Association of Chemistry Teachers, Washington, D.C.

Saul Trevino (*srt0589@gmail.com*), Houston Baptist University, Houston, Tex.

Learn how to help students integrate results and ideas from multiple explorations to build explanations and construct arguments based on structure-property relationships of covalent compounds.

1:00–1:30 PM Presentation

Invisible Technology: Integrating Digital Tools into Preschool Science

(Grades P–2) 384, Convention Center Science Focus: ETS, CCC

Martin Horejsi, University of Montana, Missoula

By using select intuitive technology that simplifies data presentation in colorful visualizations, students in preschool and up can learn to graph, predict, infer, and measure using sensors, iPads, and probeware.

2:00–2:30 PM Presentation

Environmental Monitoring with Drones

(Grades 9–College) 294, Convention Center Science Focus: ESS2.A, ETS, SEP

Steven Babcock (*sbabcock@lsu.edu*), Louisiana State University Laboratory School, Baton Rouge

Have learning soar in your classroom with the use of small, inexpensive unmanned aerial systems or drones for environmental monitoring. Find out how to bring this exciting technology to your students.

2:00–2:30 PM Hands-On Workshop

AAPT Session: Interference and LIGO Update

(Grades 9–12) 388, Convention Center Science Focus: PS4, CCC, SEP

Chadwick Young (chadwick.young@gmail.com) and Kaisa Young (kaisa.young@nicholls.edu), Nicholls State University, Thibodaux, La.

We will present activities related to waves, interference, and general relativity that are associated with the recent LIGO detection of gravitational waves.

2:00–3:00 PM Presentations

Using the NSTA Learning Center as an Online Textbook

(Grades 9–College) 269, Convention Center Science Focus: GEN, NGSS

Flavio Mendez (@fljmendez; *flavio_m@nsta.org*), Assistant Executive Director, Learning Center, NSTA, Arlington, Va. John Putnam, Assistant Executive Director, Professional Programs, NSTA, Arlington, Va.

Professors are invited to come learn how to use the NSTA Learning Center as an online textbook when teaching science preservice teachers.

Materials Matter! Looking at Materials Science to Help Teach Chemistry

(Grades 6–12) Science Focus: PS, CCC, SEP 283, Convention Center

Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Use the concepts of materials science to make the connections of all the areas of science to students. Instead of teaching in "silos," make connections that students can relate to in all areas of science. Take home a CD of information.

Blend, Layer, and Create: Curriculum Differentiation to Reach ALL Students

(Grades 9–12) 284, Convention Center Science Focus: LS, SEP1, SEP3, SEP4, SEP7, SEP8

Renee Andrews (*randrews@pky.ufl.edu*) and **Michelina MacDonald** (@MicMacdonaldPKY; *mmacdonald@pky.ufl. edu*), P.K. Yonge Developmental Research School, Gainesville, Fla.

Need practical ideas for differentiating to meet all learners' needs in heterogeneous classrooms? We will share best practices for differentiating through blended, layered, and project-based biology and marine science curricula.

Elementary Science with NOAA: Free K–5 Science Resources from the National Oceanic and Atmospheric Administration

(Grades K–5) 293, Convention Center Science Focus: ESS, SEP

June Teisan (*june.teisan@noaa.gov*), NOAA Office of Education, Washington, D.C.

The National Oceanic and Atmospheric Administration offers an array of free resources to teach K–5 Earth system and environmental science. Learn about our curricular units and stand-alone lessons, digital storybooks, and inquiry-based activities—resources that enhance literacy skills while encouraging scientific exploration by young minds.

Talk Moves to Encourage Academic Discourse in Elementary Science

(Grades K–5) Science Focus: GEN, SEP 295, Convention Center

K. Renae Pullen (@KRenaeP; renaepullen@outlook.com), Caddo Parish Public Schools, Shreveport, La.

Arguments shouldn't happen on the playground; they should happen in your class! Explore how to engage young students in discourse with Talk Moves.

Spark Students' Curiosity with Chemistry

(Grades K–12) 299, Convention Center Science Focus: PS1, PS3

Karen Kaleuati (*k_kaleuati@acs.org*), American Chemical Society, Washington, D.C.

Learn about the various free resources—games, lesson plans, grants, and more—available from the American Chemical Society (ACS) without being a member. Attendees will walk away with copies of the resources.

Exploration and Discovery Through Maps: Teaching Science with Technology

(Grades 4–8) 391, Convention Center Science Focus: ESS3.A, ESS3.C, CCC5

Jenna Hartley (@JHartleySTEM; *hartley.jenna@epa.gov*), ASPPH, Hillsborough, N.C.

Hear how to engage young learners in exploration with a three-part lesson package that is hands on, outdoors, and includes a high-tech web-based mapping tool developed by the EPA (EnviroAtlas).

2:00–3:00 PM Hands-On Workshops

Ripped from the Headlines: Science News for the Classrooms

(Grades 5–12) 265, Convention Center Science Focus: GEN, NGSS

Robert Wallace (*iamrobwallace@gmail.com*), The National World War II Museum, New Orleans, La.

The best approach for teaching science is to focus on phenomena. One great way to present interesting phenomena to learners is through news. People see news about science all the time...get some news you can use with your students.

\$10,000...You Are Worth It!

(Grades K-12)

266, Convention Center

Science Focus: GEN

Peggy Carlisle, Pecan Park Elementary School, Jackson, Miss.

Amanda Upton, Manager, Nominations and Teacher Awards Programs, NSTA, Arlington, Va.

Every teacher deserves to be recognized! Learn how to write a successful application for the Shell Award.

ASTE-Sponsored Session: Effective Science Practices in Early Childhood: Incorporating STEM and Addressing the NGSS

(Grades P–2) 288, Convention Center Science Focus: GEN, NGSS

Christine Tippett (ctippett@uottawa.ca), University of Ottawa, Ont., Canada

Todd Milford (*tmilford@uvic.ca*), University of Victoria, B.C., Canada

Mary Hobbs (maryhobbs@utexas.edu), The University of Texas at Austin

Bob Williams, Consultant, Belmont, Tex.

Use collections of natural objects to teach young children (preK–2) developmentally appropriate observation, sorting, and communication skills to meet *NGSS* and STEM requirements.

Come On Board as We Show You Around Picture-Perfect Science Lessons!

(Grades P–8) 289, Convention Center Science Focus: GEN, NGSS

Georgia Littleton (georgia.littleton@boonevilleschools.com) and Garnetta Bonner (garnetta.bonner@boonevilleschools. com), Booneville Elementary School, Booneville, Ark.

Allow us to demonstrate our gratification to *Picture-Perfect Science Lessons*. These lessons incorporate science, math, and literacy while captivating the attention of elementary students.

Shaking Up Scientific Investigations for Young Learners

(Grades 1–2) 290, Convention Center Science Focus: ESS2, CCC4, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Kayla Wingard, Discovery Place, Charlotte, N.C.

Discover how to incorporate informal learning into your classroom to create extraordinary experiences for your young learners.

Diversity Through Science: A Country Far Away

(Grades K–12) 296, Convention Center Science Focus: GEN, NGSS

Misty Ewing, Curtis School, Los Angeles, Calif.

Using the book, *A Country Far Away*, students discover how, even though we make inferences based off our observations, they are not always accurate.

Science Practices: Effective, Fun, and Relevant

(Grades 4–11) 298, Convention Center Science Focus: GEN, CCC, SEP3, SEP4

Steve Weinberg (*weinberg@ntplx.net*), Science Consultant, Boynton Beach, Fla.

W. Tony Heiting (*heitingtony@yahoo.com*), Science Consultant, Portland, Ore.

Take part in a number of authentic and engaging investigatory activities that exemplify specific science practices such as planning and carrying out investigations and analyzing and interpreting data that are effective, fun, and relevant.

Infect Your Science Classroom with Math!

(Grades 7–12) 392, Convention Center Science Focus: GEN, SEP3, SEP4, SEP5

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

Integrating science and math can be seamless, natural, and painless. Come join the fun as we collect and analyze data!

ASEE Session: CARS! CARS! CARS! Force and Motion!

(Grades K–5) 393, Convention Center Science Focus: ETS1, PS2.A

Calvin Mackie, STEM NOLA, New Orleans, La.

Participants will be guided in how to engage students in STEM subjects by incorporating an innovative hands-on activity in the classroom. Activity is correlated to match curriculum requirements for every grade level and rich in elementary-level science content.

NESTA Earth System Science Share-a-Thon

(Grades K–12) 394-396, Convention Center Science Focus: ESS

Michael Passow (michael@earth2class.org), Retired Teacher, Englewood, N.J.

Join more than 20 NESTA members and other education specialists as they share their favorite *NGSS*-congruent class-room activities. Lots of free handouts!

2:00–3:00 PM Exhibitor Workshops Community-Based Problems: Using Middle School

Science and Engineering to Help Your Community

(Grades 6–9) 260/261, Convention Center Science Focus: GEN, SEP3

Sponsor: AEOP

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

Real-world connections help strengthen the lessons students learn. Find out how to help students identify community problems that are important to them and discover how the practical application of science and engineering can lead to solutions for those problems. In addition, we will discuss how eCYBERMISSION, an online competition for grades 6–9 students, encourages them to solve a problem in their community using science and engineering practices.

Conserving Panda Population...One Hormone Test Design at a Time!

262, Convention Center

(Grades 9–College) Science Focus: LS

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Come put your immunology and reproductive endocrinology systems knowledge basics to the test as you engineer a hormone detection system that can be used for giant panda population conservation efforts.

The Biology of Skin Color: Explore Evolution with BioInteractive Resources

(Grades 9–12) 263, Convention Center Science Focus: LS1.D, LS3, LS4.A, LS4.B, LS4.C, CCC1, CCC2, CCC7, SEP1, SEP4, SEP6

Sponsor: HHMI BioInteractive

Sydney Bergman (*bergmans@hhmi.org*), Howard Hughes Medical Institute, Chevy Chase, Md.

Why do people have different skin colors? What's the relationship between skin color, UV radiation, selection, and adaptation? HHMI BioInteractive's free standards-focused resources (also available in Spanish) weave together key concepts in biogeography, human evolution, genetics, and anatomy/physiology to explore this phenomenon.

The Science and Ethics of Genome Editing with CRISPR/Cas9

(Grades 9–College) 264, Convention Center Science Focus: ETS, LS1, LS3, LS4, CCC4, CCC6, CCC7, SEP1, SEP2, SEP3

Sponsor: MSOE Center for BioMolecular Modeling

Tim Herman (*herman@msoe.edu*), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

The development of CRISPR/Cas9 gene editing technology promises to revolutionize the biological sciences the same way that restriction endonucleases led to genetic engineering in the 1970s. Explore physical models of the Cas9 endonuclease and contrast the structure/function of this protein with restriction enzymes, zinc finger nucleases, and TALEN proteins.

Competitive Robotics: The VEX Platform

(Grades 4–12) Science Focus: ETS 268, Convention Center

Sponsor: Robotics Education and Competition Foundation **Luis Medina,** Robotics Education & Competition Foundation, Greenville, Tex.

The study of competitive robotics not only encompasses all four pillars of STEM education, but also encourages valuable life skills like teamwork, communication, and Project-Based Learning. The Robotics Education & Competition (REC) Foundation exists to bring this life-changing experience to students all over the globe through the VEX IQ Challenge, VEX Robotics Competition, and VEX U.

Integrating iPad with Vernier Data-Collection Technology

(Grades 3–College) 270, Convention Center Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. In this hands-on workshop, you will learn how Vernier supports teachers who use iPads in their classrooms. Experiments such as "Boyle's Law," "Grip Strength Comparison," and "Ball Toss" will be conducted.

New and Emerging Infectious Diseases: Using Case Studies to Address Crosscutting Concepts and Disciplinary Core Ideas

272, Convention Center

278/279, Convention Center

(Grades 9–12) Science Focus: LS

Sponsor: Pearson Learning Services

Joseph Levine, Author, Boston, Mass.

Zika, Ebola, Bird flu, Lassa fever, and HIV seem to appear out of nowhere. Measles re-emerges to threaten children. Mysteries? Not really. Scientific narratives that fascinate students also demonstrate the value of ecological and evolutionary core ideas and crosscutting concepts in medical practice, public health, and students' lives.

Come to Your Senses: Physiology in Action

(Grades K–12) 275/276, Convention Center Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Don't think you have the nerves for physiology? Learn four easy hands-on activities to explore homeostasis, reflexes and reactions, and response to stimuli. Experience and take home exciting, engaging physiology activities that are suitable for all grade levels!

Chemical Formula and Amino Acids

(Grades 9–12) Science Focus: ETS1, PS2 Sponsor: Lab-Aids, Inc.

David Ziegler, Valor Christian High School, Highlands Ranch, Colo.

What is the difference between subscripts and coefficients? What does "balancing" a chemical equation mean? Many students have trouble with these fundamental concepts in chemistry. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for some elegant, intuitive, and well-differentiated lessons that allow students of all levels to master the chemical formula and thereby move confidently into a deeper understanding of chemistry.

2:00-5:00 PM Short Course

Science Standards from the GUT: Guidance for Unpacking with Teachers (SC-4)

(Grades K–12) Tickets Required; \$28 282, Conv. Center Science Focus: GEN, NGSS

Cathi Cox-Boniol (*ccox@lincolnschools.org*), Lincoln Parish School Board, Ruston, La.

Missy Wooley (missywooley@la.gov), Louisiana Dept. of Education, Ruston

For description, see page 31.

2:30–3:00 PM Presentations Creating a Coding Culture in the

Creating a Coding Culture in the Classroom (Grades P-4) 294, Convention Center

294, Convention Center

Byron Gilliland (@byron_gilliland; byron.gilliland@ winona.k12.mn.us), Jefferson Elementary STEM School, Winona, Minn.

Discover ways to create a culture inclusive to coding in the classroom. Explore methods to create excitement and engage preK-6 students in coding/programming activities.

STEM Opportunities for All: Relationships, Relevance, Rigor

(Grades 5–8) Science Focus: ETS

Science Focus: ETS

384, Convention Center

388, Convention Center

Michelle Dominy (@missydominy; *missyd@gctech.edu*), Gordon Cooper Technology Center, Shawnee, Okla.

The SOAR3 Project resulted from collaboration between education and industry in central Oklahoma and includes a regionally relevant STEM curriculum, teacher training, and a STEM Camp.

Showcasing Real-World Applications Through Digital Storytelling in the Science Classroom

(Grades 7–College) 398, Convention Center Science Focus: GEN, SEP6, SEP7

Ann Haley Mackenzie, Miami University, Oxford, Ohio Digital storytelling is becoming popular for science teachers. Leave with everything needed to get started with digital storytelling, especially with key STEM concepts.

2:30–3:00 PM Hands-On Workshop

AAPT Session: Simple Physics Demos

(General) Science Focus: PS

Dana Browne, Louisiana State University, Baton Rouge Join in for a collection of physics demos that are easy on the budget and demonstrate fundamental physical processes.

2:45–3:30 PM Special Session

Meet the Presidents and Board/Council

(General) Exhibit Hall Entrance, 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! One lucky person who attends this event will be eligible to win a \$100 gift certificate to the NSTA Science Store. Must be present to win. Drawing will take place at 3:20 PM.

3:30–4:30 PM Exhibitor Workshops Investigate Photosynthesis and Cellular Respiration with Algae Beads

(Grades 9–College) Science Focus: LS

262, Convention Center

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Use algae beads in a colorimetric assay to study both photosynthesis and cellular respiration through authentic inquiry investigations in formats to support both AP and *NGSS* biology. Learn how to extend this lab to study the effects of light intensity, light color, temperature, and other organisms on these processes.

Explore the Genetics of Sickle Cell Anemia with HHMI BioInteractive

(*Grades* 9–12) 263, *Convention Center* Science Focus: LS1.A, LS1.D, LS3, LS4.A, LS4.B, LS4.C, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP4, SEP6 Sponsor: HHMI BioInteractive

Lee Ferguson (mrsleeferg@gmail.com), Allen High School, Allen, Tex.

Ryan Reardon (*treardon71@gmail.com*), Shades Valley High School, Irondale, Ala.

Develop your understanding of inheritance using HHMI's free resources. Learn about the discovery of the relationship between the incidence of sickle cell anemia (SCA) and malaria. Explore the molecular basis of SCA, model its pattern of inheritance, and employ the chi-square test to analyze results of genetic crosses.

Physics and Physical Science with Vernier

270, Convention Center

Science Focus: ETS, PS, SEP

(Grades 9-12)

Sponsor: Vernier Software & Technology

David Carter (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, learn how Vernier supports physics and physical science teachers who want their students to use probeware. A variety of experiments from our popular lab books will be conducted. Learn how our innovative datacollection technology works across multiple platforms such as LabQuest 2, computer, Chromebook, and iPad.

Global Change: Teaching the Science with Rigor and Relevance

(Grades 9–12)	272,	Convention	Center
Science Focus: GEN			
Sponsor: Pearson Learning Services			

Joseph Levine, Author, Boston, Mass.

Global change is a perfect *NGSS* phenomenon—interdisciplinary, driven by powerful narratives, and perfect for case study— and PBL-based learning. The Understanding Global Change conceptual framework uses system models to correlate cause and effect, time and scale, and stability and change.

Distilling Aromatic Hydrocarbons

(Grades 9–12) 278/279, Convention Center Science Focus: PS2

Sponsor: Lab-Aids, Inc.

David Ziegler, Valor Christian High School, Highlands Ranch, Colo.

We distill water to purify it, or so we think. So why does the clear distillate from apple cider smell like apples? Join us and find out! Using a clever test-tube distillation apparatus, distill the essence of vanilla and the scent of mint...and even learn how to make brandy from wine! Distillation is a crucial process in chemical engineering and technology, yet few students ever get to explore the process.

5:00–6:30 PM Meeting LSTA Annual Membership Meeting

The National WWII Museum STEM Innovation Gallery

LSTA members are invited to come together for the annual business meeting, awards presentation, and installation of new officers. We welcome the opportunity for our members to visit the new STEM Innovation Gallery at The National WWII Museum and share information on the implementation of the revised Louisiana Student Standards Science (LSSS) and other important issues in science education.

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8:00–8:30 AM Presentation

Inspiring and Capturing Environmentalism in Young Students

(Grades P–K)

293, Convention Center

Science Focus: GEN, INF

Melissa Parks (mparks@stetson.edu), Stetson University, Deland, Fla.

Get the details about a replicable low-cost preK–K activity and supporting literature designed to introduce young students to their ability to act as environmental stewards within their local area.

8:00–9:00 AM Presentations Fitting STEM in the Puzzle

(Grades P-2) 288, Convention Center Science Focus: ESS, LS, PS

Stephanie Zimny (@MadisonRoom11; *zimnys@skokie69. net*) and **Erin Pollyea-Lane** (@RockinRoom14), Madison Elementary School, Skokie, Ill.

Think about your current schedule and themes. Together we will figure out how STEM activities can fit in with what you are already doing!

A Unique Ice Core Investigation That Integrates the Three Dimensions of *NGSS* and STEM

(*Grades* 7–12) 294, *Convention Center* Science Focus: ESS1.A, ESS1.C, ESS2.A, ESS2.B, ESS2.D, ESS3.B, ESS3.C, ETS1.A, ETS1.B, ETS2.B, PS1.A, PS1.B, PS2, PS3.C, PS3.D, PS4.B, PS4.C, CCC1, CCC2, CCC4, CCC5, CCC7, SEP

Donna Young (*dlyoung.nso@gmail.com*), NASA NSO STEM Coordinator, Bullhead City, Ariz.

Discover a multidisciplinary open-ended investigation that incorporates absolute and relative dating, anomalies, historical context, volcanoes, solar proton events, energy cycles, Earth systems, terrestrial events, and supernovas.

Developing Teachers into Master Educators and Leaders: National Board Certification

(Grades P–12) 389, Convention Center Science Focus: GEN, NGSS

Lisa Swenson (lisaswenson@newmanschool.org), Isidore Newman School, New Orleans, La.

A NBCT will examine the process of National Board Certification and how this rigorous professional development process can deepen content and pedagogical knowledge.

Reaching ALL of Your Students in Your 1:1 Classroom

(Grades 5–12) 391, Convention Center

Science Focus: GEN, NGSS

Diane Kasparie, Quincy Notre Dame High School, Quincy, Ill.

Deliver your high-quality standards-based science curriculum, assess your students' understanding, and keep them engaged in your 1:1 classroom to ensure genuine student learning, painlessly! BYOD!

Leveraging GLOBE Resources to Implement Middle Grades Science and Mathematics Standards

(Grades 5–8) 393, Convention Center Science Focus: ESS, SEP

Deborah McAllister (*deborah-mcallister@utc.edu*), The University of Tennessee at Chattanooga

Lisa Wilkes (lswilkes2010@gmail.com), Girls Preparatory School, Chattanooga, Tenn.

This presentation will report on a grant-funded research project to implement the GLOBE program with grade 6 science and mathematics teachers.

C'mon, Neil! Why Good Philosophy Is Part of Good Science Teaching and Science

(General) 397, Convention Center Science Focus: GEN, SEP

Gregory Macklem (gmacklem@nd.edu), University of Notre Dame, Ind.

Erik Peterson (elpeterson@ua.edu), The University of Alabama, Tuscaloosa

Charles Pence (@pencechp; charles@charlespence.net), Louisiana State University, Baton Rouge

Discuss how philosophy is part of science teaching and is necessary for good science and teaching of science. (Hint: it's already in your classroom.)

Green STEM Your Way to a Green School

(Grades 5–12) 399, Convention Center Science Focus: ESS3.A, ESS3.C, ESS3.D, ETS, CCC1, CCC2, CCC3, CCC4, CCC5, SEP

Brian Gautreau (*bgautreau@wlf.la.gov*), Louisiana Dept. of Wildlife and Fisheries, Baton Rouge

Let's use the environment as an exciting context to teach STEM. Find out how Green STEM activities can help your school become more environmentally friendly.

8:00–9:00 AM Hands-On Workshops

Family Science Night, Lapbooks, Formative Assessments, and More

(Grades 5-8)

265, Convention Center

Science Focus: GEN, INF

Jennifer Thibodaux (jethibodaux@assumptionschools.com), Shannon Dorsey (sdorsey@assumptionschools.com), and Misty Landry (milandry@assumptionschools.com), Assumption Parish Schools, Napoleonville, La.

We will address how to successfully plan and execute a family science night, how to put together lapbooks to promote engagement, and how to easily collect data to drive instruction.

Keeping Them Engaged: Using Structured Inquiry to Nurture Their Natural Curiosity

(Grades 1-6) 289, Convention Center Science Focus: GEN

John Zenchak (jjzenchak@noctrl.edu) and Mary Jean Lynch (mlynch@noctrl.edu), North Central College, Naperville, Ill.

Young children are naturally curious about everything. We nurture their curiosity so that they want to learn more about what they observe. Come see how.

Forest Ecosystems: Trees of Life

(Grades P-7) 290, Convention Center Science Focus: ESS, LS1.A, LS1.B, LS1.C, LS2.A, LS2.C, LS2.D, LS3, LS4.B, LS4.C, LS4.D

Georgia Littleton (georgia.littleton@boonevilleschools.com), Garnetta Bonner (garnetta.bonner@boonevilleschools.com), and **Barbette Smithson** (barbette.smithson@boonevilleschools. *com*), Booneville Elementary School, Booneville, Ark.

Join us in a STEM exploration of the ecosystems surrounding the forests and trees of the world. Lesson plans and literacy connections supplied.

NSTA Press[®] Session: From Flower to Fruit

(Grades K-4)

291/292, Convention Center Science Focus: LS

Richard Konicek-Moran (rkonicek@gmail.com), Professor Emeritus, UMass Amherst, Mass.

Put botany back in your curriculum using From Flower to Fruit. We will use formative assessment and lesson planning to teach for understanding.

Think STEM Is Just For The Next Innovator? Meet Some People Who Might Disagree with You On That

(Grades K-12) 295, Convention Center Science Focus: GEN

Benjamin Riden ((*a*)BenRidenPSU; *benjaminriden*(*a*)*yahoo*. com), and Jonté Taylor (@docjttaylor; jct215@psu.edu), Penn State, University Park, Pa.

We will discuss and demonstrate strategies shown to produce positive outcomes for students with disabilities in inclusive STEM classrooms that are becoming increasingly complex.

Exploring the Science and Engineering Practices

(Grades K-12) 296, Convention Center Science Focus: GEN, SEP

Tricia Shelton (@tdishelton; tshelton@nsta.org), Standards Implementation Specialist, NSTA, Arlington, Va.

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

Alligator Cuisine: Exploring the Diet of Alligators Through a Real-World Scenario Approach

(Grades 5-8) 298, Convention Center Science Focus: LS2, CCC

Brian Fontenot (brian.fontenot@cpsb.org), Calcasieu Parish School Board, Lake Charles, La.

Participants will be presented with a scenario in which 100 alligators have been harvested. They will work as a team to sort through the data, organize it, and make conclusions about alligator diet preferences. We will then delve deeply into the interactions of organisms in a marsh.

Cheap STEM for the Classroom

(Grades 6-12) 388, Convention Center Science Focus: ETS1, CCC4, CCC6, SEP4, SEP8

Briana Richardson (briana.richardson@wchcs.org), Washington High School, Washington Court House, Ohio

Scott Spohler (homebase22@gmail.com), Global Impact STEM Academy, Springfield, Ohio

Explore STEM with concrete, metal, and clay. Apply math concepts and pull in lots of real-world examples. Supplies are cheap and kids love destructive testing!

8:00–9:00 AM Exhibitor Workshop Calling All Carbons

(Grades 9–12) 278/279, Convention Center Science Focus: ESS2.A, ESS3.A, ESS3.C Sponsor: Lab-Aids, Inc.

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

8:00-5:00 PM Meeting

Discover the NGSS Train-the-Trainer Workshop

(By Preregistration Only) Camp, Hilton This workshop gives teacher leaders a solid understanding of the NGSS, tools for conducting teacher training, and the confidence they need to be leaders.

8:30–9:00 AM Presentation

Feet Wet, Hands Dirty: Engaging Students in ScienceTeaching and Learning with Stream Investigations(Grades 3–5)293, Convention Center

Science Focus: LS2.A, LS2.C, CCC4

Sarah Haines (*shaines@towson.edu*), Towson University, Towson, Md.

Delve into a pilot program in which preservice teachers partnered with classroom teachers to provide students in grades 3 and 4 with Meaningful Watershed Educational Experiences (MWEEs) that meet the mission of the Maryland Stream Initiative program as well as meet curriculum and learning goals for the preservice students.

9:00 AM-12 Noon Exhibits

Hall H, Convention Center

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. Some exhibitors will offer materials for sale.

9:30–10:00 AM Presentation

Promising Research to Support Greater STEM Workforce Diversity

399, Convention Center

Science Focus: GEN

(General)

Susan Meabh Kelly, AAPT-New England Section, Bridgewater, Conn.

Research-identified obstacles to STEM workforce diversity will be reviewed, as well as promising classroom mitigation strategies. Examples relevant to K–12 experience will be highlighted.



9:30–10:30 AM Featured Presentation Zombies, Sports, and Cola: Implications for Communicating Weather and Climate Change

(General) 286/287, Convention Center Science Focus: ESS2.D, ESS3, INF



Marshall Shepherd (@DrShepherd2013; marshgeo@gmail.com), Professor of Geography, University of Georgia, Athens

Presider: Shannon Lafont, Program Coordinator, NSTA New Orleans Area Conference, and Virtual Academy of Lafourche, Houma, La.

Join Marshall Shepherd as he examines contemporary challenges associated with communicating weather and climate change to broader audiences and students. Using the lens of accessible analogies and his experiences, he will walk through six overarching challenges and provide solutions that can improve the narrative related to these pressing scientific topics. This talk will primarily touch upon strategies for informal education outreach but contain several useful nuggets of information for formal educators as well.

Marshall Shepherd serves as director of the University of Georgia's (UGA) Atmospheric Sciences Program and as a full professor in the Department of Geography. Prior to UGA, he spent 12 years as a research meteorologist at NASA Goddard Space Flight Center and was deputy project scientist for the Global Precipitation Measurement (GPM) mission, a multinational space mission that launched in 2014. In addition, he was the 2013 president of the American Meteorological Society. President Bush honored Marshall in 2004 with the Presidential Early Career Award for pioneering scientific research in weather and climate science.

On a weekly basis, Marshall tackles contemporary weather and climate topics as the host of Weather Geeks, a pioneering national Sunday talk show on The Weather Channel.

9:30–10:30 AM Presentations

INF Scientific Explanations for the Young Scholar

(Grades K–3) 288, Convention Center Science Focus: GEN, INF, SEP6, SEP7, SEP8

Ana Appel (ana.appel@ascendlearning.org), Ascend Learning, Brooklyn, N.Y.

Scientific explanations are achievable with our youngest scholars. Learn how to teach scientific writing in K–3. Walk away with samples and templates.

NSTA Press® Session: Argument-Driven Inquiry in Physical Science: Lab Investigations for Grades 6–8

(Grades 6–8) 291/292, Convention Center Science Focus: PS, CCC, SEP

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

Learn about Argument-Driven Inquiry and how it can help students learn to use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.

Teach Engineering Practices on the Cheap with Concrete

(Grades 6–12)	386, Convention Center
Science Focus: ETS1, SEP	

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

Teach engineering using concrete and other composite materials. Discover inexpensive STEM projects that engage students using the #1 building material in the world. *NGSS* correlations will be shared.

Using Pop Culture and Polymers to Create Inquisitive Minds

(Grades 6–12) 389, Convention Center Science Focus: PS, SEP1, SEP2, SEP6, SEP7, SEP8

Sherri Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Ever wonder how to get more students interested in what you teach? Add some pop culture and a pop culture project to make the connection with your students. Take home a CD.

Ignite Science Writers

(Grades 6–8) Science Focus: GEN, NGSS

Charlotte Cantkier (@CCantkier; *charlotte.cantkier*@acsk-12.org), Arlington Middle School, Arlington, Tenn.

390, Convention Center

391, Convention Center

Andrea Starks (@astar901; andrea.starks@gmsdk12.org), Houston Middle School, Germantown, Tenn.

Emphasis will be placed on strategies for integrating writing in the science classroom. Engage in reading scientific informational text, responding creatively to a given prompt and constructing science writing assignments.

Evolution for Educators

(Grades 6–9)

Science Focus: LS3, LS4

Blake Touchet (*blake.touchet@vpsb.net*), North Vermilion High School, Maurice, La.

The Teacher Institute for Evolutionary Science provides teachers with content knowledge and best practices for teaching evolution, natural selection, and population genetics.

9:30–10:30 AM Hands-On Workshops

Now That We "Write" So Little, How Do We Identify the Writer?

(Grades 8–12) 265, Convention Center Science Focus: GEN, CCC, SEP4, SEP5

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

Experience Stylometry in forensics science to analyze the writing of the "criminal." Analyze several samples to identify the writer of a note.

Science and Children's Curiosity: A Natural Combination

(Grades K–3) Science Focus: GEN, CCC 266, Convention Center

Christine Hypolite, University of Holy Cross, New Orleans, La.

Children have a natural curiosity to explore their world. Build on it through actively engaged activities, all in the compact schedule of an elementary classroom.

Marine Education Share-a-Thon

(Grades 4–12) 394–396, Convention Center Science Focus: ESS, LS2, INF, CCC

Jessica Kastler, Gulf Coast Research Laboratory, Ocean Springs, Miss.

Come by for one-stop shopping for resources on a variety of marine science concepts, organisms, and habitats. Join members of the Southern Association of Marine Educators (SAME) for this share-a-thon featuring educational activities produced and used by science educators from Louisiana to the Florida panhandle.

Beyond Rockets: Using the History of Spaceflight in a STEM Classroom

(Grades 4–8) 290, Convention Center Science Focus: ETS1.A, ETS1.B, ETS2.A, CCC4, CCC7, SEP2, SEP3

Becky Wolfe (*beckyw@childrensmuseum.org*), The Children's Museum of Indianapolis, Ind.

The history of spaceflight includes examples of human innovation and problem solving. Explore ways to merge literacy, engineering, and science using the lens of human spaceflight.

Engineering Success! Exploring Engineering Practices in Your Elementary Classroom

(Grades 3–5) 293, Convention Center Science Focus: ETS

Steven Bernhisel *(steveb@linfield.edu),* Linfield College, McMinnville, Ore.

Come explore what engineering is using engaging, inexpensive, and safe activities designed to teach children about how engineering is conducted.

Lights! Colors! Inquiry Action!

(Grades 5-12) 298, Convention Center Science Focus: ETS1.A, ETS1.B, PS4.B, CCC1, CCC4, SEP2

William Katzman ((@LIGOLA; wkatzman(@)ligo-la.caltech. edu), LIGO's Science Education Center, Livingston, La.

Eileen Hite (*eileenchite*(*@gmail.com*), St. Clement of Rome School, Metairie, La.

Participate in activities shared by alumni from the Exploratium's Teacher Institute. Investigate the nature of light and color, including how we perceive colors.

Connecting Chemistry to Your World Through ChemClub

(Grades 9-12) 388, Convention Center Science Focus: PS, INF

Karen Kaleuati (@ACSChemClubs; k_kaleuati@acs.org), American Chemical Society, Washington, D.C.

Join us to learn more about the ChemClub program, try out some of the activities, and take home a copy of the resources.

LEGO[®] or Links

(Grades 9-College)

397, Convention Center

Science Focus: ETS2.A Carolann Bivens, American Society of Safety Engineers, Jackson, Tenn.

Presenter will share her different careers as well as 20 years of recruiting for all types of professional jobs, including industrial engineers, science lab assistants, and many more. Find out how your best games you love online can be connected to the industry at any age and help you nurture your critical-thinking and problem-solving skills.



9:30–10:30 AM Exhibitor Workshops

Cells as Protein Engineers

(Grades 8-College) 264, Convention Center Science Focus: ETS1, LS1, LS3, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP1, SEP2, SEP4, SEP5, SEP6 Sponsor: MSOE Center for BioMolecular Modeling Tim Herman (herman@msoe.edu), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

Explore the cellular processes of DNA replication, transcription, and translation using hands-on instructional materials that support the three dimensions of NGSS, most notably the science and engineering practice of developing and using models. Handouts and information on borrowing instructional materials from a university model lending library program will be provided.

Prospecting for Mineral Ore

(Grades 9-12) Science Focus: ESS3, ETS1

278/279, Convention Center

Sponsor: Lab-Aids, Inc.

Eric Pyle, James Madison University, Harrisonburg, Va. How do geologists look for mineral ore? In this activity from EDC Earth Science, participants search for a layer of rock containing a valuable mineral called molybdenum by testing sediments collected in strategic spots along river systemsgathering data to decide where the deposit is located. This is no cookie mining activity!

10:00–10:30 AM Presentation

Science for ALL: Modeling in Secondary Science Classroom

295, Convention Center

Science Focus: GEN, SEP2

(Grades 9-12)

Kellie Dean (kdean@d125.org), Molly Sponseller (msponseller@d125.org), and Lauren Albert (@MissLAlbert; lalbert@d125.org), Adlai E. Stevenson High School, Lincolnshire, Ill.

Come see a variety of models from secondary science classes, related to the NGSS performance expectations and science and engineering practices, that can be differentiated to accommodate ALL students.

11:00 AM-12 Noon Presentations

Wildfire Matters: Teachi	ng Wildfire Ecology to Kids
(Grade 4)	269, Convention Center
Science Focus: ESS3.B, ES	SS3.C, LS2.B, LS2.C, PS1.A,
LS2.A, CCC2, CCC5, CCC	C7, SEP1, SEP2, SEP7, SEP8
Einar Jensen (@FireLifeS	Safety; einar.jensen@southmetro.
org), South Metro Fire Rescu	ie, Centennial, Colo.

Hear about a multi-part course based on state academic standards that uses differentiated learning to nurture the inquisitiveness of fourth-graders living in wildfire-prone ecosystems.

What I Have Learned by Being a Science Olympiad Coach

(Grades 6–12) Science Focus: INF 288, Convention Center

Hannah Luna, City Academy, Salt Lake City, Utah

Science Olympiad is a competition of different science disciplines that can provide students with opportunities to explore science beyond the typical curriculum. I will share with you my triumphs and tribulations being a first- and second-year science olympiad coach for Division B (Grades 6–9) and Division C (Grades 9–12). You will learn how to increase student and volunteer participation, ways to receive outside funding to support your team and keep costs low for Title 1 students, and ways to empower students to take accountability in their projects and learning.

Enabling K–6 Students to Understand the Impact of STEM and Integration of All Its Disciplines: Explorations and Problem Solving with Physical Structures and Everyday Household Objects

(Grades K–6) 294, Convention Center Science Focus: GEN, NGSS

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

Presenter will model integration of STEM disciplines in classroom explorations by analyzing and constructing physical structures and everyday household objects to advance learning and ignite engagement and creativity. Handouts.

Fall in Love with NGSS by Using a Digital Science Notebook

(Grades 4–12) 391, Convention Center Science Focus: GEN, NGSS

Mark Kirste (markkirste@comcast.net), Edison Computech 7–8, Fresno, Calif.

Kim Kirste (kimkirste@comcast.net), Tenaya Middle School, Fresno, Calif.

Osa Martinez (*osamartinez@washingtoncolony.org*), Washington Colony Elementary School, Fresno, Calif.

Find out how students can use Google Classroom to create a Digital Science Notebook that supports the *NGSS*.

Developing Science Process Skills Through Citizen Science and School Yard Investigations

(Grades K-12)393, Convention CenterScience Focus: GEN, NGSS

Lindsay Glasner (@BirdSleuth; *lig27@cornell.edu*), The Cornell Lab of Ornithology, Ithaca, N.Y.

Meeting science standards goes hand-in-hand with student investigations and citizen science. Motivate students with school yard projects and real data with our free inquiry curriculum!

Using Mapping as a Global Language to Explore Community, Science, and the Environment

(Grades 4–6) 399, Convention Center Science Focus: ESS2.C, ESS3.C, CCC5

Jenna Hartley (@JHartleySTEM; *hartley.jenna*@epa.gov), ASPPH, Hillsborough, N.C.

Hear about a Spanish and English three-part lesson package—it's hands on, outdoors, and includes a high-tech webbased mapping tool developed by the EPA (EnviroAtlas).

11:00 AM–12 Noon Hands-On Workshops Meeting STEM Leaders in Your Community

(Grades 6–12) 265, Convention Center Science Focus: GEN, INF

Erica Del Riego, St. Brendan High School, Miami, Fla. Inspire students to meet STEM leaders in their community through an interview project that focuses on the leaders' inspiration and role in the community as a mentor for young aspiring scientists.

Designing Designers: Bridging Formal and Informal Education Worlds

(Grades 5–8) 266, Convention Center Science Focus: ETS1, INF, SEP3, SEP6

Emma Banay (emma.banay@gmail.com) and Sabrina Gomez (@expand_school; sgomez@expandedschools.org), ExpandED Schools, New York, N.Y.

Jasmine Maldonado (jmaldonado@nyscience.org), New York Hall of Science, Corona

Suraia Fattah (sfattah@is234.org) and Dawn Waka (dwaka@is234.org), J.H.S. 234 Arthur W. Cunningham, Brooklyn, N.Y.

Wondering how to integrate students' science worlds? Come learn about best practices in integrating classroom and afterschool educators, museums, and community partners to support STEM learning.

Reaching New Heights: Integrating Science Data into Your Classroom

(Grades 1–5) Science Focus: ESS 289, Convention Center

Diane Ripley (diane@visitinfinity.com) and **Donna Torres** (dtorres@visitinfinity.com), INFINITY Science Center, Pearlington, Miss.

Explore how to engage students with atmospheric hands-on activities. Your students will also collect real-time data to use in your classroom to strengthen the connections between real world and the classroom. Find out how with simple, inexpensive activities you can send your students to a higher understanding about the atmosphere around us.

Equity Strategies for Encouraging Hispanic Students to Pursue STEM Careers

(Grades 6–12) 290, Convention Center Science Focus: GEN, SEP1, SEP4, SEP6, SEP7

Ann Haley Mackenzie (@annmackenzie; mackenah@ miamioh.edu) and Megan Brown (brownmm5@miamioh.edu), Miami University, Oxford, Ohio

We will showcase exciting activities that capture the attention of ALL students with an emphasis on the Hispanic learner using role models and simulations.

NSTA Press® Session: Uncovering Students' (and Teachers') Ideas in Science, Engineering, and Mathematics with Formative Assessment Probes and Techniques

(Grades K–12) Science Focus: GEN, SEP 291/292, Convention Center

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

Experience examples of how the *Uncovering Student Ideas* assessment probes and Formative Assessment Classroom Techniques (FACTs) can be used to elicit students' STEM-related ideas and inform instruction.



Story Starts to STEM: Using Children's Literature to Engage Young Students in STEM

293, Convention Center

Science Focus: ETS1, SEP

(Grades P-5)

Jennifer Williams (@ScienceJennifer; @nolascience; jenniferwilliams@newmanschool.org), Isidore Newman School, New Orleans, La.

Tiffany Abshire (tabshire@mceschool.com), Mount Carmel School, Abbeville, La.

Promote your students' enthusiasm and understanding of scientific concepts by integrating children's literature into project-based experiments and activities. Join us as we explore the seamless blend of "story time" and STEM. Leave with a bibliography of suggested titles and STEM activities.

Coding Across the Curriculum

(Grades 3–10) 298, Convention Center Science Focus: GEN, SEP1, SEP6, SEP8

Erin Dunroe (@dunroe_erin; erind13@me.com), Lake Center Middle School, Santa Fe Springs, Calif.

Learn to use the coding program Scratch to incorporate STEM across multiple content areas, including example projects and rubrics. Participants will create a Scratch project.

Polymers: Teaching "Hard" Concepts with Gooey Labs

(Grades 5–12) 388, Convention Center Science Focus: ETS, PS, CCC, SEP2, SEP3, SEP4, SEP6, SEP8

Andrew Nydam (andrewnydam@hotmail.com), Polymer Ambassador, Olympia, Wash.

Enhance and deepen science and math concepts taught in traditionally "fun" polymer labs. Add more scientific processes to make them inquiry based. Take home a CD of information.

11:00 AM–12 Noon Exhibitor Workshop Using Climate Proxies to Learn About Earth's Climate History

(Grades 9–12) 278/279, Convention Center

Science Focus: ESS2, ESS3, ETS1

Sponsor: Lab-Aids, Inc.

Eric Pyle, James Madison University, Harrisonburg, Va. How can scientists tell what Earth's climate was like thousands of years before human measurements? This activity simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph samples of replicas of these organisms to determine relative warm and cold periods in the past 200,000 years. This activity is from EDC Earth Science, a new NSF-supported high school program from Lab-Aids.

JOIN US

7TH ANNUAL

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Forum & Expo

HOSTED BY NSTA Philadelphia, Pennsylvania July 11–13, 2018

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

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

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



#STEMforum

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

В

С

EA

ΕN

G

PH

PD

Т

Biology/Life Science
Chemistry/Physical Science
Earth/Space Science
Environmental Science
Integrated/General Science
Physics/Physical Science
Professional Development
Technology Education



Photo courtesy of Jacob Slaton

3D Molecular Designs	#419	
1050 N. Market St., CC130A	В, С, ЕА,	
Milwaukee, WI 53202	EN, G, PD	
Phone: 414-774-6562	4–12, College	
E-mail: contactus@3dmoleculardesigns.com		
Website: www.3dmoleculardesians.com		

Hands-on and minds-on! Our kits and models focus on core ideas and crosscutting concepts in biology, chemistry, physical, and life sciences. We involve teachers in developing products and field testing. Kits support STEM and the *NGSS*. Ask about our Dynamic DNA Kit and new Synapse Construction Kit.

7th Annual STEM Foru	n &	#319
Expo, Hosted by NSTA		PD
Philadelphia	PreK-12,	College
1840 Wilson Blvd.		
Arlington, VA 22201		
Phone: 703-243-7100		
E-mail: conferences@nsta.org	1	
Website: www.nsta.org/stemf	orum	

Stop by and hear about the exciting program we have for the 7th Annual STEM Forum & Expo, *hosted by NSTA* in Philadelphia, July 11–13, 2018. The STEM Forum is a unique, focused professional development event that brings together informal and formal educators, business leaders, and governmental and company representatives who are interested in, and who have tools and resources to share that will ensure successful implementation of STEM education into our schools and communities.

Activate Learning	#416
44 Amogerone Crossway, Suite 7862	В, С,
Greenwich, CT 06836 EA, EN, G	, PD, T
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E-mail: info@activatelearning.com	
Website: www.activatelearning.com	

Activate Learning is a leader in research-based K–12 STEM curricula, including IQWST® and Project-Based Inquiry Science: $PBIS^{TM}$ for middle school science and several leading high school math, science, and engineering curricula. Our project-based, investigation-centered, and literacy-rich programs immerse students in rigorous learning environments, in which their original questions and everyday experiences are central to standards-based 3-D learning.

AEOP eCYBERMI	SSION and	#224
GEMS	B, C, EA, EN, C	G, PH, T
1840 Wilson Blvd.	PreK–12,	College
Arlington, VA 2220	1	
Phone: 703-312-936	0	
E-mails: swhitsett@n	sta.org	
Website: www.usaeop	.com	

The National Science Teachers Association administers and provides support to U.S. Army Educational Outreach Programs that engage students in real-world STEM experiences. Learn about eCYBERMISSION, an online competition free to grades 6–9 students, as well as GEMS and Camp Invention, summer STEM enrichment programs for grades K–12 teachers and students.

American Chemical So	ciety	#315
1155 16th St. NW		C, PD
Washington, DC 20036	PreK-1	2, College
Phone: 800-333-9511		
E-mail: education@acs.org		
Website: www.acs.org/educa	tion	

The ACS Education Division serves learners and educators by building communities and providing effective chemistry education resources, grants, communities, professional development opportunities, standards, and guidelines. Stop by our booth to find information that can support your efforts to provide innovative, relevant, and effective chemistry education from kindergarten through professional education.

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Greenville, TX 75402		
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E-mail: luis_medina@roboticseducation.org		
Website: www.roboticseducation.org		
	-	

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Website: www.spacecenter.org/ea	lucation-programs

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E-mail: david@acceleratelearning.com	
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Robotics Education & Competition Foundation (Booth #616)

Friday, Dec 1	2:00-3:00 PM	268, Conv. Center	Competitive Robotics: The VEX Platform (p. 88)	
Science Bits (B	ooth #322)			
Thursday, Nov 30	3:30-4:30 PM	260/261, Conv. Center	Science Bits: 5E Made EASY! (p. 60)	
Friday, Dec 1	11:00 AM-12 Nooi	n 260/261, Conv. Center	Science Bits: 5E Made EASY! (p. 77)	
Simulation Cu	rriculum Corp. (B	ooth #510)		
Thursday, Nov 30	9:30-10:30 AM	280/281, Conv. Center	Hurricanes, Earthquakes, and Volcanoes Are Now Online! (p. 42)	

Thursday, Nov 30	2:00-3:00 PM	280/281, Conv. Center	Plate Tectonics Made Easy (p. 56)	
Friday, Dec 1	11:00 AM-12 Noon	280/281, Conv. Center	Should Pluto Be a Planet Again? (p. 79)	

Southern Science Supply (Booth #520)

Thursday, Nov 30 11:00 AM-12 Noon 268, Conv. Center

Science Classroom Theater: A Cross-Curricular Bonanza (p. 43)

Index of Exhibitor Workshops

STEMscopes (Booth #408)

Friday Dec 1	8.00-9.00 AM	271 Conv Center	Science Teacher/STEM Teacher: What's the Difference? (n. 66)
Friday, Dec 1	9:30–10:30 AM	271, Conv. Center	STEMrangers—Making Science Night Meaningful (p. 72)
Friday, Dec 1	11:00 AM-12 No	on 271, Conv. Center	Using Argumentation for Discussing Phenomena and Increasing Student Voice
			about STEM (p. 78)
Friday, Dec 1	12:30-1:30 PM	271, Conv. Center	Demystifying STEM: Earthquake-Proof Towers and Engineering Design (p. 84)

Texas Instruments (Booth #604)

Thursday, Nov 30	11:00 AM-12 Noon	280/281, Conv. Center	Using Maggots, Flies, and Flesh to Solve a Mystery! (p. 44)
Thursday, Nov 30	12:30-1:30 PM	280/281, Conv. Center	Are You Moody? (p. 50)
Thursday, Nov 30	3:30-4:30 PM	280/281, Conv. Center	Zombie Apocalypse! (p. 61)
Friday, Dec 1	8:00-9:00 AM	280/281, Conv. Center	When Zombies Attack! (p. 66)
Friday, Dec 1	12:30-1:30 PM	280/281, Conv. Center	Drought in Africa Inspires Students to Invent a Smart Irrigation System (p. 84)

Vernier Software & Technology (Booth #401)

Friday, Dec 1	8:00-9:00 AM	270, Conv. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 65)
Friday, Dec 1	9:30-10:30 AM	270, Conv. Center	Chemistry with Vernier (p. 72)
Friday, Dec 1	11:00 AM-12 Noon	270, Conv. Center	Biology with Vernier (p. 78)
Friday, Dec 1	12:30-1:30 PM	270, Conv. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 83)
Friday, Dec 1	2:00-3:00 PM	270, Conv. Center	Integrating iPad with Vernier Data-Collection Technology (p. 88)
Friday, Dec 1	3:30-4:30 PM	270, Conv. Center	Physics and Physical Science with Vernier (p. 90)

WhiteBox Learning (Booth #504)

Thursday, Nov 30	9:30-10:30 AM	268, Conv. Center	New Standards: Project-Based STEM Engineering by WhiteBox Learning (p. 41)
Friday, Dec 1	9:30-10:30 AM	268, Conv. Center	New Standards: Project-Based STEM Engineering by WhiteBox Learning (p. 72)

Earth and Space Science

Thursday

8:00-9:00 AM	P-3	266, Conv. Center	Let's Get Wet: Water and Weather (p. 36)
8:00-9:00 AM	5–9	299, Conv. Center	Cycles, Sinks, and Solutions (p. 36)
8:00-9:00 AM	5-8	388, Conv. Center	NASA Journey to Mars (p. 38)
8:00-9:00 AM	3-5	284, Conv. Center	Elementary STEM Response to Intervention (p. 35)
8:00-9:00 AM	4-8	393, Conv. Center	NMLSTA-Sponsored Session: Surf's Up (p. 38)
8:00–9:00 AM	3-8	291/292, Conv. Center	NSTA Press® Session: Uncovering Grades 3–8 Students' Ideas About Water in the Earth System (p. 36)
9:30-10:30 AM	4–C	264, Conv. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 40)
9:30-10:30 AM	5-12	280/281, Conv. Center	Hurricanes, Earthquakes, and Volcanoes Are Now Online! (p. 42)
12:30-1:30 PM	5-12	388, Conv. Center	Hands-On Universe (p. 48)
12:30-1:30 PM	3-8	290, Conv. Center	NESTA Session: Data Collecting: Getting to KnowYour Piece of the Planet! (p. 47)
12:30–1:30 PM	9-12	397, Conv. Center	Analysis of Supernova Remnants Using X-Ray Spectroscopy with NASA Data and STEM Tools (p. 48)
12:30-1:30 PM	6–C	283, Conv. Center	AstroMATH: Classroom Activities to Improve Quantitative Skills Using Astronomy (p. 45)
2:00-3:00 PM	5-12	280/281, Conv. Center	Plate Tectonics Made Easy (p. 56)
2:00-3:00 PM	K-1	389, Conv. Center	Science in the Sky (p. 53)
2:00-3:00 PM	7–9	388, Conv. Center	Watch the Delta Grow: Interactive Data-Based Earth Science Lessons (p. 52)
2:00-3:00 PM	6-8	294, Conv. Center	Out-of-This-World Space Science (p. 53)
2:00-3:00 PM	P-3	293, Conv. Center	A River Story: A Collaborative Effort to Explore Cross-Curricular Connections to
			Earth Science Disciplinary Core Ideas for Second Graders (p. 52)
3:30-4:30 PM	6-8	296, Conv. Center	Maury Project Module: Wind-Driven Ocean Circulation (p. 58)
3:30-4:30 PM	3-7	390, Conv. Center	Beyond Spaceship Earth (p. 59)
3:30-4:30 PM	8–C	383, Conv. Center	Astronomy Is a Verb: Authentic Scientific Investigations Using Online Data (p. 58)
3:30-4:30 PM	6-8	278/279, Conv. Center	Investigating a Cliff Model (p. 61)

Friday

8:00–9:00 AM	7-12	294, Conv. Center	Decoding Starlight—From Photons to Pixels to Images: Using Science and Art (p. 63)
8:00–9:00 AM	P-2	288, Conv. Center	Fitting STEM in the Puzzle (p. 93)
8:00-9:00 AM	K-12	272, Conv. Center	Ideas for Teaching About Earthquakes and Earth Structure (p. 66)
8:00-9:00 AM	3–7	391, Conv. Center	Sculpting, Building, and Movie-Making to Teach Astronomy (p. 64)
9:30-10:30 AM	P–C	286/287, Conv. Center	Featured Presentation: Learning from the Outside In: The Power of Place-Based
			Science Education (p. 68)
9:30-10:30 AM	5-12	384, Conv. Center	Coral Reefs: Fragile Wonders Under Threat: Bring Vibrant Environmental Stewardship
			Lessons to Your Students with Free NOAA Resources (p. 69)
9:30-10:30 AM	6–C	263, Conv. Center	Explore Global Climate and Biodiversity with HHMI BioInteractive Apps (p. 71)
9:30-10:30 AM	3-5	266, Conv. Center	Children's Literature and the Weather: Integrating the NGSS and Geography (p. 69)
9:30-10:30 AM	3-8	271, Conv. Center	STEMrangers: Making Science Night Meaningful (p. 72)
9:30-10:30 AM	6-8	289, Conv. Center	Measuring Sea Level from Space (p. 70)
11:00AM-12 Noon	9-С	391, Conv. Center	Greenway Case Study Puts Students in the Decision-Making Role: Using Technology
			and Maps to Inform Development Decisions (p. 75)
11:00AM-12 Noon	3-5	296, Conv. Center	Guided Science (p. 76)
11:00AM-12 Noon	5-С	280/281, Conv. Center	Should Pluto Be a Planet Again? (p. 79)
12:30-1:30 PM	6-12	289, Conv. Center	Noble Research Institute Science Exploration Trunks: A Free Lab-Based Resource for
			Teachers (p. 82)
12:30-1:30 PM	6-12	280/281, Conv. Center	Drought in Africa Inspires Students to Invent a Smart Irrigation System (p. 84)
12:30-1:30 PM	3-12	271, Conv. Center	Demystifying STEM: Earthquake-Proof Towers and Engineering Design (p. 84)
12:30-1:30 PM	6–9	392, Conv. Center	Exploring Strange New Worlds (p. 83)
12:30-1:30 PM	1-4	293, Conv. Center	Fly Me to the Moon (p. 82)

Schedule at a Glance Earth and Space Science

2:00-3:00 PM	K-5	293, Conv. Center	Elementary Science with NOAA: Free K–5 Science Resources from the National
			Oceanic and Atmospheric Administration (p. 86)
2:00-3:00 PM	K-12	394-396, Conv. Center	NESTA Earth System Science Share-a-Thon (p. 87)
2:00-2:30 PM	9-С	294, Conv. Center	Environmental Monitoring with Drones (p. 85)
2:00-3:00 PM	4-8	391, Conv. Center	Exploration and Discovery Through Maps: Teaching Science with Technology (p. 86)
2:00-3:00 PM	1-2	290, Conv. Center	Shaking Up Scientific Investigations for Young Learners (p. 87)

Saturday

8:00-9:00 AM	5-8	393, Conv. Center	Leveraging GLOBE Resources to Implement Middle Grades Science and Mathematics
			Standards (p. 93)
8:00-9:00 AM	P-7	290, Conv. Center	Forest Ecosystems: Trees of Life (p. 94)
8:00-9:00 AM	9-12	278/279, Conv. Center	Calling All Carbons (p. 95)
8:00–9:00 AM	7-12	294, Conv. Center	A Unique Ice Core Investigation That Integrates the Three Dimensions of <i>NGSS</i> and STEM (r. 93)
0.00.0.00	5 10		STEM (p. 95) $(1 - 1)^{-1}$
8:00–9:00 AM	5-12	399, Conv. Center	Green STEM Your Way to a Green School (p. 93)
9:30-10:30 AM	P–C	286/287, Conv. Center	Featured Presentation: Zombies, Sports, and Cola: Implications for Communicating
			Weather and Climate Change (p. 96)
9:30-10:30 AM	4-12	394-396, Conv. Center	Marine Education Share-a-Thon (p. 97)
9:30-10:30 AM	9-12	278/279, Conv. Center	Prospecting for Mineral Ore (p. 98)
11:00AM-12 Noon	9-12	278/279, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 101)
11:00AM-12 Noon	1-5	289, Conv. Center	Reaching New Heights: Integrating Science Data into Your Classroom (p. 100)
11:00AM-12 Noon	4-6	399, Conv. Center	Using Mapping as a Global Language to Explore Community, Science, and the Environment (p. 99)
11:00AM-12 Noon	4	269, Conv. Center	Wildfire Matters: Teaching Wildfire Ecology to Kids (p. 99)

Engineering, Technology, and the Application of Science

Thursday

3—5	284, Conv. Center	Elementary STEM Response to Intervention (p. 35)
8-12	386, Conv. Center	Physics-Driven Engineering Design and 3D Printing: Putting It All Together! (p. 38)
5—9	299, Conv. Center	Cycles, Sinks, and Solutions (p. 36)
P-5	390, Conv. Center	Engineering Design for All (p. 38)
6–C	270, Conv. Center	Martian Genetics: An Electrophoresis Exploration (p. 39)
4–C	264, Conv. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 40)
6-12	268, Conv. Center	New Standards: Project-Based STEM Engineering by WhiteBox Learning (p. 41)
5-12	273, Conv. Center	CPO's Wind Turbine: A STEM Approach to Engineering and Design (p. 41)
4-8	271, Conv. Center	Makerspaces with Options for All Students (p. 41)
6–9	260/261, Conv. Center	Putting the "E" in STEM: Engineering in the Middle School Science Classroom (p. 42)
4-8	294, Conv. Center	Implementing Engineering Design: If I Can Do It, You Can, Too! (p. 47)
6-8	278/279, Conv. Center	NGSS Biomedical Engineering: Get a Grip! (p. 50)
6-12	391, Conv. Center	Using a 3D Printer in the High School Science Classroom—From Application to
		Creation (p. 46)
P-2	293, Conv. Center	Community Collaborative for Early Learning and Media: A New Model for Early
		Science Learning (p. 46)
6-12	280/281, Conv. Center	Are You Moody? (p. 50)
3-8	273, Conv. Center	Modular Robotics for Elementary and Middle School: CUBELETS! (p. 49)
7–9	388, Conv. Center	Watch the Delta Grow: Interactive Data-Based Earth Science Lessons (p. 52)
K-3	271, Conv. Center	Boosting the Makerspace Experience for Young Scientists! (p. 56)
4-8	298, Conv. Center	Drop, Stop, but Don't Pop! (p. 53)
7–11,C	283, Conv. Center	Cars: A Fundamental Look at How They Work and the Science Involved (p. 51)
	3-5 8-12 5-9 P-5 6-C 4-C 6-12 5-12 4-8 6-9 4-8 6-12 P-2 6-12 3-8 7-9 K-3 4-8 7-11,C	3-5284, Conv. Center $8-12$ 386, Conv. Center $5-9$ 299, Conv. Center $P-5$ 390, Conv. Center $6-C$ 270, Conv. Center $4-C$ 264, Conv. Center $6-12$ 268, Conv. Center $5-12$ 273, Conv. Center $4-8$ 271, Conv. Center $4-8$ 294, Conv. Center $6-12$ 391, Conv. Center $6-8$ 278/279, Conv. Center $6-12$ 391, Conv. Center $6-12$ 280/281, Conv. Center $7-9$ 388, Conv. Center $7-9$ 388, Conv. Center $4-8$ 294, Conv. Center $7-11, C$ 283, Conv. Center

Schedule at a Glance Engineering, Technology, and the Application of Science

2:00-3:00 PM	4—9	295, Conv. Center	Using Evidence to Design Sails: Highlighting the Science, Mathematics, and Engineering Connections (p. 53)
3:30-4:30 PM	4-8	295, Conv. Center	Integrating Social Studies and STEM: STEM Lessons That Support Learning About WWI and WWII (p. 58)
3:30-4:30 PM	6–C	397, Conv. Center	What's the Science Behind the Yeti Technology? (p. 59)
3:30-4:30 PM	7-12	268, Conv. Center	Simple Ways to Bring Biotech into Your Classroom (p. 60)
3:30-4:30 PM	4–9	298, Conv. Center	Engaging Students in the Engineering Design Process Beyond Trial and Error (p. 59)
3:30-4:30 PM	K-12	386, Conv. Center	3-2-1 Blast Off! (p. 59)

Friday

8:00-9:00 AM	3–C	270. Conv. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 65)
8:00-9:00 AM	5-8	296, Conv. Center	Reaching More Learners Through Collaborative Teaching (p. 64)
8:00-9:00 AM	6-12	280/281, Conv. Center	When Zombies Attack! (p. 66)
8:00-9:00 AM	5-8	393, Conv. Center	ASEE Session: Grasping with Straws: Build Your Own "Robot" Hand (Biomedical
			Engineering) (p. 64)
8:00-9:00 AM	5-12	288, Conv. Center	PolyWhat? Application of STEM Using Polymers (p. 63)
8:00-9:00 AM	4-8	289, Conv. Center	Integrating Technology for Greater Student Success (p. 63)
8:00-9:00 AM	P–C	398, Conv. Center	Smorgasbord of Technology Tips and Tricks (p. 63)
9:30-10:30 AM	5–9	393, Conv. Center	ASEE Session: Using Engineering and Coding to Make Science Stick (p. 71)
9:30–10:30 AM	4—8	265, Conv. Center	NMLSTA-Sponsored Session: Whirligigs: Watching, Wondering, Working Together— Wow! (p. 69)
9:30-10:30 AM	9-12	270, Conv. Center	Chemistry with Vernier (p. 72)
9:30-10:30 AM	8–C	264, Conv. Center	DNA Structure and Function with a Twist of Dynamic DNA (p. 72)
9:30-10:30 AM	6-12	268, Conv. Center	New Standards: Project-Based STEM Engineering by WhiteBox Learning (p. 72)
11:00AM-12 Noon	9-С	393, Conv. Center	ASEE Session: Enhancing Prototyping with a Kit-Built Vacuum Former (p. 77)
11:00AM-12 Noon	9-С	264, Conv. Center	Of All the Nerve: Exploring Neuronal Communication Through Three-Dimensional
			Learning (p. 78)
11:00AM-12 Noon	9-12	270, Conv. Center	Biology with Vernier (p. 78)
11:00AM-12 Noon	P-8	298, Conv. Center	Connecting Families Through STEM Events (p. 76)
11:00AM-12 Noon	1-10	294, Conv. Center	Teaching Engineering, Motion, and Energy Through Rube Goldberg (p. 76)
12:30-1:30 PM	P-12	393, Conv. Center	ASEE Session: ASEE's K-12 Outreach: Engineering, Go For It (eGFI), Teach
			Engineering, Link Engineering, and the National Science Digital Library (p. 83)
12:30-1:30 PM	6-12	280/281, Conv. Center	Drought in Africa Inspires Students to Invent a Smart Irrigation System (p. 84)
12:30-1:30 PM	K-3	265, Conv. Center	Integrating Engineering and Science in the Elementary Classroom (p. 82)
12:30-1:30 PM	9-12	294, Conv. Center	Beams to Bridges: Graphing Stress-Strain Curves (p. 82)
12:30-1:30 PM	3-С	270, Conv. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 83)
1:00-1:30 PM	P-2	384, Conv. Center	Invisible Technology: Integrating Digital Tools into Preschool Science (p. 85)
2:00-2:30 PM	9-С	294, Conv. Center	Environmental Monitoring with Drones (p. 85)
2:00-3:00 PM	9-С	264, Conv. Center	The Science and Ethics of Genome Editing with CRISPR/Cas9 (p. 88)
2:00-3:00 PM	K-5	393, Conv. Center	ASEE Session: CARS! CARS! Force and Motion! (p. 87)
2:00-3:00 PM	3-С	270, Conv. Center	Integrating iPad with Vernier Data-Collection Technology (p. 88)
2:00-3:00 PM	9-12	278/279, Conv. Center	Chemical Formula and Amino Acids (p. 89)
2:00-3:00 PM	4-12	268, Conv. Center	Competitive Robotics: The VEX Platform (p. 88)
2:30-3:00 PM	P-4	294, Conv. Center	Creating a Coding Culture in the Classroom (p. 89)
2:30-3:00 PM	5-8	384, Conv. Center	STEM Opportunities for All: Relationships, Relevance, Rigor (p. 89)
3:30-4:30 PM	9–12	270, Conv. Center	Physics and Physical Science with Vernier (p. 90)
3:30-4:30 PM	K-5,C	290, Conv. Center	Inspiring a Focus on Science Practices in the Next Generation: A Support Model for
			Elementary Teacher Candidates (p. 58)

Schedule at a Glance Engineering, Technology, and the Application of Science

Saturday

8:00–9:00 AM	7–12	294, Conv. Center	A Unique Ice Core Investigation That Integrates the Three Dimensions of <i>NGSS</i> and STEM (p. 93)
8:00-9:00 AM	6-12	388, Conv. Center	Cheap STEM for the Classroom (p. 94)
8:00-9:00 AM	5-12	399, Conv. Center	Green STEM Your Way to a Green School (p. 93)
9:30-10:30 AM	4-8	290, Conv. Center	Beyond Rockets: Using the History of Spaceflight in a STEM Classroom (p. 97)
9:30-10:30 AM	9-12	278/279, Conv. Center	Prospecting for Mineral Ore (p. 98)
9:30-10:30 AM	5-12	298, Conv. Center	Lights! Colors! Inquiry Action! (p. 98)
9:30-10:30 AM	9-С	397, Conv. Center	LEGO® or Links (p. 98)
9:30-10:30 AM	6-12	386, Conv. Center	Teach Engineering Practices on the Cheap with Concrete (p. 96)
9:30-10:30 AM	3-5	293, Conv. Center	Engineering Success! Exploring Engineering Practices in Your Elementary
			Classroom (p. 97)
9:30-10:30 AM	8–C	264, Conv. Center	Cells as Protein Engineers (p. 98)
11:00AM-12 Noon	P-5	293, Conv. Center	Story Starts to STEM: Using Children's Literature to Engage Young Students in STEM (p. 100)
11:00 AM-12 Noon	5-8	266. Conv. Center	Designing Designers: Bridging Formal and Informal Education Worlds (p. 100)
11:00AM-12 Noon	5-12	388, Conv. Center	Polymers: Teaching "Hard" Concepts with Gooey Labs (p. 101)
11:00 AM-12 Noon	9–12	278/279, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p.101)

Life Science

Thursday

8:00-9:00 AM	5-12	273, Conv. Center	CPO Science Biology Energy QUEST: Teaching Cell Energy Pathways (p. 39)
8:00-9:00 AM	P-3	293, Conv. Center	Hidden in Plain Sight: Engaging Activities to Explore Camouflage for Young Learners (p. 37)
8:00-9:00 AM	6–C	270, Conv. Center	Martian Genetics: An Electrophoresis Exploration (p. 39)
8:00-11:00 AM	4-8	387, Conv. Center	SC-3: Stretch Your Legs for Science! (p. 39)
9:30-10:30 AM	6-8	278/279, Conv. Center	NGSS Ecology: Modeling the Introduction of a New Species (p. 42)
9:30-10:30 AM	4–C	264, Conv. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 40)
9:30-10:30 AM	9-С	270, Conv. Center	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 41)
9:30-10:30 AM	9-12	275/276, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 41)
11:00AM-12 Noon	6-8	278/279, Conv. Center	NGSS Reproduction: Breeding Critters—More Traits (p. 44)
11:00AM-12 Noon	8–C	264, Conv. Center	5 E'sy Ways to Investigate Enzymes! (p. 42)
11:00AM-12 Noon	6–C	270, Conv. Center	Left at the Scene of the Crime: Introduction to Forensic Science (p. 43)
11:00AM-12 Noon	5-12	273, Conv. Center	CPO's LINK Genetics Learning Modules: Crazy Traits and Crazy Chromosomes (p. 43)
12:30-1:30 PM	9-С	270, Conv. Center	Cancer Investigators: Medical Diagnostics in Your Classroom (p. 49)
12:30-1:30 PM	6-8	278/279, Conv. Center	NGSS Biomedical Engineering: Get a Grip! (p. 50)
12:30-1:30 PM	9-12	291/292, Conv. Center	NSTA Press® Session: Argument-Driven Inquiry in Biology: Lab Investigations for Grades
			<i>9–12</i> (p. 46)
12:30-1:30 PM	6–C	264, Conv. Center	Getting Students Through the Cellular Membrane (p. 48)
12:30-1:30 PM	6-12	288, Conv. Center	Watershed Education and Service Learning Using Oysters or Clams (p.46)
12:30-1:30 PM	6-12	391, Conv. Center	Using a 3D Printer in the High School Science Classroom—From Application to
			Creation (p. 46)
2:00-3:00 PM	6-12	391, Conv. Center	Using Kinesthetic Models to Implement NGSS Life Science Learning for English
			Language Learners (p. 54)
2:00-3:00 PM	9-С	296, Conv. Center	Inquiry Through Creepy-Crawlies (p. 53)
2:00-3:00 PM	7-С	390, Conv. Center	Large K Equilibrium (p. 54)
2:00-3:00 PM	9-12	260/261, Conv. Center	Flipping AP Biology with FlinnPREP TM (p. 54)
2:00-3:00 PM	K-12	275/276, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 56)
2:00-3:00 PM	9-С	270, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 55)
2:00-3:00 PM	5-С	268, Conv. Center	Engaging Your Anatomy Students: Building Muscles in Clay (p. 55)

Schedule at a Glance Life Science

3:30-4:30 PM	7-12	268, Conv. Center	Simple Ways to Bring Biotech into Your Classroom (p. 60)
3:30-4:30 PM	K-5	275/276, Conv. Center	Collecting Evidence: How Does an Owl Get All That Energy? (p. 61)
3:30-4:30 PM	9-С	270, Conv. Center	Environmental Toxicology Using Edvotek's New EZ-elegans (p. 60)
3:30-4:30 PM	9-С	262, Conv. Center	Enzymes: Technology Inspired by Nature (p. 60)
3:30-4:30 PM	K-5,C	290, Conv. Center	Inspiring a Focus on Science Practices in the Next Generation: A Support Model for
			Elementary Teacher Candidates (p. 58)
3:30-4:30 PM	6-8	272, Conv. Center	Evolutionary Evidence in the Fossil Record (p. 60)

Friday

8:00-9:00 AM	6–C	268, Conv. Center	PTCTaster Lab: From Genotype to Phenotype (p. 65)
8:00-9:00 AM	P-2	288, Conv. Center	Fitting STEM in the Puzzle (p. 93)
8:00-9:00 AM	9-12	278/279, Conv. Center	Photosynthesis and Respiration Shuffle (p. 66)
8:00-9:00 AM	8–C	263, Conv. Center	Elephants: Ecology, Evolution, Biotechnology, and the Ivory Trade (p. 65)
8:00-9:00 AM	9-С	262, Conv. Center	How to Use Pop Culture in Your Life Science Class (p. 65)
8:00-9:00 AM	6-12	280/281, Conv. Center	When Zombies Attack! (p. 66)
8:00-9:00 AM	K-12	275/276, Conv. Center	Hands-On Science with Classroom Critters (p. 66)
9:30-10:00 AM	8-12	295, Conv. Center	iPhones, Microscopes, and Protozoans (p. 67)
9:30-10:30 AM	6–C	263, Conv. Center	Explore Global Climate and Biodiversity with HHMI BioInteractive Apps (p. 71)
9:30-10:30 AM	K-12	391, Conv. Center	Video Communication: Bringing the World into Your Classroom (p. 69)
9:30-10:30 AM	7-С	392, Conv. Center	How to Build a Better Muscle (p. 71)
9:30-10:30 AM	8–C	267, Conv. Center	Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery! (p. 72)
9:30–10:30 AM	Р-С	286/287, Conv. Center	Featured Presentation: Learning from the Outside In: The Power of Place-Based Science Education (p. 68)
9:30-10:30 AM	6-12	273, Conv. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 73)
9:30-10:30 AM	8–C	383, Conv. Center	Darwin and Evolution: Using Historical Critiques and Responses to Address Student
			Misunderstanding (p. 69)
9:30-10:30 AM	8–C	264, Conv. Center	DNA Structure and Function with a Twist of Dynamic DNA (p. 72)
9:30-10:30 AM	9-С	290, Conv. Center	Using Mitotic Division to Introduce Statistics in AP and IB Biology (p. 70)
11:00AM-12 Noon	7-12	290, Conv. Center	Teach Evolution with the World's Most Extravagant Birds (p. 76)
11:00AM-12 Noon	9-12	278/279, Conv. Center	Cell Differentiation and Gene Expression (p. 79)
11:00AM-12 Noon	6-12	295, Conv. Center	Explaining Scientific Phenomenon Using Data and Evidence (p. 75)
11:00AM-12 Noon	9-С	262, Conv. Center	Become a GMO Investigator (p. 77)
11:00AM-12 Noon	9-С	264, Conv. Center	Of All the Nerve: Exploring Neuronal Communication Through Three-Dimensional
			Learning (p. 78)
11:00AM-12 Noon	9-12	270, Conv. Center	Biology with Vernier (p. 78)
11:00AM-12 Noon	10-C	267, Conv. Center	Viral Amplification: From One to a Billion Copies in 20 Minutes (p. 78)
11:00AM-12 Noon	6-12	275/276, Conv. Center	Carolina's Young Scientist TM Dissections with Carolina's Perfect Solution® Specimens (p. 79)
12:30-1:00 PM	9-12	295, Conv. Center	STEM Approach to Learning in Biology (p. 80)
12:30-1:30 PM	6-12	289, Conv. Center	Noble Research Institute Science Exploration Trunks: A Free Lab-Based Resource for
			Teachers (p. 82)
12:30-1:30 PM	9-С	263, Conv. Center	Exploring Gene Expression with HHMI BioInteractive Resources (p. 83)
11:00AM-12 Noon	9-С	391, Conv. Center	Greenway Case Study Puts Students in the Decision-Making Role: Using Technology
			and Maps to Inform Development Decisions (p. 75)
12:30-1:30 PM	2-5	291/292, Conv. Center	NSTA Press® Session: Finding Science in the Outdoors and Through a Good Book (p. 82)
12:30-1:30 PM	1-2	290, Conv. Center	Using Informational Texts and High-Quality Digital Media to Help Young Children
			Acquire and Apply Science Knowledge (p. 82)
12:30-1:30 PM	9-С	264, Conv. Center	Take a Walk Through the Molecular World with Watercolor Landscapes (p. 83)
2:00-3:00 PM	9-С	264, Conv. Center	The Science and Ethics of Genome Editing with CRISPR/Cas9 (p. 88)
2:00-3:00 PM	9-12	263, Conv. Center	The Biology of Skin Color: Explore Evolution with BioInteractive Resources (p. 88)
2:00-3:00 PM	9-С	262, Conv. Center	Conserving Panda Population: One Hormone Test Design at a Time! (p. 88)
2:00-3:00 PM	9-12	284, Conv. Center	Blend, Layer, and Create: Curriculum Differentiation to Reach ALL Students (p. 86)

Schedule at a Glance Life Science

2:00-3:00 PM	K-12	275/276, Conv. Center	Come to Your Senses: Physiology in Action (p. 89)
2:00-3:00 PM	9-12	272, Conv. Center	New and Emerging Infectious Diseases: Using Case Studies to Address Crosscutting
			Concepts and Disciplinary Core Ideas (p. 89)
3:30-4:30 PM	9-12	263, Conv. Center	Explore the Genetics of Sickle Cell Anemia with HHMI BioInteractive (p. 90)
3:30-4:30 PM	9-С	262, Conv. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 90)

Saturday

8:00–9:00 AM 8:00–9:00 AM	K4 P7	291/292, Conv. Center 290, Conv. Center	NSTA Press® Session: <i>From Flower to Fruit</i> (p. 94) Forest Ecosystems: Trees of Life (p. 94)
8:00–9:00 AM	5-8	298, Conv. Center	Alligator Cuisine: Exploring the Diet of Alligators Through a Real-World Scenario
8:30-9:00 AM	3-5	293. Conv. Center	Approach (p. 94) Feet Wet, Hands Dirty: Engaging Students in Science Teaching and Learning with
			Stream Investigations (p. 95)
9:30-10:30 AM	4-12	394-396, Conv. Center	Marine Education Share-a-Thon (p. 97)
9:30-10:30 AM	8–C	264, Conv. Center	Cells as Protein Engineers (p. 98)
9:30-10:30 AM	6–9	391, Conv. Center	Evolution for Educators (p. 97)
11:00AM-12 Noon	4	269, Conv. Center	Wildfire Matters: Teaching Wildfire Ecology to Kids (p. 99)

Physical Science

Thursday

8:00-9:00 AM	8-12	386, Conv. Center	Physics-Driven Engineering Design and 3D Printing: Putting It All Together! (p. 38)
8:00-9:00 AM	3-5	397, Conv. Center	Power Pendulums (p. 38)
8:00-9:00 AM	6-8	278/279, Conv. Center	NGSS Waves: Protect Your Eyes! (p. 39)
8:00-9:00 AM	7-12	288, Conv. Center	Polymers: Basics for the Science Classroom (p. 35)
8:00-9:00 AM	5—9	299, Conv. Center	Cycles, Sinks, and Solutions (p. 36)
8:00-9:00 AM	9-12	289, Conv. Center	Chemistry: A Bonding Experience (p. 36)
9:30-10:30 AM	4–C	264, Conv. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 40)
9:30-10:30 AM	9-12	260/261, Conv. Center	Year-Round Solutions for Success in AP Chemistry from Flinn Scientific (p. 40)
11:00 AM-12 Noon	6-8	277, Conv. Center	Space Docking Failure: Phenomena and 3-D Instruction for Grades 6–8 (p. 44)
11:00AM-12 Noon	8–C	264, Conv. Center	5 E'sy Ways to Investigate Enzymes! (p. 42)
12:30-1:30 PM	9-12	289, Conv. Center	Solids: The Neglected "State" of Chemistry (p. 46)
12:30-1:30 PM	6–C	264, Conv. Center	Getting Students Through the Cellular Membrane (p. 48)
12:30-1:30 PM	9-12	397, Conv. Center	Analysis of Supernova Remnants Using X-Ray Spectroscopy with NASA Data and
			STEM Tools (p. 48)
12:30-1:30 PM	6-8	272, Conv. Center	Wave Properties and Information Transfer (p. 49)
12:30-1:30 PM	9-12	275/276, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry
			Teacher (p. 49)
12:30-1:30 PM	K-12	263, Conv. Center	Structuring Discussion to Be Equitable and Rigorous (p. 48)
12:30-1:30 PM	K-1	277, Conv. Center	Puppet Theater Engineering: Phenomena and 3-D Instruction for Grades K
			and 1 (p. 49)
12:30-1:30 PM	6-12	280/281, Conv. Center	Are You Moody? (p. 50)
12:30-1:30 PM	6-12	391, Conv. Center	Using a 3D Printer in the High School Science Classroom—From Application to
			Creation (p. 46)
12:30-1:30 PM	P-2	293, Conv. Center	Community Collaborative for Early Learning and Media: A New Model for Early
			Science Learning (p. 46)
2:00-3:00 PM	6-8	278/279, Conv. Center	Chemical Batteries (p. 56)
2:00-3:00 PM	6-8	272, Conv. Center	Identifying Energy Transfers in Motors and Generators (p. 56)
2:00-3:00 PM	3-6	397, Conv. Center	Testing Look-Alike Liquids (p. 54)
			U A A .

Schedule at a Glance Physical Science

2.00-3.00 PM	4_9	295 Conv Center	Using Evidence to Design Sails: Highlighting the Science, Mathematics, and
2.00 3.00 1.01	. ,	295, Cont. Center	Engineering Connections (n. 53)
2:00-3:00 PM	7–11,C	283, Conv. Center	Cars: A Fundamental Look at How They Work and the Science Involved (p. 51)
2:00-3:00 PM	9-12	289, Conv. Center	Meet the Standards and Enhance Your Chemistry Classroom with Other People's
			Money (p. 52)
2:00-3:00 PM	7—С	390, Conv. Center	Large K Equilibrium (p. 54)
3:30-4:00 PM	6–C	387, Conv. Center	ASTE-Sponsored Session: Video Games Being Implemented Educationally in Physics
			and Teacher Preparation Classrooms (p. 57)
3:30-4:30 PM	K-5,C	290, Conv. Center	Inspiring a Focus on Science Practices in the Next Generation: A Support Model for
			Elementary Teacher Candidates (p. 58)
3:30-4:30 PM	3-8	266, Conv. Center	Evidence and Explanations: Energy Changes and Transformations in a Bouncing,
			Flashing Ball (p. 58)
3:30-4:30 PM	5-12	273, Conv. Center	CPO Science LINK Learning Module: Chemistry and the Periodic Table (p. 61)
3:30-4:30 PM	4–9	298, Conv. Center	Engaging Students in the Engineering Design Process Beyond Trial and Error (p. 59)
3:30-4:30 PM	4–9	298, Conv. Center	Engaging Students in the Engineering Design Process Beyond Trial and Error (p. 59)

Friday

8:00-9:00 AM	3-С	270, Conv. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 65)
8:00-9:00 AM	P-2	288, Conv. Center	Fitting STEM in the Puzzle (p. 93)
8:00–9:00 AM	K-8	298, Conv. Center	Students with Inquiring Minds Are Scientists: The S.W.I.M.A.S. Approach to Student- Driven Inquiry (p. 64)
8:00-9:00 AM	7-12	294. Conv. Center	Decoding Starlight—From Photons to Pixels to Images: Using Science and Art (p. 63)
8:00-9:00 AM	6-12	280/281, Conv. Center	When Zombies Attack! (p. 66)
8:00-9:00 AM	7-12	273, Conv. Center	Untangling Electric Circuits: STEM Activities from Essential Physics (p. 66)
8:00-9:00 AM	9–12	278/279, Conv. Center	Photosynthesis and Respiration Shuffle (p. 66)
8:00-9:00 AM	6-8	397, Conv. Center	ACS Middle Level Session One: Solids, Liquids, Gases, and Changes of State (p. 64)
8:00-9:00 AM	6-12	389, Conv. Center	Corrosion Chemistry: Redox Is Everywhere! (p. 63)
8:00-9:00 AM	5-12	288, Conv. Center	PolyWhat? Application of STEM Using Polymers (p.63)
8:00-9:00 AM	4–9	388, Conv. Center	AAPT Session: Visible Spectrum Shadows (p. 64)
8:00-10:00 AM	8-12	390, Conv. Center	ACS High School Session One: Relating Structure and Properties: Eliciting and
			Visualizing Student Initial Ideas (p. 67)
9:30-10:00 AM	P–C	388, Conv. Center	ties in 30 Minutes (p. 67)
9:30-10:30 AM	6-8	275/276, Conv. Center	Shifting to the Five Innovations: How Do We Transform Instruction? (p. 73)
9:30-10:30 AM	2–9	260/261, Conv. Center	Cool! Can We Do That Again?! (p. 71)
9:30-10:30 AM	3-5	296, Conv. Center	Planes, Trains, and Automobiles (p. 70)
9:30-10:30 AM	6-8	397, Conv. Center	ACS Middle Level Session Two: The Water Molecule and Dissolving (p. 71)
9:30-10:30 AM	9-12	270, Conv. Center	Chemistry with Vernier (p. 72)
9:30-10:30 AM	6-10	280/281, Conv. Center	The Chemistry of Glow Sticks (p. 73)
9:30–10:30 AM	4-8	265, Conv. Center	NMLSTA-Sponsored Session: Whirligigs: Watching, Wondering, Working Together—
0.00.40.00.004	0.10		Wow! (p. 69)
9:30–10:30 AM	8-12	294, Conv. Center	lech Ed in the Chemistry Classroom: Using Materials Science to leach Design and
0.20.10.20.000	5 0	202 G G	Physical Science Concepts (p. 70)
9:30–10:30 AM	5-9	393, Conv. Center	ASEE Session: Using Engineering and Coding to Make Science Stick (p. 71)
10:00–10:30 AM	3-0	388, Conv. Center	AAP1 Session: Physics leaching in Scotland (p. 74)
10:30AM-12 Noon	8-12	390, Conv. Center	ACS High School Session Iwo: Relating Structure and Properties: Constructing Science
	D G		Ideas I hrough Exploring Data (p. 74)
11:00–11:30 AM	P-C	388, Conv. Center	AAP1 Session: Bringing Physics to Broadway: A Brief History of That Physics Show (p. 74)
11:00AM-12 Noon	6-12	273, Conv. Center	Evaporative Cooling: Visualizing Matter so It Makes Sense! (p. 79)
11:00AM-12 Noon	К—5	392, Conv. Center	Take Force and Motion Beyond Cars and Coasters (p. 77)
11:00AM-12 Noon	3-5	296, Conv. Center	Guided Science (p. 76)
11:00AM-12 Noon	9–12	291/292, Conv. Center	NS1A Press® Session: Argument-Driven Inquiry in Physics: Mechanics Lab Investigations for Grades 9–12 (p. 74)

Schedule at a Glance Physical Science

11:00AM-12 Noon	1-10	294, Conv. Center	Teaching Engineering, Motion, and Energy Through Rube Goldberg (p. 76)
11:30AM-12 Noon	K-2	388, Conv. Center	AAPT Session: PhysKids! Physics Demonstrations for Early Elementary (p. 80)
12:30-1:30 PM	6-12	289, Conv. Center	Noble Research Institute Science Exploration Trunks: A Free Lab-Based Resource for Teachers (p. 82)
12:30-1:30 PM	6-12	273, Conv. Center	Exploring Misconceptions: What Is pH? (p. 84)
12:30-1:30 PM	Р–С	388, Conv. Center	AAPT Session: Waves Here, There, and Everywhere: The Physics of Sound, Light, and Gravity (p. 81)
12:30-1:30 PM	9-12	294, Conv. Center	Beams to Bridges: Graphing Stress-Strain Curves (p. 82)
12:30-1:30 PM	K-8	288, Conv. Center	CESI-Sponsored Session: Using Toys to Teach Physics (p. 82)
12:30-1:30 PM	1-2	290, Conv. Center	Using Informational Texts and High-Quality Digital Media to Help Young Children Acquire and Apply Science Knowledge (p. 82)
12:30-1:30 PM	3-5	391, Conv. Center	Batteries and Bulbs (p. 83)
12:30-1:30 PM	6-8	397, Conv. Center	ACS Middle Level Session Four: Chemical Reactions—Ocean Acidification (p. 83)
12:30-1:30 PM	3-С	270, Conv. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 83)
12:30-1:30 PM	3-12	271, Conv. Center	Demystifying STEM: Earthquake-Proof Towers and Engineering Design (p. 84)
12:30-1:30 PM	9-12	278/279, Conv. Center	pH Scale (p. 84)
12:30-1:30 PM	9-С	264, Conv. Center	Take a Walk Through the Molecular World with Watercolor Landscapes (p. 83)
12:30-2:30 PM	8-12	390, Conv. Center	ACS High School Session Three: Relating Structure and Properties: Demonstrating
			Understanding Through Integration and Application of Knowledge (p. 85)
2:00-2:30 PM	9-12	388, Conv. Center	AAPT Session: Interference and LIGO Update (p. 85)
2:00-3:00 PM	9-12	278/279, Conv. Center	Chemical Formula and Amino Acids (p. 89)
2:00-3:00 PM	K-5	393, Conv. Center	ASEE Session: CARS! CARS! Force and Motion! (p. 87)
2:00-3:00 PM	K-12	299, Conv. Center	Spark Students' Curiosity with Chemistry (p. 86)
2:00-3:00 PM	6-12	283, Conv. Center	Materials Matter! Looking at Materials Science to Help Teach Chemistry (p. 85)
2:30-3:00 PM	P–C	388, Conv. Center	AAPT Session: Simple Physics Demos (p. 89)
3:30-4:30 PM	9-12	270, Conv. Center	Physics and Physical Science with Vernier (p. 90)
3:30-4:30 PM	9-12	278/279, Conv. Center	Distilling Aromatic Hydrocarbons (p. 90)

Saturday

8:00–9:00 AM	7–12	294, Conv. Center	A Unique Ice Core Investigation That Integrates the Three Dimensions of <i>NGSS</i> and STEM (p. 93)
9:30-10:30 AM	6-12	389, Conv. Center	Using Pop Culture and Polymers to Create Inquisitive Minds (p. 96)
9:30-10:30 AM	9-12	388, Conv. Center	Connecting Chemistry to Your World Through ChemClub (p. 98)
9:30-10:30 AM	5-12	298, Conv. Center	Lights! Colors! Inquiry Action! (p. 98)
9:30-10:30 AM	6-8	291/292, Conv. Center	NSTA Press® Session: Argument-Driven Inquiry in Physical Science: Lab Investigations for
			<i>Grades</i> 6–8 (p. 96)
11:00 AM-12 Noon	5-12	388, Conv. Center	Polymers: Teaching "Hard" Concepts with Gooey Labs (p. 101)
11:00 AM-12 Noon	4	269, Conv. Center	Wildfire Matters: Teaching Wildfire Ecology to Kids (p. 99)

General Science Education

Thursday

8:00–9:00 AM 8:00–9:00 AM 8:00–9:00 AM	P–C C P–C	385, Conv. Center 383, Conv. Center 394-396, Conv. Center	Authors Wanted! How to Get Published in an NSTA Journal (p. 36) College Science Teaching and Student Success (p. 36) Is This Your First NSTA Conference? First-Timer Conference Attendees'
		,	Orientation (p. 36)
8:00-9:00 AM	5-8	271, Conv. Center	How to Argue in a Middle School Science Class (p. 39)
8:00-9:00 AM	K-8	272, Conv. Center	Ten Minutes to Improving Science Achievement (p. 39)
8:00-9:00 AM	9–C	294, Conv. Center	Students Assessing Community Vulnerability and Resilience (p. 38)
8:00-9:00 AM	3-8	269, Conv. Center	WIDA Session: Doing and Talking Science with ELLs (p. 35)

8:00-9:00 AM	4-10	295, Conv. Center	How to Read Like Scientists! (p. 38)
8:00-9:00 AM	1-12	296, Conv. Center	How to Provide Focus in a Science Professional Learning Community (PLC) (p. 38)
8:00–9:00 AM	P6	283, Conv. Center	Nurturing Curious Minds: Exploring the Science Encountered in the Young Child's World and Inspiring Sustained Curiosity. Interest, and Learning (p. 35)
8.00-9.00 AM	P_4	290 Conv Center	Creating Teachable Moments for Elementary Science with Literature (n. 37)
8:00-9:00 AM	P_5	265 Conv. Center	Launching an Elementary Science Program (n. 36)
8:00_9:00 AM	Г—5 К_8	205, Conv. Center	Harnessing a Powerful Synergy, Engaging All Students in the Primary Classroom with
0.00-2.007110	K =0	290, 6011. 661161	Science Based Experiences for Younger Children (n. 38)
9.15 10.30 AM	PC	New Orleans Theater Sect. B	Ceneral Session: Science Is a Verb Exploring Engaging and Expanding Thinking (p. 40)
).13-10.30 mm	1-0	Conv. Center	General session. Selence is a verb—Exploring, Engaging, and Expanding Hintking (p. 10)
9:30-10:30 AM	K-5	272. Conv. Center	What Does Argumentation Look Like in an Elementary Classroom? (p. 41)
9:30–10:30 AM	K-8	277. Conv. Center	The Power of Modeling in K–8 Classrooms (p. 42)
9:30-10:30 AM	K-12	263, Conv. Center	Science Storylines and the Driving Ouestion Board: Keeping NGSS Curricula Student
		,	Driven (p. 40)
11:00AM-12 Noon	P-12	268, Conv. Center	Science Classroom Theater: A Cross-Curricular Bonanza (p. 43)
11:00AM-12 Noon	6-12	280/281, Conv. Center	Using Maggots, Flies, and Flesh to Solve a Mystery! (p. 44)
11:00AM-12 Noon	5-8	263, Conv. Center	Literacy in the Context of Science in the Middle School Classroom (p. 42)
11:00AM-12 Noon	K-8	271, Conv. Center	OK, Class, Please Open Your Science Notebooks (p. 43)
11:00AM-12 Noon	K-5	272, Conv. Center	What Does Conceptual Modeling Look Like in Grades K-5 Classrooms? (p. 43)
11:00AM-12 Noon	K-5	275/276, Conv. Center	Coding with First Graders? The Smithsonian Says YES! (p. 44)
12:30-1:30 PM	K-8	271, Conv. Center	What in the World Are Crosscutting Concepts? (p. 49)
12:30-1:30 PM	K-12	260/261, Conv. Center	Out-of-School STEM Enrichment: AEOP Program Design Collaboration (p. 48)
12:30-1:30 PM	K-12	393, Conv. Center	Three-Dimensional Learning Forum Session: Designing and Using Classroom
			Assessments to Support Meaningful 3-D Investigations (p. 47)
12:30-1:30 PM	P–C	284, Conv. Center	Make a Difference: Practical Tools and Strategies for Science Education Advocacy (p. 46)
12:30-1:30 PM	P–C	269, Conv. Center	NSTA's Online Resources and Communities (p. 45)
12:30-1:30 PM	K-5	299, Conv. Center	Science and Literacy in the K–5 Classroom (p. 46)
12:30-1:30 PM	K–C	266, Conv. Center	Successful STEM-Rich Making Practices That Benefit Underserved Students (p. 47)
12:30-1:30 PM	P-1	389, Conv. Center	\$40 a Year, Early Childhood STEM Activities on a Budget (p. 48)
12:30-1:30 PM	P-12	265, Conv. Center	Celebrate and Communicate: Music as Motivation and Curriculum in STEM (p. 45)
12:30-1:30 PM	9-С	386, Conv. Center	Describing Data Using Central Tendencies, Graphs, and Statistics in AP and IB (p. 47)
12:30-1:30 PM	P-9	390, Conv. Center	Using Hands-On Performance Assessment in Grades 3–5 Classrooms: Assessing
			Student Mastery of the Science Practices, Disciplinary Core Ideas, and CCSS (p. 48)
12:30-1:30 PM	3-8	298, Conv. Center	Increase Science Engagement and Achievement Through Content Literacy (p. 47)
12:30-1:30 PM	7-12	295, Conv. Center	Zombies Are Knocking on Your Classroom Door! (p. 47)
2:00-3:00 PM	6-8	263, Conv. Center	Project-Based Inquiry Science TM (PBIS): Creating "Coherence and Science Storylines"
			for Middle School Science (p. 54)
2:00-3:00 PM	K-4	399, Conv. Center	Start with a Book! (p. 52)
2:00-3:00 PM	P-8,C	269, Conv. Center	STEM and Literacy: Strange Bedfellows (p. 51)
2:00-3:00 PM	P-5	385, Conv. Center	Do This, Not That! (p. 52)
2:00-3:00 PM	3-12	284, Conv. Center	Promoting Innovation and Creativity Through Problem-Based Learning (p. 51)
2:00-3:00 PM	K-5	290, Conv. Center	Energy Games, Chants, and Plays: Increasing Energy Literacy in Your Elementary Classroom (p. 53)
2:00-3:00 PM	K6	266, Conv. Center	Linking Science and Literacy for Improved Student Outcomes (p. 53)
2:00-3:00 PM	K6	383, Conv. Center	Enabling All Students to Investigate, Explore, Inquire, Participate, and Achieve
			Success (p. 52)
2:00-3:00 PM	P-12	265, Conv. Center	NSTA Press® Session: Be a Winner: Get a Grant and Your Students Win, Too! (p. 51)
2:00-3:00 PM	9-12	387, Conv. Center	High School Teachers: Birds of a Feather (p. 52)
2:00-3:00 PM	3–6	291/292, Conv. Center	NSTA Press® Session: EUREKA! Grade 3–5 Science Activities and Stories (p. 53)
2:00-3:00 PM	K-12	393, Conv. Center	Three-Dimensional Learning Forum Session: Better Science for All (p. 54)
2:00-3:00 PM	5-12	273, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 56)
2:00-3:00 PM	Р–С	286/287, Conv. Center	Featured Presentation: STEM for All: Instructional Shifts to Promote Science and
			Language Learning (p. 51)
2:00-3:00 PM	9–C	262, Conv. Center	Communicating Science Through Lab Notebooking (p. 54)
3:30-4:30 PM	6-12	280/281, Conv. Center	Zombie Apocalypse! (p. 61)

3:30-4:30 PM	6-8	260/261, Conv. Center	Science Bits: 5Es Made EASY! (p. 60)
3:30-4:30 PM	K-4	271, Conv. Center	How to Argue in the Elementary Science Class (p. 60)
3:30-4:30 PM	K-5	263, Conv. Center	Literacy in the Context of Science in the Elementary Classroom (p. 60)
3:30-4:30 PM	K-12	393, Conv. Center	Three-Dimensional Learning Forum Session: Selecting Phenomena to Motivate Student
			Sensemaking (p. 59)
3:30-4:30 PM	K-12	269, Conv. Center	NSTA District Support (p. 57)
3:30-4:30 PM	K-4	399, Conv. Center	Digital Story Telling Is Elementary! (p. 58)
3:30-4:30 PM	K-3	265, Conv. Center	Linking K–3 Literacy and STEM (p. 57)
3:30-4:30 PM	P-4	293, Conv. Center	Project-Based Learning in an Early Elementary and Early Childhood Classroom (p. 57)
3:30-4:30 PM	P-12	299, Conv. Center	Design Thinking and Writing in the Science Classroom (p. 58)
3:30-4:30 PM	1-С	291/292, Conv. Center	NSTA Press® Session: Teaching for Conceptual Understanding in Science (p. 57)
3:30-4:30 PM	5-12	283, Conv. Center	Data Is Not a Four-Letter Word: Use NOAA Resources to Build Student Proficiency in
			Data Analysis (p. 57)
3:30-4:30 PM	8-10	391, Conv. Center	Feeding the World's Growing Population (p. 59)

Friday

8:00-9:00 AM	9–12	295, Conv. Center	ELL Success in an AP Classroom (p. 63)
8:00-9:00 AM	5-12	392, Conv. Center	Real-World Science at The National WWII Museum (p. 64)
8:00-9:00 AM	P–C	291/292, Conv. Center	NSTA Press® Session: Creating a STEM Culture for Teaching and Learning (p. 63)
8:00-9:00 AM	9-12	283, Conv. Center	Student Research to Drive STEM Discovery (p. 63)
8:00-9:00 AM	6–C	260/261, Conv. Center	Research and Inquiry-Based STEM Program from Flinn Scientific (p. 65)
8:00-9:00 AM	K-12	271, Conv. Center	Science Teacher / STEM Teacher: What's the Difference? (p. 66)
9:30-10:30 AM	6-12	387, Conv. Center	Do You Need a New Science Lab? (p. 69)
9:30-10:30 AM	12	269, Conv. Center	Assistance from Retiree Committee (p. 68)
9:30-10:30 AM	7-С	386, Conv. Center	iPad: Data Collection, Analysis, and Student Lab Reporting (p. 70)
9:30-10:30 AM	3-8	298, Conv. Center	Connecting Forest Ecology and Wildfires to STEM Careers by Studying Authentic
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