

AREA CONFERENCE *on* SCIENCE EDUCATION



# RICHMOND

*Celebrate Science Inside and Out!*

OCTOBER 16-18, 2014



#NSTA14

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Science  
Teachers  
Association

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Wednesday 5:00 PM–7:00 PM  
Thursday 7:00 AM–5:00 PM  
Friday 7:00 AM–5:00 PM  
Saturday 7:30 AM–12 Noon

**NSTA** National  
Science  
Teachers  
Association



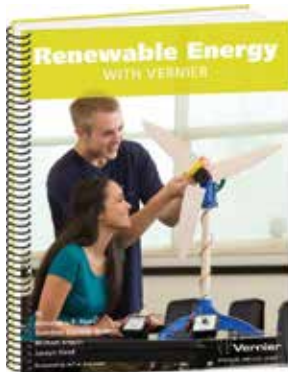
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[www.vernier.com/rev](http://www.vernier.com/rev)



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**National Science Teachers Association**

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703-243-7100, E-mail: [conferences@nsta.org](mailto:conferences@nsta.org)  
[www.nsta.org](http://www.nsta.org)

**NSTA Affiliates**

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

# Welcome to Richmond—Celebrate Science Inside and Out!



Candace Lutzow-Felling



Patricia Simmons

Welcome to the NSTA conference in Richmond where we will Celebrate Science Inside and Out! We look forward to joining you as you attend and/or present sessions, visit our Exhibit Hall and NSTA Science Store, and engage in the myriad of networking opportunities planned for you during this conference. NSTA staff and many dedicated educators have worked countless hours planning a conference designed to foster partnerships and collaborations, explore the connections between science and other disciplines, focus on watershed education, and encourage learning that takes place inside and outside the classroom. Our goal is to provide you with new knowledge, resources, ideas, and relationships that will inspire and expand your teaching.

Conference sessions have been organized around three strands and one special thread, all designed to provide you with a science learning experience inside and out! We can learn and teach science inside the classroom and outdoors; inside our specific disciplines or outside through interdisciplinary lessons; and by reaching inside and outside our schools and institutions to create collaborative teaching and learning networks. Our three strands are *Watershed Science: Inside and Out*, *Partnerships and Collaborations: Learning Inside and Out*, and *Integrating Science with Other Disciplines: Learning Inside and Out*. The special thread—*Get Your Nature On!*—provides sessions sprinkled throughout the conference specifically selected to inspire and help you provide your students with outdoor learning experiences. We thank the Virginia environmental education community for organizing the *Get Your Nature On!* thread and for serving on the planning committee for this conference.

*A Celebration of Literacy & Science* is an innovative Saturday event during which we will explore what literacy means in the context of science. Several trade book authors will join us to share their work and discuss ways to incorporate their books into your lessons. This exciting focus on literacy has come to fruition through collaboration with the International Reading Association. Truly, this NSTA conference is a model of *Learning Inside and Out!*

2014 Richmond Area Conference Committee Leaders  
Candace Lutzow-Felling and Patricia Simmons

NSTA wishes to acknowledge our invaluable partnership with the Virginia Office of Environmental Education (VOEE) and the Virginia Resource Use Education Council (VRUEC). We deeply appreciate their generous support and contributions in planning the program and arrangements for the Richmond conference.

## Conference Chairperson

Candace Lutzow-Felling  
2012–2015 NSTA Director of Informal Science, and  
Director of Education  
UVA/Blandy Experimental Farm  
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## Program Coordinator

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## Richmond Conference Committee

### Program Committee

#### Strand Leader: Watershed Science:

#### Learning Inside & Out

Jack Padalino  
Dingmans Ferry, PA

#### Strand Leader: Partnerships & Collaborations: Learning Inside & Out

Margaret Glass  
Association of Science-Technology Centers  
Washington, DC

#### Strand Leaders: Integrating Science with Other Disciplines: Learning Inside & Out

Kelly Riedinger  
David Heil & Associates  
Portland, OR

J. Randy McGinnis  
University of Maryland  
College Park, MD

Emily Hestness  
University of Maryland  
College Park, MD

### Program Representatives

Marily DeWall  
Science Education Consultant  
Newport News, VA

Chuck English  
Science Museum of Virginia  
Richmond, VA

### Conference Advisory Board Liaison

Karen L. Ostlund  
2012–2013 NSTA President  
Austin, TX

### Local Arrangements Committee

**Excursions Manager**  
Sheila Barnett  
Virginia Office of Environmental Education  
Richmond, VA

### Volunteers Manager

David Ruble  
Virginia Office of Environmental Education  
Richmond, VA

### VOEE/VRUEC Liaison

J. Michael Foreman  
Virginia Office of Environmental Education  
Richmond, VA

# President's Welcome

## Breaking Down Walls



This year the National Science Teachers Association is “breaking down walls.” We are reminding ourselves and our communities that we are *Learning Inside and Out*. From early childhood to senior learners, from classroom to sea and sky, we want to share the wonder and challenge of science with every citizen. That means expanding our definition of science teaching to include new partners and new

venues—no boundaries. What better place to begin than at this Richmond conference!

This meeting represents a number of firsts for the association. We are building bridges with new groups to maximize our reach and share our areas of expertise. Three environmental organizations have joined us in providing unique content. We are also grateful for the help of the International Reading Association in planning NSTA’s first full-day Celebration of Literacy & Science.

In the program you’ll find many sessions with special relevance to regional teachers, like watershed science. You’ll also find ideas to support implementation of *Next Generation Science Standards* and *Common Core State Standards* that are applicable to every

learning environment. And because the questions our students ask are seldom categorized by subject matter or hour of the day, participants will share ways to integrate Science, Technology, Engineering, and Mathematics that can be applied inside and out the classroom.

The keynote speakers provide still more examples of how our science can’t be limited by classroom walls—from Akiima Price, who brings environmental education to children in urban communities, to Louisa Koch, who directs student explorations from ocean to atmosphere, to Brendan Mullan, who will lead us to the stars.

As lifelong science learners, we accept no boundaries in the questions we ask or the answers we seek. We acknowledge the value of scientific literacy not only in classrooms but in the lives of every citizen. That’s why the rich synergy of our partnerships is so important to helping us meet our goals.

We invite you to participate fully in the many opportunities this conference offers, not only to break down walls but to build bridges to a successful and sustainable future.

Juliana Texley  
2014–2015 NSTA President

## Richmond Conference Sponsors

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

### Sponsors

- National Geographic Learning
- Richmond Region Tourism
- Southwest Airlines
- Texas Instruments
- Virginia Office of Environmental Education (VOEE)
- Virginia Resource Use Education Council (VRUEC)



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



# NSTA Conferences Go Green!

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

## Conference Previews

Gone are the days of bulky, newspaper-style advance programs. Brief conference previews allow us to be more focused in our conference content, since each preview is specific to a particular conference. As an added bonus, they are more environmentally friendly, as they dramatically reduce both our print and mailing requirements.

## Online Conference Information and Personal Scheduler

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

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

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

## Recycled Paper and Sustainable Print Services

Conference previews and final conference programs are now printed on recycled paper. In addition, Walsworth Print Group, the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth Print Group works to reduce and recycle waste, use reduced or low-VOC chemicals, increase the recycled content of raw materials, and use soy- and/or vegetable-based inks. Walsworth Print Group has also obtained chain-of-custody certification for paper products to ensure they are being harvested from environmentally responsible sources.

## Environmentally Friendly Exhibition Practices

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

## Greater Richmond Convention Center's Green Efforts

The Greater Richmond Convention Center staff is dedicated to environmental responsibility and the Virginia Green program. Green practices include:

- **Recycling and Waste Reduction**—We actively recycle paper, plastic, aluminum, and cardboard, as well as glass, grease, toner cartridges, batteries, newspaper, and fluorescent lamps.
- **Eliminate use of Styrofoam and Reduce Disposables**—Recycled paper is used by the administrative offices; biodegradable products are used in the concession stands; dishware, glassware, and silverware are used to minimize the use of disposables; coreless paper products are used in the restrooms; and food and beverage operations serve condiments in bulk to minimize packaging waste.
- **Water Efficiency**—All water fountains have been retrofitted with filters and signage to encourage use, restrooms have low-flow toilets and other water-saving devices and the property has been landscaped with drought-resistant plants.
- **Energy Conservation**—Incandescent lamps have been switched to energy-efficient fluorescent lighting wherever possible, state-of-the-art energy management systems for HVAC and lighting are used throughout the facility, lighting and HVAC systems are programmed based on event schedules to minimize usage during nonpeak times, nonessential items are turned off when spaces are not in use, and LED lighting upgrades have begun in various areas throughout the facility.
- **Support of Green Conferences and Events**—Recycling containers are provided to all meeting organizers, the use of public transportation is encouraged, we use Green Seal Certified cleaning products, and housekeeping staff uses Ionaters to clean most surfaces, significantly reducing the use of harsh and harmful chemicals.

## "Go Green" at the Richmond Conference!

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



## Meeting Location and Times

The co-headquarters hotels are the Richmond Marriott and Crowne Plaza Richmond Downtown. Conference registration, the exhibits, the NSTA Expo, the NSTA Science Store, exhibitor workshops, and most sessions are located at the Greater Richmond Convention Center. Other sessions and events are scheduled at the Marriott and most short courses are at the Crowne Plaza. The conference will begin on Thursday, October 16, at 8:00 AM, and end on Saturday, October 18, at 3:00 PM.

## Registration

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

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

Wed., Oct. 15	5:00–7:00 PM
Thu., Oct. 16	7:00 AM–5:00 PM
Fri., Oct. 17	7:00 AM–5:00 PM
Sat., Oct. 18	7:30 AM–12 Noon

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

## Purchasing Ticketed Events

The Richmond 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 NSTA Registration Area. See the Conference Program section (starting on page 32) for details. Note that some events may have required advance registration.



## Getting Around Town

Many of the attractions and restaurants in the downtown area are within an easy walking distance of the conference hotels. Taxi service is available at your hotels, and some hotels provide a complimentary shuttle van service on a limited availability and distance basis.

The Greater Richmond Transit Company (GRTC) provides transportation to other parts of the Richmond Region. The regular fare is \$1.50 and exact change is required. For more information, call 804-358-4782 or visit [www.ridegrtc.com](http://www.ridegrtc.com).

## Ground Transportation to/from Airport

Attendees can choose one of the following options for airport travel:

- Inbound—James River Transportation is located in the Richmond International Airport at the bottom of the escalator on the left. They provide private vehicles with fixed pricing (price is per trip, not per person), professional drivers in uniform, and 24/7 on-site customer service support. Twenty-four-hour advance reservations are recommended by calling 804-249-1052, e-mailing [RICI@JamesRiverTrans.com](mailto:RICI@JamesRiverTrans.com), or via [www.JamesRiverTrans.com](http://www.JamesRiverTrans.com). The fare to the downtown area hotels is \$41.40 per trip for up to three passengers (gratuity is included in this fare).

- Taxi service is available outside baggage claim in the center section of the lower level curbside, adjacent to the North and South parking garages. Taxi fare is approximately \$30 per trip plus gratuity.
- Sedan and Limousine Services are listed at [www.flyrichmond.com](http://www.flyrichmond.com).
- Outbound—James River Transportation can provide service for the return trip to the airport. Twenty-four-hour advance reservations are required. Taxi service is available at each of the hotels, and the concierge, bellman, or front desk staff can assist in securing a taxi.

## Parking

Daily parking is available in the deck of the Convention Center and the rate is \$6 per entry. The entrance is from 3rd Street between Broad and Marshall streets. For GPS instructions, use this address: 351 North 3rd Street. Visit [www.richmondcenter.com/parking](http://www.richmondcenter.com/parking) for more information.

Each of the conference hotels offers self-parking and/or valet parking. Consult your hotel for parking rates. See facing page for a map of additional parking lots/decks near the Convention Center.

On-street meter parking is available. Be sure to check signage for time limitations. Meter fees are not required on Saturday or Sunday.

# Registration, Travel, and Hotels

## Shuttle

Shuttle bus service will be provided between the conference hotels and the Convention Center during registration and session hours, courtesy of Richmond Region Tourism. See page 11 for a schedule.

## Conference Hotels

See page 10 for a list of hotels and a map of the downtown area. If you have questions or concerns regarding your housing, please call Michelle Taylor at Orchid Event Solutions (during business hours), Monday through Friday, 9:00 AM–8:00 PM EDT at 877-352-6710 (toll-free) or 801-505-4611. Please call 866-748-9565 after business hours.

## Airlines

NSTA has made arrangements with several major airlines to offer discounted fares to Richmond conference attendees. Visit [www.nsta.org/richmondtravel](http://www.nsta.org/richmondtravel) for details.

## Discounted Rental Cars

The toll-free number to contact an NSTA-designated car rental company is as follows:

Enterprise 800-593-0505 16AH230

*\* go to [www.enterprise.com](http://www.enterprise.com) and use "16AH230" in the "Optional: Coupon, Customer or Corporate Number" box and enter PIN "NST."*

# CONFERENCE APP



## Connect. Share. Engage.

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

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

Available for download on



iPhone + iPad

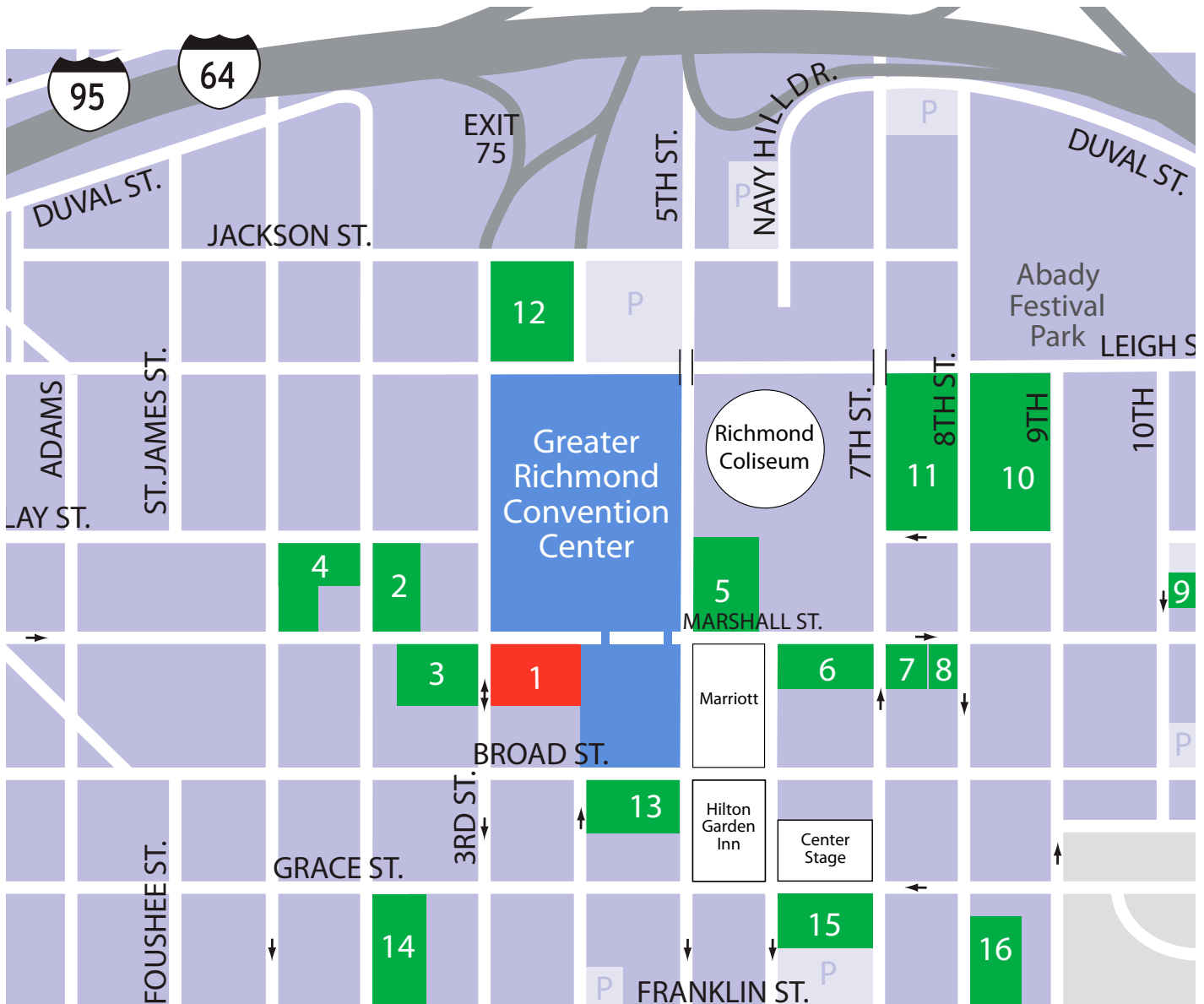


Android

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

Powered by: **NSTA** National Science Teachers Association

# Parking Lots in Downtown Richmond



1. **Greater Richmond Convention Center Parking Deck** (\$6/day)—Pay attendant upon entry. Payments accepted: Cash, Mastercard, Visa, American Express. 3rd Street and East Marshall Street; enter from 3rd Street
2. **Richmond Parking Surface Lot** (Honor Box)—East Marshall Street and 2nd Street; enter from either Marshall or 2nd streets
3. **Richmond Parking Surface Lot** (Attendant/Honor Box)—East Marshall Street and 3rd Street; enter from Marshall or 3rd streets
4. **Central Parking System Surface Lot** (Honor Box)—East Marshall Street between 1st Street and 2nd Street; enter from Marshall or 1st streets
5. **Standard Parking Deck** (Attendant)—500 East Marshall Street; enter from Marshall or 5th streets
6. **Standard Parking Deck** (Attendant)—East Marshall Street between 6th Street and 7th Street; enter from 6th Street
7. **Parking Deck** (Attendant)—7th and Marshall streets; enter from 7th Street
8. **Surface Parking Lot** (Attendant/Honor Box)—8th and Marshall streets; enter from Marshall or 8th streets
9. **10th Street Surface Lot** (Attendant)—10th Street between Clay and Marshall streets; enter from 10th Street
10. **City of Richmond Surface Lot** (Honor Box)—8th Street between Leigh and Clay streets; enter from Clay or 8th streets
11. **Standard Parking Deck** (Attendant)—7th Street across from the Richmond Coliseum; enter from 7th Street
12. **Standard Parking Surface Lot** (Honor Box)—At the corner of 4th and Leigh streets; enter from 4th or Leigh streets
13. **Standard Parking Surface Lot** (Attendant/Honor Box)—East Broad Street between 4th Street and 5th Street; enter from 5th or 4th streets
14. **Parking Deck** (Attendant)—2nd Street between Grace and Franklin streets; enter from Grace or Franklin streets
15. **Surface Parking Lot** (Honor Box)—On Grace Street between 6th and 7th streets; enter from 6th or 7th streets
16. **Parking Deck** (Attendant)—8th Street between Grace and Franklin streets; enter from 8th Street

## Downtown Richmond



### 1. Richmond Marriott

*(Co-headquarters Hotel)*  
500 E. Broad St.  
Richmond, Va.

### 2. Crowne Plaza Richmond Downtown

*(Co-headquarters Hotel)*  
555 E. Canal St.  
Richmond, Va.

### 3. DoubleTree Hotel Richmond Downtown

301 W. Franklin St.  
Richmond, Va.

### 4. Hilton Garden Inn

501 E. Broad St.  
Richmond, Va.

### 5. Holiday Inn Express Downtown

201 E. Cary St.  
Richmond, Va.

### 6. Omni Richmond

100 S. 12th St.  
Richmond, Va.



## Shuttle

### Hours of Operation

(Please see signage for updates)  
Coaches run every 15–20 minutes.

*NSTA is grateful to Richmond Region Tourism for providing this service.*

#### ROUTE A

##### Omni Richmond Hotel

*(boarding on Cary Street at 12th Street)*

##### Crowne Plaza Richmond Downtown

*(boarding on Canal Street across from hotel's main entrance)*

##### Greater Richmond Convention Center (GRCC)

*(boarding on Marshall Street near intersection with 5th Street)*

#### ROUTE B

##### DoubleTree Hotel Downtown Richmond

*(Boarding on Franklin St. in front of hotel)*

##### Holiday Inn Express Downtown Richmond

*(Boarding on Cary St. in front of hotel)*

##### Greater Richmond Convention Center (GRCC)

*(boarding on Marshall Street near intersection with 5th Street)*

*Note: The **Richmond Marriott** and **Hilton Garden Inn** are located across the street from the Convention Center.*

Route	Service Begins	Last Coach Leaves GRCC
<b>Wednesday, Oct. 15</b>		
Route A and B combined	7:30 AM at Omni	7:30 PM
Route A	3:00 PM	7:30 PM
Route B	3:00 PM	7:30 PM
<b>Thursday, Oct. 16</b>		
Route A	6:30 AM	6:45 PM
Route B	6:30 AM	6:45 PM
<b>Friday, Oct. 17</b>		
Route A	6:30 AM	6:45 PM
Route B	6:30 AM	6:45 PM
<b>Saturday, Oct. 18</b>		
Route A	7:00 AM	3:30 PM
Route B	7:00 AM	3:30 PM

#### Short Courses scheduled at the Crowne Plaza Richmond Hotel

- Coaches will depart from the Greater Richmond Convention Center boarding location on Marshall Street just west of 5th Street.
- **If you are at a Route B Hotel** (DoubleTree Hotel Downtown Richmond or Holiday Inn Express Downtown Richmond), you should travel to the Greater Richmond Convention Center and then catch the Route A coach to the Crowne Plaza Richmond Hotel. Be sure to allow ample time to transfer to Route A.
- Coaches will return participants in the short courses at the end of the sessions to the Greater Richmond Convention Center and hotels.

### NSTA Exhibits

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

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. A complete list of exhibitors and contact information starts on page 105.

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

**Exhibit Hall Hours.** Located in Exhibit Hall A of the Convention Center, exhibits will be open for viewing during the following hours:

Thu., Oct. 16 11:00 AM–5:00 PM  
Fri., Oct. 17 9:00 AM–5:00 PM  
Sat., Oct. 18 9:00 AM–12 Noon

Did you know that NSTA offers Exclusive Exhibits Hall hours on Thursday 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.

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

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



first-served basis. See page 117 for a complete listing of exhibitor workshops.

### A Celebration of Literacy & Science

This FREE event is scheduled on Saturday from 9:00 AM to 2:15 PM at the Convention Center. Teachers who wish to attend this event must be registered for the conference; nonteaching personnel can register for this event on-site. The Literacy Event Registration tables in the Ballroom Pre-function Area open at 8:00 AM on Saturday. See pages 30–31 for details.

### Meet the Presidents and Board/Council

Be sure to stop by Thursday from 11:10 AM to 12:10 PM at the entrance to the Exhibit Hall for a special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits. The

President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!

### Wi-Fi in Convention Center

Visit the Cyber Café located adjacent to the Business Center to access six free internet kiosks. You can connect to this complimentary Wi-Fi by selecting "FREE\_CyberCafe." This is an open, unsecured network with no login required.

### NSTA Expo

Stop by the NSTA Expo (Booth #441) to redeem your free six-month membership and to learn more about NSTA's membership benefits, services, programs, and partners. See pages 112–113 for a complete list of NSTA services and programs.

**NSTA Science Store**

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

- Exclusive author signings and meet-and-greet opportunities;

- Our latest books—*Uncovering Student Ideas in Physical Science, Volume 2*; *Using Physical Science Gadgets and Gizmos, Grades 3–5*; *Translating the NGSS for Classroom Instruction*; and *Hard-to-Teach Biology, Revised 2nd Edition*—and our new children's books from NSTAKids, including the *Next Time You See* series;
- “I Love Science” and NSTA gear product lines to show your love of science and pride in teaching;
- Member discounts of 20% on NSTA Press® items and 10% on books from other publishers for all attendees; and
- Daily book and gear specials, product giveaways, and more.

**Graduate Credit Opportunity**

Richmond conference attendees can earn one graduate-level credit in professional development through Framingham State University. Visit [www.framingham.edu/nsta2014](http://www.framingham.edu/nsta2014) for complete details. The fee is \$129 and credit is by pass/fail option only.

**VRUEC Booth**

The Virginia Resource Use Education Council is an interagency workgroup that coordinates efforts across the Commonwealth. The Council coordinates teacher professional development institutes funded by NOAA B-WET. Stop by and learn about Virginia's natural resources.

NSTA's 2015  
**STEM**  
SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

**Forum & Expo**

**May 20-23**  
**Minneapolis, MN**

Proposal Deadline:  
12/1/2014

To submit a proposal, visit  
[www.nsta.org/conferenceproposals](http://www.nsta.org/conferenceproposals)

**NSTA** National Science Teachers Association





### Richmond Region Information Desk

Richmond Region Tourism has an Information Desk located in the registration lobby of the Convention Center. The desk is open as follows:

Wed., Oct. 15	4:30–7:30 PM
Thu., Oct. 16	9:30 AM–5:30 PM
Fri., Oct. 17	9:30 AM–5:30 PM
Sat., Oct. 18	9:00 AM–12:30 PM

Information about Richmond’s attractions, museums, and dining opportunities are available. Staff can assist in making dining reservations.

### Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at <http://svy.mk/Y7Eso4>.

## Online Session Evaluations and Tracking Professional Development

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

Help NSTA’s **GREEN** efforts by visiting the conference session browser to complete Richmond session evaluations online, October 15–31, 2014. During the conference, session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area. **And this year, we’re giving away a NEW Kindle Fire HD 7" to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

To evaluate a session, attendees should follow these steps:

- Visit the conference session browser and search for part of the session title or presenter’s name using the **Find Keyword** search option.
- Once you find the session you wish to evaluate, simply click the **Evaluate Session** button.
- Enter badge number (if you don’t remember your badge number, click “help me find my badge number”).
- When finished evaluating the session, click the **Submit Evaluation** button.
- Repeat this process for each session attended.

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

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

Beginning November 12, 2014, an attendee can view his or her transcript at the NSTA Learning Center ([learningcenter.nsta.org](http://learningcenter.nsta.org)) by clicking on “My PD Record and Certificates.” Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits, etc.). In addition, the NSTA Learning Center offers professional development experiences (online and face-to-face) for your long-term growth and professionalism.

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



### The NSTA Conference App

Navigate the conference from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful conference experience. Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center, hotels, and Exhibit Hall; Social Media plugins; exhibitor and sponsorship information; complete session evaluations; take notes; and more. Visit [www.nsta.org/richmondapp](http://www.nsta.org/richmondapp) or scan the QR code on page 111 to download the app. *Note:* The NSTA Conference app does not sync to our online Personal Scheduler.

### Presenters and Presiders Check-In

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

### Lost and Found

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

### Audiovisual Needs

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

- Registration Office 1/2, Conv. Center
- Salon B, Marriott

### First Aid Services

First Aid is located just behind Exhibit Hall A in the Convention Center. Attendees in need of first aid should notify a Convention Center Event Staff representative (these staff wear blue or black vests with black pants and are positioned around the facility). If no Event Staff member is in sight, please call the Security Base at 804-783-7341 for immediate assistance.

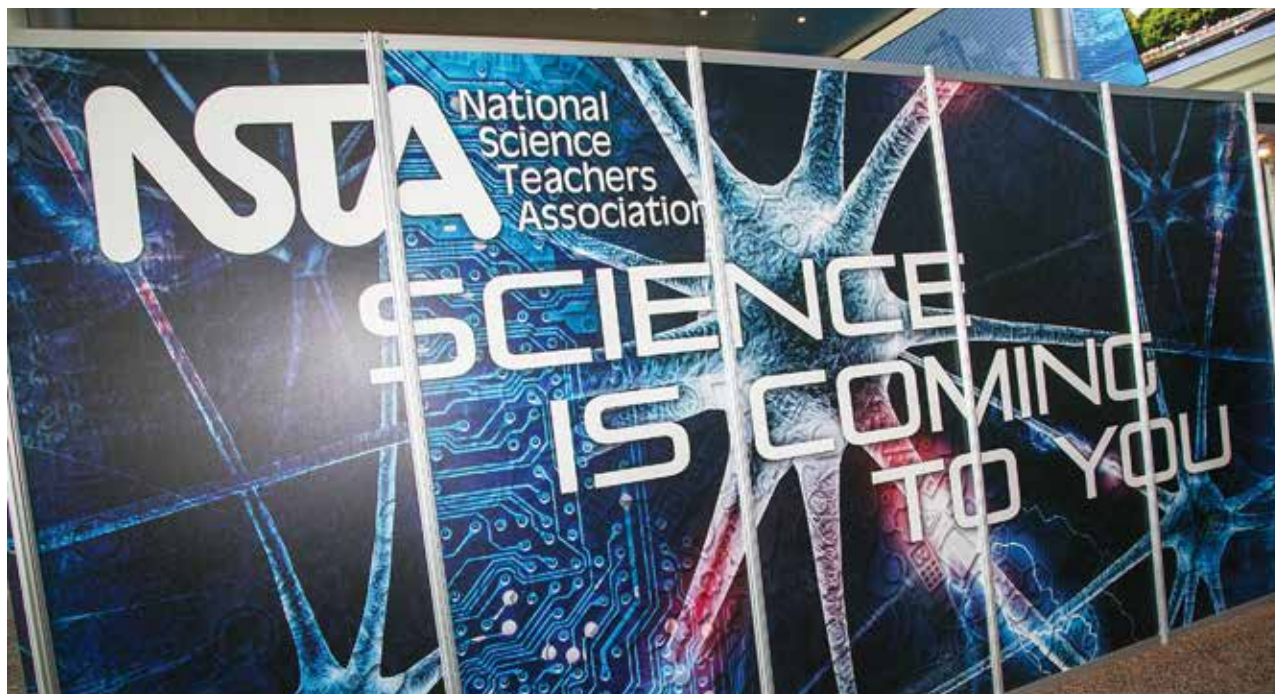
### Message Center

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

### Business Services

The Business Center, conveniently located right inside the Convention Center, is a self-service operation offering meeting planners and attendees computer stations with Microsoft software packages, a multifunction copy/fax unit, and color printing. The Business Center provides each customer with the appropriate solutions for their copying, faxing, and printing needs! There is also a Cyber Café located adjacent to the Business Center that provides six free internet kiosks and free Wi-Fi service. The Business Center is open during all hours of the conference.

The Marriott offers complimentary work stations at the bells stand for internet browsing and printing. Faxing and copying services are available at the Front Desk; applicable fees will apply.



# Greater Richmond Convention Center

## Level 1

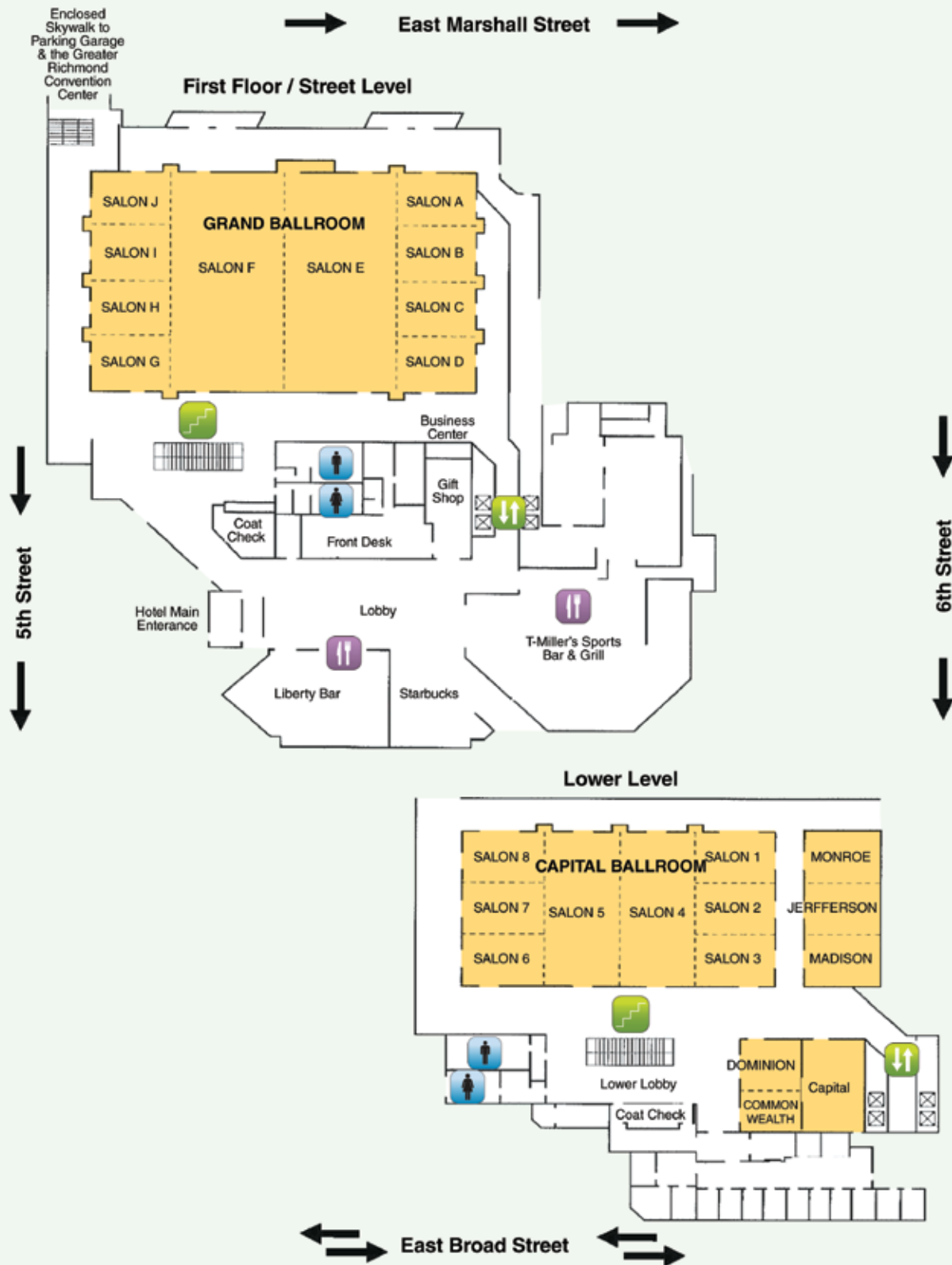


# Greater Richmond Convention Center

## Level 2



# Richmond Marriott





# Crowne Plaza Richmond Downtown



## Executive Office

David L. Evans, Executive Director

### BOARD RELATIONS

Michelle Butler, Executive Administrator and Manager

### COMMUNICATIONS

#### Legislative Affairs

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Kate Falk, Senior Manager, Public Relations  
Cindy Workosky, Communications Specialist

#### Marketing

Jennifer Gulley, Manager

#### Social Media and e-Newsletters

Lauren Jonas, Director

#### Website

Tim Weber, Assistant Executive Director, Web and News

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Vacant, Assistant Executive Director, Development  
Azi Ambrishami, Development Coordinator

### MEMBERSHIP DEVELOPMENT AND CHAPTER RELATIONS

Teshia Birts, Senior Director

### NGSS

Ted Willard, Program Director, COMPASS  
Jennifer Horak, NGSS Project Manager

### NOMINATIONS AND TEACHER AWARDS PROGRAM

Amanda Upton, Manager

## Operations Division

Moira Fathy Baker, Associate Executive Director, COO, and CFO

Shantee Young, Administrative Assistant

### BUSINESS & FINANCE

Brian Short, Senior Accountant  
Ravi Mittal, Controller  
Shawn Crowder, Grant Administrative Support Specialist  
Diane Cash, Manager, Accounts Payable  
Gaby Bathiche, Accountant  
LaKeisha Hines, Jr. Accountant

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Rodney Palmer, Building Engineer  
Donovan Parker, Mailing Services Coordinator  
Joe Harpe, Mailing Services Assistant

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Janine Smith, HR Benefits Manager and Generalist

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Mike Sullivan, Director, IT  
Edwin Pearce, Manager, IT Support  
Martin Lopong, Manager, Web Development  
Edward Hausknecht, Web and Database Developer  
Adam Ebel, Web Developer

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LaToyya Parks, Coordinator, CSR/Data Entry, Publication Sales  
Kristen Reiss, Customer Service Representative, Publication Sales

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Rick Bounds, Assistant Executive Director, Publications Operations  
Kimberly Hotz, Senior Manager, Exhibitor Operations  
Jeffrey LeGrand, Marketing and Sales Associate  
Becky Shoemaker, Advertising Production Manager  
Danielle McNeill, Project Manager, NSTA Mailing List  
Lucia Davis, Advertising Sales Associate

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Nelly Guacheta, Senior Manager  
Jasmine McCall, Special Projects Coordinator/CSR  
Cindy Thomas, Fulfillment Coordinator/Claims Correspondent  
Kiara Pate, Customer Service Representative

## Services Division

Al Byers, Assistant Executive Director, Government Partnerships and e-Learning  
Jodie Rozzell, Director, NASA Explorer Schools Program for NSTA

Caroline Nichols, Executive Administrator and International Program Coordinator

### CONFERENCES AND MEETINGS

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Dina Weiss, Associate Director  
Linda Crossley, Assistant Director/Managing Editor  
Donna Fletcher, Conference Coordinator  
Beverly Shaw, Conference Administrator  
Christina Dierssen, Project Editor  
Kimberlyn McDonald, Registration Supervisor/Administrative Assistant  
Jo Neville, Database Manager  
Marcelo Nunez, Exhibit Services Coordinator

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Dayna Anderson, Coordinator, e-Learning and Government Partnerships  
Jeff Layman, Web/Technical Coordinator

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Wendy Binder, SPIR Project Director  
Sherri Bracey, Program Manager

### SCIENCE EDUCATION COMPETITIONS

Sue Whitsett, eCYBERMISSION Program Manager  
Ty Butler, Assistant Manager, Science Education Competitions  
John Batko, eCYBERMISSION Logistics Coordinator  
Frank Curcio, eCYBERMISSION Outreach Specialist  
Matt Hartman, eCYBERMISSION Content Coordinator  
Alexis Mundis, eCYBERMISSION Volunteer Coordinator  
Keisha Jeffries, eCYBERMISSION Administrative Assistant

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David Beacom, Associate Executive Director and Publisher

Emily Brady, Executive Administrator and Manager, NSTA Recommends

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Joseph Butera, Senior Graphic Designer

Hima Bichali, Graphic Designer

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Kara Pantalena, Course Developer

Eleanor Dixon-Roche, e-Learning Multimedia Specialist

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Valynda Mayes, Managing Editor

Stephanie Simmons, Associate Editor

#### *Science Scope*

Inez Fugate Liftig, Field Editor

Ken Roberts, Senior Managing Editor

#### *The Science Teacher*

Stephen C. Metz, Field Editor

Scott Stuckey, Managing Editor

#### *Journal of College Science Teaching*

Ann Cutler, Field Editor

Caroline Barnes, Managing Editor

### NEW PRODUCTS

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### NSTA PRESS

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Wendy Rubin, Managing Editor, Books

J. Andrew Cooke, Senior Editor

Amanda O'Brien, Associate Editor

Amy America, Book Acquisitions Coordinator

### NSTA Reports

Lynn Petrinjak, Editor

Debra Shapiro, Associate Editor

### PRINTING AND PRODUCTION

Catherine Lorrain, Director

Jack Parker, Electronic Prepress Technician

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## NSTA Officers, Board of Directors, Council, and Alliance of Affiliates

### *NSTA Mission Statement*

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

### Officers and Board of Directors

David L. Evans, Executive Director

Juliana Texley, President

Carolyn Hayes, President-Elect

Bill Badders, Retiring President

Harold Pratt, Parliamentarian

LeRoy Lee, Treasurer

Peggy Carlisle, Preschool/Elementary

Patty McGinnis, Middle Level Science

Teaching

Beverly DeVore-Wedding, High School

Science Teaching

Sally Harms, College Science Teaching

Kelly Price, Coordination and Supervision of

Science Teaching

Candace Lutzow-Felling, Informal Science

Jerry Valadez, Multicultural/Equity

Eric J. Pyle, Preservice Teacher Preparation

Steve Rich, Professional Development

John Tillotson, Research

### Council

Juliana Texley, President

Harold Pratt, Parliamentarian

Jeanelle Day, District I

Lynn Farrin, District II

Stephanie Wright, District III

Fran Hess, District IV

Donna Governor, District V

Manley Midgett, District VI

John Ammons, District VII

David Helm, District VIII

Mary Colson, District IX

Janet Struble, District X

Paul Adams, District XI

Natacia Campbell, District XII

Norma Neely, District XIII

Vicki Massey, District XIV

Timothy Maze, District XV

Tim Williamson, District XVI

Steven Ruthford, District XVII

Michael Bowen, District XVIII

### Alliance of Affiliates

Elizabeth Allan, Chairperson, and  
NSELA Affiliate Representative

Robert Ferguson, AMSE Affiliate  
Representative

Sharon A. Kortman, ASTC Affiliate  
Representative

Lisa Martin-Hansen, ASTE Affiliate  
Representative

Julie Thomas, CESI Affiliate Representative

Juan-Carlos Aguilar, CSSS Affiliate  
Representative

Deborah Hanuscin, NARST Affiliate  
Representative

Todd Hoover, NMLSTA Affiliate  
Representative

Brian Shmaefsky, SCST Affiliate  
Representative

All cities are subject to change pending final negotiation.

**National Conferences on Science Education**

Chicago, Illinois  
March 12–15, 2015

Nashville, Tennessee  
March 31–April 3, 2016

Los Angeles, California  
March 30–April 2, 2017

**2015 STEM Forum & Expo**

Minneapolis, Minnesota  
May 20–23

**Area Conferences on Science Education**

**2014 Area Conferences**

Orlando, Florida—November 6–8  
Long Beach, California—December 4–6  
*(in collaboration with CSTA)*

**2015 Area Conferences**

Reno, Nevada—October 22–24  
Philadelphia, Pennsylvania—November 12–14  
Kansas City, Missouri—December 3–5

**2016 Area Conferences**

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



**NSTA's 2015 CONFERENCES**  
to enthuse and stimulate our community of educators!

**SHARE YOUR IDEAS!**  
Have an idea for an inspiring presentation or workshop on science education? Submit a session proposal today for...

**2015 Area Conferences**

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

**2016 National Conference**

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

**Proposal Deadline: 4/15/2015**

To submit a proposal, visit  
[www.nsta.org/conferenceproposals](http://www.nsta.org/conferenceproposals)

**NSTA** National Science Teachers Association





**SAVE THE DATE**

**CHICAGO**

MARCH 12-15, 2015

**NSTA NATIONAL CONFERENCE ON SCIENCE EDUCATION**



**PROFESSIONAL DEVELOPMENT STRANDS**

Natural Resources,  
Natural  
Partnerships

Teaching Every  
Child by  
Embracing  
Diversity

The Science  
of Design:  
Structure and  
Function

Student Learning—  
How Do We Know  
What They Know?

FOR INFORMATION AND UPDATES, VISIT,  
[www.nsta.org/conferences](http://www.nsta.org/conferences)

**NSTA** National  
Science  
Teachers  
Association

## Conference Program • Highlights



—Photo courtesy of Richmond Region Tourism

### A Celebration of Literacy & Science

This FREE event is scheduled on Saturday, October 18, from 9:00 AM to 2:15 PM. See pages 30–31 for details.



### Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday from 8:00 to 9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! See page 43 for details.

### Thursday, October 16

8:00–9:00 AM	First-Timer Conference Attendees Orientation— . . . . .	43
	Is This Your First NSTA Conference?	
9:15–10:30 AM	General Session: Brendan Mullan . . . . .	47
11:00–11:05 AM	Ribbon Cutting Ceremony/Exhibits Opening . . . . .	49
11:05 AM–5:00 PM	Exhibits . . . . .	50
11:10 AM–12:10 PM	Meet the Presidents and Board/Council . . . . .	50
12:30–1:30 PM	Featured Presentation: June Ahn . . . . .	50
3:30–4:30 PM	Featured Presentation: Louisa Koch . . . . .	60

### Friday, October 17

9:00 AM–5:00 PM	Exhibits . . . . .	71
9:30–10:30 AM	Featured Presentation: Preeti Gupta . . . . .	71
11:00 AM–12 Noon	Featured Presentation: Akiima Price . . . . .	76
2:00–3:00 PM	Featured Presentation: Stephen Pruitt . . . . .	81
7:00–9:00 PM	Ice Cream Social Sponsored by VOEE and MAMEA . . . . .	92

### Saturday, October 18

9:00 AM–2:15 PM	A Celebration of Literacy & Science . . . . .	30–31
9:00 AM–12 Noon	Exhibits . . . . .	95

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

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

The drawings will be held at **4:00 PM** on Oct. 16 and Oct. 17 during the conference. You must be present to win.

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



NSTA would like to thank the following organizations for their continued support of NSTA throughout 2014 as exhibitors and advertisers. Please take a moment to stop by the following booths to meet them and to thank them for their support:

Company	Booth
Albert Einstein Distinguished Educator Fellowship Program	524
American Chemical Society	430
Bio-Rad Laboratories	618
Camp Invention	624
Carolina Biological Supply Company	415
Educational Innovations	523
ExploreLearning	215
Flinn Scientific	615
Howard Hughes Medical Institute	522
LAB-AIDS	519
LEGO Education	429
NanoAndMore USA, Inc.	331
Nasco	217
Ohaus Corporation	423
PASCO scientific	422
Pearson	315
Project Learning Tree	333
School Specialty Science	314
Science First/STARLAB	330
Texas Instruments	528
Vernier Software & Technology	515

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



### **Watershed Science: Learning Inside and Out**

Watersheds sustain life, and everyone should play a role in preserving their health. Protecting watersheds demands interdisciplinary and system sciences; studying watershed systems integrates engineering and Earth, life, and physical sciences. In fact, watersheds are so important that many states mandate watershed science education to prepare citizens to make informed decisions about the use and stewardship of these resources. This strand will increase participants' watershed knowledge and their ability to relate it to successful and replicable science practices in both non-formal and formal learning environments.



### **Integrating Science with Other Disciplines: Learning Inside and Out**

There is a strong interconnectivity among science and language arts, social studies, mathematics, and engineering; they are essential in learning for all. In light of state standards, *Common Core State Standards*, and the *Next Generation Science Standards*, we are challenged to address the needs of all preK–16 learners. This strand will show how science can increase understanding and practices across the curricula.



### **Partnerships and Collaborations: Learning Inside and Out**

Learning often occurs in communities. Partnerships and collaborations play pivotal roles in advancing STEM education inside and outside the classroom. The synergy of working together and sharing resources strengthens all stakeholders. Learning from each other, non-formal and formal educators can provide powerful and meaningful educational experiences for their students and themselves. This strand will showcase effective partnerships and lead to new opportunities for collaborations.

## **Watershed Science: Learning Inside and Out**

### **Thursday, October 16**

#### **8:00–9:00 AM**

Protecting Our Watersheds to Sustain Ecosystems and Human Health: Examining the Concepts of Bioavailability, Bioaccumulation, and Biomagnification

#### **12:30–1:30 PM**

Bring the Great Lakes and Ocean Watersheds to Your Landlocked Classrooms!

#### **2:00–3:00 PM**

Climate Education for a Changing Bay

#### **3:30–4:30 PM**

Featured Presentation: Water in a Changing World Offers Much to Teach About (Speaker: Louisa Koch)

#### **5:00–6:00 PM**

Water, Water Everywhere—But What Will It Support?

### **Friday, October 17**

#### **8:00–8:30 AM**

Dive Underwater and Explore Your Nation's Estuaries

#### **9:30–10:30 AM**

Integrating Teacher and Student Learning in Watershed Science Education

#### **11:00–11:30 AM**

Connecting Young Children to Nature: Activities and Resources Appropriate for PreK–2

#### **2:00–3:00 PM**

A Drop in My Drink—Diving into Water Activities Through Trade Books

#### **5:00–6:00 PM**

Yes, No, Maybe? The Importance of Environmental Decision-Making

### **Saturday, October 18**

#### **8:00–9:00 AM**

Water Quality Monitoring and Service Learning at the Chesapeake Bay Governor's School for Marine and Environmental Science

#### **8:30 AM–1:00 PM**

SC-4: Earth Systems Science on the James River **(CANCELED)**

#### **9:30–10:30 AM**

Watershed and Wetlands Sustainability

#### **12:30–1:30 PM**

Bay to Bay: A Multidisciplinary Watershed Investigation for Teachers



## Integrating Science with Other Disciplines: Learning Inside and Out

### Thursday, October 16

8:00–9:00 AM

Through the Wormhole

12:30–1:30 PM

Featured Presentation: Selfies, Superheros, and Tardigrades: Everyday Life, Science Fiction, and Game Experiences and Their Role in Developing Interest in STEM Pathways (Speaker: June Ahn)

ID Scat Using Edible Dough

2:00–3:00 PM

Diving Deeper into Science Practice and Crosscutting Concepts with NOAA

5:00–6:00 PM

Sky Art: Sharing in the Beauty of Nature While Learning the Science Behind It

### Friday, October 17

9:30–10:30 AM

Working the NGSS into Your Curriculum Through Ocean Exploration

11:00 AM–12 Noon

Sea Turtles and STEM

1:30–4:30 PM

SC-3: Build a Classroom Planetarium While Building Math and Science Skills (Ticket required: \$30)

2:00–3:00 PM

Developing Spatial Visual Skills of Middle School Girls Through 3-D Printing in Informal Science Settings

3:30–4:30 PM

Cultivating Collaboration to Promote Environmental Literacy in D.C.

Use Your Local Community as an Environmental Science Laboratory: Planning Land Use with Students (PLUS)

5:00–6:00 PM

Informally Learning

### Saturday, October 18

8:00–9:00 AM

Students' Cloud Observations Online: A Project for Cross-curricular Learning

9:30–10:30 AM

Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century

11:00 AM–12 Noon

Feeding the World with Solar Power

12:30–1:30 PM

Growing with Water

## Partnerships and Collaborations: Learning Inside and Out

### Thursday, October 16

8:00–9:00 AM

Using Citizen Science to Build Community Partnerships

2:00–3:00 PM

The Marketing Agency for STEM

3:30–4:30 PM

Make Broader Impacts: A Network for Connecting Students to Real Science

5:00–6:00 PM

Texas-STEM Coalition: Partnerships for Success

### Friday, October 17

8:00–9:00 AM

Family STEM Explorations Created by Community Partnerships

9:30–10:30 AM

Featured Presentation: Building Bridges: Supporting Youth Trajectories in STEM (Speaker: Preeti Gupta)

2:00–3:00 PM

Spark Students' Interest in Chemistry with Resources from the American Chemical Society

3:30–4:30 PM

Strategies for STEM Success

### Saturday, October 18

8:00–9:00 AM

The Engaged Scientist Project: Lessons from a Decade of Engaging Scientists in Informal Education

9:30–10:30 AM

Arizona STEM Club Guide and Network

11:00 AM–12 Noon

Our Common Planet: A Collaborative Venture

12:30–1:30 PM

How Delaware Left No Child Inside

2:00–2:30 PM

Childlike Wonder: Using Science Hobbies and Hobbyists to Facilitate a Lifetime Engagement with Science

*NSTA wishes to acknowledge our invaluable partnership with the Virginia Office of Environmental Education (VOEE) and the Virginia Resource Use Education Council (VRUEC). We deeply appreciate their generous support and contributions in planning this special thread. The sessions in this thread are identified by a salamander icon throughout the daily program.*

Explore exemplary teaching methods and environmental issues of Virginia. Learn best practices in field science experiences, the latest in the Atlantic sturgeon restoration, and methods to increase volunteer support of your educational programs. This thread will show the power of partnerships to build collaborative learning experiences grounded in the classroom and conducted in the field using resources from federal, state, and local natural resource agencies. Most importantly, hear our keynote speaker Akiima Price discuss her groundbreaking urban environmental educational work.

# GET YOUR NATURE ON



### **Thursday, October 16**

#### **8:00–9:00 AM**

Rain to Drain: Fighting the Flow of Pollution

#### **12:30–1:30 PM**

Let's Go Outside—Getting Nature into the School Day

#### **2:00–3:00 PM**

What Is Envirothon? North America's Largest Environmental Education Competition!

#### **3:30–4:30 PM**

Regional Celebrations of Environmental Education Efforts

#### **5:00–6:00 PM**

Seeing Math Patterns in Nature with Kids of All Ages

### **Friday, October 17**

#### **8:00–8:30 AM**

Creek Freaks: Outdoor Ed Meets Science, Technology, and Exploration!

#### **9:30–10:30 AM**

Atlantic Sturgeon in and Around the Bay

#### **11:00 AM–12 Noon**

Featured Presentation: Connecting Environmental Outcomes with Community Concerns (Speaker: Akiima Price)

#### **3:30–4:30 PM**

Jump into the Garden

#### **5:00–6:00 PM**

How NOAA's Educational Resources and Funding Advance K–12 Watershed Education

### **Saturday, October 18**

#### **8:00–9:00 AM**

Out of the Box: 4-H in the Classroom

#### **11:00 AM–12 Noon**

Discover Karst Groundwater Through Project Underground

#### **12:30–1:30 PM**

Planning Field Science Experiences: Lessons Learned from MWEEs

#### **2:00–3:00 PM**

Fairfax County Grade 5 Field Guide Development Project

## NSTA Press Sessions

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

### Thursday, October 16

- 8:00–9:00 AM *Picture-Perfect Science Lessons: Using Children’s Books to Guide Inquiry*
- 12:30–1:30 PM *Next Time You See...*
- 2:00–3:00 PM *Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns*
- 3:30–4:30 PM *Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12*



### Friday, October 17

- 8:00–9:00 AM *It’s Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12*
- 9:30–10:30 AM *Bringing Outdoor Science In*
- 11:00 AM–12 Noon *Teaching Science Through Integrating Children’s Literature and Outdoor Investigations*
- 12:30–1:30 PM *Including Students with Disabilities in Advanced Science Classes*
- 2:00–3:00 PM *Breathtaking Science: Exploring the Hidden and Unexpected Worlds at the Nanoscale*
- 3:30–4:30 PM *Showcasing How Elementary Preservice Interns Teach Inside Out*
- 5:00–6:00 PM *Scientific Argumentation in Biology: 30 Classroom Activities*

### Saturday, October 18

- 8:00–9:00 AM *Inquiring Scientists, Inquiring Readers: Using Literacy Strategies to Support Inquiry Investigations*
- 9:30–10:30 AM *Special Needs Students in Science*
- 11:00 AM–12 Noon *Citizen Science: Diverse Projects That Bring Biology to Life*
- 12:30–1:30 PM *Models and Approaches to STEM Professional Development*
- 2:00–3:00 PM *Earth Science Puzzles: Making Meaning from Data*

## Meetings and Social Functions

### Wednesday, October 15

- FOSS Exploring Engineering Practices for Grades K–5 Meeting  
By Invitation Only  
Salon I/J, Marriott ..... 12 Noon–3:30 PM

### Friday, October 17

- Ice Cream Social Sponsored by the Virginia Office of Environmental Education (VOEE) and the Mid-Atlantic Marine Education Association (MAMEA)  
*Complimentary Tickets Required (available on a first-come/first-served basis at the VRUEC booth in the Registration Area until 12 Noon on Friday)*  
Salon F, Marriott ..... 7:00–9:00 PM

# A Celebration of LITERACY & SCIENCE



## FREE EVENT

### Saturday, October 18

9 A.M. to 2:15 P.M.

Grand Ballroom, Greater Richmond Convention Center

Do you have kids who love to explore and do science?

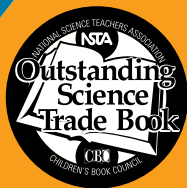
Do they also love to read about the world around them?

The National Science Teachers Association (NSTA) and the International Reading Association (IRA) invite you to learn more about science and literacy during a special event on Saturday, October 18 from 9 a.m. to 2:15 p.m. at the Greater Richmond Conference Center during the NSTA Area Conference on Science Education.

Come for all or part of this FREE event, where you'll learn more about the importance of science and literacy, discover outstanding children books, and meet with the authors who make science come alive.



Learn more about  
NSTA Kids books and  
Outstanding Science  
Trade Books



**NSTA Kids**  
National Science Teachers Association

**NSTA** National  
Science  
Teachers  
Association



# SCHEDULE of EVENTS



## WHAT DOES LITERACY MEAN? HOW DO SCIENCE AND LITERACY CONNECT?

(9 a.m. – 9:50 a.m.)

Come hear NSTA Retiring President Bill Badders and Marcie Craig Post, Executive Director of the International Reading Association, talk about “literacy” in the context of science, and provide concrete examples.

## AUTHORS! INSPIRATION!

(10 a.m. – 11:30 a.m.)

A panel discussion of the nation’s best authors of science trade books (see below) will discuss what inspires them, how they do their work, and how their books can be used in classrooms. These authors have been honored by the Children’s Book Council, AAAS/Subaru, and other national organizations. Authors include:

### **Molly Bang**

*Ocean Sunlight: How Tiny Plants Feed the Seas*

### **Loree Griffin Burns**

*Handle With Care: An Unusual Butterfly Journey*

### **Vicki Cobb**

*What’s the Big Idea?: Amazing Science Questions*

### **Emily Morgan**

*Next Time You See* series

### **Melissa Stewart**

*A Place for Turtles*

### **Pamela Turner**

*Dolphins of Shark Bay*

### **Joy Hakim**

*The Story of Science*

### **Gail Hedrick**

*Something Stinks!*

## General Session—Children and Parents Welcome

MEET and GREET OUTSTANDING AUTHORS

(11:45 a.m. – 1:15 p.m.)

Children and their parents are invited to visit with authors to explore their mutual curiosity and wonder about the natural world. Families and homeschoolers will also be able to tour the NSTA exhibit hall and the NSTA Science Store between 9:00 AM and 12 PM on Saturday. Lunch will be available at the food court concessions. Teachers registered for the Richmond conference are encouraged to invite students and parents for this session.

## EUREKA! I FOUND GOLD IN THE LIBRARY

1:15 p.m. – 2:15 p.m.

See how the best of science trade books for children and classrooms are chosen. You will learn how to explore NSTA’s searchable database of more than 10,000 materials for classrooms to find the best materials.



## REGISTRATION

Teachers must first register for the NSTA Area Conference in Richmond ([www.nsta.org/conferences](http://www.nsta.org/conferences)) and can participate by showing their conference badges. Non-teaching personnel can register for the event onsite.

**NSTA** National Science Teachers Association

### Picture-Perfect Science Preconference Workshop (C-1)

Tickets for this preconference workshop were available by preregistration only.



Karen Ansberry

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



Emily Morgan

Level: Grades K–5

Date: Wednesday, October 15

Time: 8:30 AM–3:30 PM

Location: Salon G/H, Marriott

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

in a meaningful way, so you can teach both subjects at once. In this



—Photo courtesy of Karen Ansberry and Emily Morgan

full-day workshop, you will participate in model lessons that integrate science and reading, learn the benefits and cautions of using children's picture books in science, and become familiar with the BSCS 5E model. All attendees will also receive a copy of *Even More Picture-Perfect Science Lessons*, a \$39.95 value containing 15 classroom-ready lessons for grades K–5.

Continental breakfast is included in the ticket price. Join us and rejuvenate elementary science instruction in your school!

### Outdoor Science Preconference Workshop (C-2)

Tickets for this preconference workshop were available by preregistration only.



Steve Rich

Level: Grades 3–8

Date: Wednesday, October 15

Time: 8:30 AM–3:30 PM

Location: Salon C/D, Marriott

**Steve Rich** ([bflywriter@comcast.net](mailto:bflywriter@comcast.net)), taught K–8 science in Georgia for 15 years, helping students in middle and elementary schools develop outdoor classrooms that earned him the NSTA Ohaus and Ciba teaching awards.

He is the author of books for teachers and students including his popular NSTA Press® title *Outdoor Science: A Practical Guide*, and the follow-up, *Bringing Outdoor Science In: Thrifty Classroom Lessons*. As the director of the West Georgia Youth Science & Technology Center, Steve conducts professional development for teachers and STEM programs for K–8 students.

If you have ever thought about taking students outdoors for science, this preconference workshop will provide the tools you need to be successful. Participants can expect to take part in practical hands-on strategies correlated to the NGSS that get students engaged in active learning. Engineering practices will be considered with questions like “How does a bird engineer a nest?” Additional strategies will include the integration of children's literature, mathematics, and social studies into outdoor science. Participants can expect to leave with resources that can help make teaching science outdoors a powerful learning experience for their students.

Continental breakfast is included in the ticket price. All participants will receive a copy of *Bringing Outdoor Science In: Thrifty Classroom Lessons*, a \$25.95 value.

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

## NSTA 2014 Richmond Area National Conference Professional Development Documentation Form

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

**Beginning November 12, 2014, Richmond transcripts can be accessed at the NSTA Learning Center ([learningcenter.nsta.org](http://learningcenter.nsta.org))** by logging on with your Richmond Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Richmond transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

**First Name:** \_\_\_\_\_ **Last Name:** \_\_\_\_\_ **Badge ID#** \_\_\_\_\_

Evaluate sessions via the Richmond session browser ([www.nsta.org/richmondbrowser](http://www.nsta.org/richmondbrowser)) using the instructions on page 14. **And don't forget, the more sessions you attend and evaluate, the more chances you have to win a Kindle Fire HD 7!"**

**Sample Questions:**

- |   |   |
|---|---|
| <p>I. I selected this session:</p> <ul style="list-style-type: none"> <li>a. for immediate classroom use.</li> <li>b. based on the reputation of the speaker.</li> <li>c. to improve my personal pedagogical knowledge/skill.</li> <li>d. to improve my science content knowledge.</li> </ul> | <ul style="list-style-type: none"> <li>2. The session met my needs.</li> <li>3. The information presented was clear and well organized.</li> <li>4. Safe practices were employed.</li> <li>5. The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press® sessions).</li> <li>6. The session should be repeated at another NSTA conference.</li> </ul> |
|---|---|

**Sample Responses:**

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

**Wednesday, October 15 8:30 AM–3:30 PM**

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

**Thursday, October 16 8:00 AM–6:00 PM**

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

***We're giving a Kindle Fire to one lucky attendee who evaluates sessions that he or she attends. The more sessions you attend and evaluate, the more chances you have to win!***





**Symposium: Flight of the Monarch Butterflies (SYM-1)**  
**\$54**

**Grant Bowers** and **Katie-Lyn Bunney**, University of Minnesota Monarch Lab, St. Paul

**Dolores (De) Cansler** (*decansler@gmail.com*), Adjunct Teacher Trainer, Monarchs in the Classroom, Rochester, Minn.

**Jim O’Leary** (*oleary@mdsci.org*) and **Maureen Sullivan**, Maryland Science Center, Baltimore

Level: Grades K–12

Science Focus: GEN

Date: Friday, October 17, 12:30–6:30 PM

Location: Off-site (Challenge Lab, Science Museum of Virginia)

NSTA is partnering with the Maryland Science Center, University of Minnesota, and the National Science Foundation to present this exciting symposium for educators, grades K–12, on the topic of monarch butterfly migration. Attendance requires conference registration.

**Stipend Opportunity (\$100)**—The presenting groups are pleased to offset the registration costs for participants, making this symposium free for registered educators. Participants will be reimbursed \$100 after successful completion of the symposium.

During this half-day symposium, participants will see the latest IMAX film *Flight of the Butterflies* and take part in classroom activities focused on the monarchs’ amazing migration across North America, as well as their habitats and life cycle. Attendees will learn how to use this content to meet the *Next Generation Science Standards (NGSS)*. Monarch experts will also discuss how teachers and students can become involved in citizen science projects to help the monarchs. Educational materials will be provided for classroom use. A drawing for door prizes will take place at the end of the program. Lunch will be served!

*Note:* Meet your instructor at the Marshall Street entrance of the Convention Center by 12:15 PM.



## Need help navigating?

So this is your first NSTA conference and you want to make the most of the experience. Join other first-time attendees for a walk through the conference program, presented by Bill Badders, NSTA retiring president. Learn all the opportunities that the conference can offer! Door prizes!

- **First-Timer Attendee Session • Thursday, October 16, 8:00–9:00 AM**  
**Ballroom A (B21A), Greater Richmond Convention Center**



### Bald Eagles and Their Conservation Success Story on the James River \$65

#T-1 Thursday, Oct. 16 8:00–11:10 AM

The James River runs through it...through the City of Richmond. And just minutes downriver is an incredible opportunity to see resident bald eagles in their natural habitat all year long! This tidal river pontoon boat tour will take you into the midst of an ecosystem rich with wildlife, abundant in history, and overloaded with beautiful scenery. Discover the James' Bald Eagle Tour travels through a five-mile stretch of the James River known as Jefferson's Reach, and covers five territories of resident bald eagles. See firsthand the conservation success story of bald eagles on the James River, where just over 30 years ago there were none. Today, more than 200 pairs of resident bald eagles call the James River home. The James River is now considered to have the best bald eagle comeback in the entire North American continent.

Ride aboard the *Spirit of the James*, a comfortable 40-foot covered pontoon boat and experience majestic bald eagles closer than you may have ever seen them. This two-hour tour is one of the most unique resident bald eagle tours on the East Coast! Bring your binoculars as a limited amount of binoculars are provided. Wildlife and history abounds. Space is limited to 30 people. This trip will run rain or shine, unless the weather is inclement. This excursion is made possible by Capt. Mike Ostrander of Discover the James and Jessica Templeton of the James River Association.

### Digging into Science at Lewis Ginter Botanical Garden \$46

#T-2 Thursday, Oct. 16 1:30–5:30 PM

Whether you have a school garden, are planning to start one, or are looking for ways to use your existing schoolyard, you'll gain new nature-based learning tools that can enhance your science curriculum. Seasoned garden educators demonstrate effective methods to actively engage learners of all ages and abilities in outdoor settings as we explore the edible Farm Garden, Compost Bin, and Sensory Herb Garden. At the Monarch Waystation, we will gather data for classroom-ready citizen science projects that kindle students' interest in real-world science. Use petals, roots, and leaves gathered from the garden to dye natural fibers in the greenhouse. Horticulturalists discuss the basics of starting and maintaining straw-bale and other simple educational gardens on a minimal budget, and our educators will share their favorite garden resources and activities that integrate social studies, language arts, and math to achieve authentic learning experiences.

Enjoy the remainder of the afternoon exploring all that Lewis Ginter Botanical Garden has to offer, including the Asian Valley, the Rose Garden, Lake Sydnor Cherry Tree Walk, the Healing Garden, and tropical plants in the Conservatory.

Rain or Shine—please wear comfortable walking shoes and dress for outdoor activity. Cameras and notepads are encouraged. You may wish to bring spending money for the Garden Café or for browsing the renowned Garden Shop.



F-2: Explore the Wildlife Habitats at Maymont

—Photo courtesy of © Chris Johnson, Maymont Foundation

**On-Water Investigation of the James River with the Chesapeake Bay Foundation \$65**

#F-1 Fri., Oct. 17 8:00 AM–12:30 PM

The Chesapeake Bay Foundation's (CBF) James River Education Program leads participants to exciting new perspectives on the James River and its connections to the Bay. CBF's on-water education programs bring life to Chesapeake Bay watershed curricula with field investigations focusing on methods that incorporate environmental education into the core subject areas of science, reading, math, and social studies. This trip investigates the ecology, natural history, and modern challenges of both the James River and the region.

While aboard the USCG inspected vessel *Baywatcher* on the James River, we'll examine the relationship between human activities, land use, and water quality and we'll learn about an exciting Atlantic sturgeon tracking program that schools can participate in. Hands-on activities like trawling and water quality collection and analysis encourage sensitivity and knowledge of local ecosystems, giving relevance and greater understanding to classroom curricula. Participants are encouraged to explore the complexity of the watershed and to see themselves as part of the solution. Participants will also learn of the many educational offerings CBF staff can provide throughout Virginia and the Bay watershed.

*Note:* This trip will run rain or shine. Participants will need to complete a health/waiver form on the bus, prior to departure from the marina. Participants should wear clothes appropriate for the weather, knowing that it is often 10 degrees colder on the water than on land; wear clothes that may get wet and muddy. Bring a water bottle/drink and your enthusiasm!

*Tickets for field trips may be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Please meet your field trip leader at the Marshall Street entrance of the Convention Center 15 minutes before departure time.*

**Explore the Wildlife Habitats at Maymont \$40**

#F-2 Fri., Oct. 17 1:00–4:45 PM

Maymont is a 10-acre American estate, an extraordinary gift given to us by James and Sallie Dooley who lived here from 1893 to 1925. The estate includes the 33-room Maymont Mansion, Italian and Japanese gardens, Nature Center, Children's Farm, wildlife exhibits, carriage collection, and arboretum. The Robins Nature & Visitor Center at Maymont is dedicated to native Virginia wildlife. Rather than displaying a host of exotic creatures from distant seas, the Nature Center interprets the natural environment of the James River. Guests are astonished to discover the staggering variety of species living in Richmond's own backyard. A 20-foot waterfall cascades into the first of 13 aquariums that are home to playful river otters, turtles, and fish of all shapes and sizes. Interactive galleries, including a replica of Richmond's flood-wall and several aquatic-based displays, add to this memorable river experience. New to the Nature Center is a Venomous Snake exhibit with live specimens of the species native to Virginia.

On this field trip, you will discover what happens behind the scenes to care for the hundreds of animals that call Maymont home. Join the Environmental Education staff on a guided behind-the-scenes tour of the Nature Center where we will visit the fish holding room and food prep kitchen. Then meet many of the animals used for educational programming such as screech owls, snakes, and flying squirrels. After our tour, explore the Nature Center and join the animal keeper staff for a river otter training session. From there we will head outdoors for a guided tour of the wildlife exhibits. Among the animals we'll see include American bison, black bears, bald eagles, and other raptors. We'll finish the exhibit tour observing a training session with our bobcat.

*Note:* This trip will run rain or shine. Please wear comfortable walking shoes and dress for the weather. Cameras are encouraged and snacks are available for purchase at the Visitor Center or you can pack your own and enjoy a picnic on the grounds.

**Engineering Using Underwater ROVs (SC-1) \$20**

**Shannon Ricles** ([shannon.ricles@noaa.gov](mailto:shannon.ricles@noaa.gov)) and **Lauren Heeseemann** ([lauren.heeseemann@noaa.gov](mailto:lauren.heeseemann@noaa.gov)), NOAA Monitor National Marine Sanctuary, Newport News, Va.

Level: Grades 5–12

Science Focus: ETS, PS, SEP2, SEP3, SEP6

Date: Thursday, October 16, 2:00–5:00 PM

Location: Georgian, Crowne Plaza

Through the excitement of underwater remotely operated vehicles (ROVs), this short course introduces you to an exciting avenue for teaching engineering and design. Learn how scientists explore the deep ocean and search for lost shipwrecks. Understand ROV science, such as Newton’s laws of motion, buoyancy, and more. Design, engineer, build, and test an ROV; and learn how to create reusable kits for your classroom. A complete set of lesson plans filled with hands-on activities is provided. Visit [monitor.noaa.gov](http://monitor.noaa.gov) for more information.

**Developing a Naturalist Approach in the Teaching of Science Concepts and Inquiry (SC-2) \$55**

**Bill Klein**, Western Iowa Tech Community College, Sioux City, Iowa

Level: Grades 5–College

Science Focus: GEN

Date: Friday, October 17, 8:30–11:30 AM

Location: Raleigh/Elizabethan, Crowne Plaza

Turn the outdoors into a hands-on laboratory...where students can learn for the rest of their lives. Many of today’s students lack knowledge of the natural world with some educators labeling them “nature deficient.” Because they have never studied firsthand common organisms such as bees, ants, dandelions, corn, wheat, cotton, etc., students frequently have difficulty correlating concepts in their texts with life cycles and adaptations/behaviors of living organisms within their immediate environments. Participants will be presented methods for teaching science concepts as an inquiry process—directed, guided, connected, and open. Following their natural curiosity, students use creativity, problem-solving skills, and inquiry processes to comprehend science concepts inherent to life cycles, behavior, and structure/function of common organisms. A wealth of materials, including labs, teaching strategies, alternative methods of assessment, and a CD are provided.



**Build a Classroom Planetarium While Building Math and Science Skills (SC-3) \$30**

**Bruce Hemp** ([bhemp@ntelos.net](mailto:bhemp@ntelos.net)), Fort Defiance High School, Fort Defiance, Va.

**Jeffery Adkins** ([@astronomyteacher](mailto:@astronomyteacher); [astronomyteacher@mac.com](mailto:astronomyteacher@mac.com)), Deer Valley High School, Antioch, Calif.

Level: Grades 4–12

Science Focus: ESS, CCC, SEP

Date: Friday, October 17, 1:30–4:30 PM

Location: Raleigh/Elizabethan, Crowne Plaza

Learn how to build a geodesic dome and turn it into a working planetarium at minimal cost! Join us and cultivate new learning in your classroom. Scale models will be featured and participants will be involved in many hands-on activities that will explore radians, scaling the universe, and parallax. You’ll learn how to find distances to the stars after discovering “What’s a Radian” and learn how to use radians to determine those distances. A variety of teaching methods will be modeled so that you will not only have classroom-ready activities to take home with you, but you will also see effective teaching strategies modeled. Participants are encouraged to wear comfortable clothing.



**Earth Systems Science on the James River (SC-4) \$50**

**Rachel Martin, Carroll Ellis, Kayne Gilcrest, Patricia Miller, and Steve Oden**, MathScience Innovation Center, Richmond, Va.

Level: Grades 4–College

Date: Saturday, October 18, 8:30 AM–1:00 PM

Location: Off-site (Belle Isle, James River Park System)

The faculty of the MathScience Innovation Center will lead you on an interdisciplinary field study of the ecosystems at the James River Park System. Participants will rotate through five investigative stations—Ecology of Potholes; Hydrodynamics; Geology of Fractures and Potholes; Overview of Geological/Geographical regions; and Seine/Fish Identification/Aquatic Ecology. Note: This trip is active field work; dress for the weather (appropriate for field work and hiking). Visit [mysic.org/en](http://mysic.org/en) for more information.

*Note:* Meet your instructor at the Marshall Street entrance of the Convention Center by 8:15 AM.

**CANCELED**

*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.*



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## FREE HANDS-ON WORKSHOPS

**Friday, October 17 • Room E10C**

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

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## Conference Program • NSTA Affiliate Sessions

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### Association for Multicultural Science Education (AMSE)

*President: Robert Ferguson*

#### Friday, October 17

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9:30–10:30 AM	Creating and Implementing Effective Watershed Lessons for All Students: Use of <i>Next Generation Science Standards</i> Appendix D and Case Studies	Salon E, Marriott
11:00 AM–12 Noon	The Smarts Are There—Create Classroom Climates Saturated with High Expectations for All Students Using “Inclusive Teaching and Inquiry-based Learning”	Salon E, Marriott

### Council for Elementary Science International (CESI)

*President: Julie Thomas*

#### Friday, October 17

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9:30–10:30 AM	Integrating Science and Literacy: Proven Strategies Using Evidence-based Practices International Space Station	Ballroom B (B21B), Conv. Center
11:00 AM–12 Noon	Elementary Science Share-a-Thon	Ballroom B (B21B), Conv. Center

### Council of State Science Supervisors (CSSS)

*President: Juan-Carlos Aguilar*

#### Thursday, October 16

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2:00–2:30 PM	Presidential Awards Program	B12, Conv. Center
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### National Association for Research in Science Teaching (NARST)

*President: Lynn Bryan*

#### Friday, October 17

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2:00–3:00 PM	Building Evidence-based Reasoning Skills Among Nonscience Majors at a Community College	B14, Conv. Center
3:30–4:30 PM	Research Apprenticeships for Diverse High School Students	B14, Conv. Center

### National Middle Level Science Teachers Association (NMLSTA)

*President: Patty McGinnis*

#### Thursday, October 16

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2:00–3:00 PM	What Can a Roll of Painters Tape Teach?	Salon E, Marriott
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#### Friday, October 17

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5:00–6:00 PM	Student-created Interactive Journals	Salon C/D, Marriott
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**National Science Education Leadership Association (NSELA)**

*President: Darlene Ryan*

**Friday, October 17**

9:30–10:30 AM	Tools for Science Leaders Part 1	B14, Conv. Center
11:00 AM–12 Noon	Tools for Science Leaders, Part 2	B14, Conv. Center





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**8:30 AM–3:30 PM Preconference Workshops**

**Outdoor Science Preconference Workshop (C-2)**

(Grades 3–8)

Salon C/D, Marriott

**By Preregistration Only**

**Steve Rich** (@bflyguy; [bflywriter@comcast.net](mailto:bflywriter@comcast.net)), NSTA Director, Professional Development, and West GYSTC, Douglasville, Ga.

For description, see page 32.

**Picture-Perfect Science Preconference Workshop (C-1)**

(Grades K–5)

Salon G/H, Marriott

**By Preregistration Only**

**Karen Ansberry** ([karen@pictureperfectscience.com](mailto:karen@pictureperfectscience.com)), Mason (Ohio) City Schools

**Emily Morgan** (@EmilyMorganNTYS; [emily@pictureperfectscience.com](mailto:emily@pictureperfectscience.com)), Picture-Perfect Science, West Chester, Ohio

For description, see page 32.

**12 Noon–3:30 PM Meeting**

**FOSS Exploring Engineering Practices for Grades K–5 Meeting**

(By Invitation Only)

Salon I/J, Marriott

*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 121, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

**Glossary**

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

**Strands**

The Richmond Conference Committee has planned the conference around the following three strands and one thread, 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 26; for a description of the Nature of Science thread, see page 28.



**Watershed Science: Learning Inside and Out**



**Integrating Science with Other Disciplines: Learning Inside and Out**



**Partnerships and Collaborations: Learning Inside and Out**



**Get Your Nature On Thread**

The following icons will be used throughout this program.



**NSTA Press sessions**



**Celebrate Literacy & Science sessions**



—Photo courtesy of ©Sean Dewitt/Science Museum of Virginia

*At the Science Museum of Virginia Boost! exhibit, attendees get to test their reaction time and find out how their reflexes compare with others.*

### 8:00–8:30 AM Presentations

#### **Exotic Bullies: Why Are Invasive Species so Successful and How Do They Affect Native Ecosystems?**

(Grades 4–6)

Salon G/H, Marriott

Science Focus: ESS, CCC, SEP

**Amy Trauth-Nare** ([anare@udel.edu](mailto:anare@udel.edu)), University of Delaware, Newark

**Christine McCauley** ([cmccau4@students.towson.edu](mailto:cmccau4@students.towson.edu)), Fallston Middle School, Fallston, Md.

Explore invasive species and their effects on native species through hands-on activities and outdoor inquiry in a free, completely developed 5E (Engage, Explore, Explain, Elaborate, Evaluate) lesson plan.

#### **Secrets of an ESL Teacher in the Science Classroom**

(Grades 6–9)

Salon I/J, Marriott

Science Focus: GEN

**Jennifer Burr**, Richardson (Tex.) ISD

Reach all of your students, including ESL students, in your science classroom with the easy and creative Interactive Notebook.

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### 8:00–9:00 AM Presentations

#### **Using Popular Science Magazine Articles to Improve Students' Critical Thinking and Scientific Literacy**

(Grades 9–12)

B11, Convention Center

Science Focus: GEN, NGSS

**Patrice Pages** ([p\\_pages@acs.org](mailto:p_pages@acs.org)), American Chemical Society, Washington, D.C.

**Steve Long**, Rogers High School, Rogers, Ark.

We will describe how science-related magazine articles can be integrated into instruction to stimulate student interest in science and increase students' scientific knowledge.

#### **The Classroom “Without” Walls**

(General)

B17, Convention Center

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

**Darrell Walker** ([@dwalker\\_1](mailto:@dwalker_1); [d.l.walker.1975@gmail.com](mailto:d.l.walker.1975@gmail.com)), Bertie Middle School, Windsor, N.C.

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

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

(Grades 9–12)

B12, Convention Center

Science Focus: ETS1, ETS2, CCC, SEP

**Cheryl Farmer** ([@UTeachEngineer](mailto:@UTeachEngineer); [cheryl.farmer@mail.utexas.edu](mailto:cheryl.farmer@mail.utexas.edu)), The University of Texas at Austin

Learn about an innovative, research-based engineering curriculum that supports the NGSS, fosters computational thinking, and advances the development of 21st-century skills.

#### **Differentiated Instruction in Secondary Science Classrooms**

(Grades 6–12)

B19, Convention Center

Science Focus: GEN, SEP

**Jennifer Maeng** ([jlc7d@virginia.edu](mailto:jlc7d@virginia.edu)), University of Virginia, Charlottesville

Specifically focused on middle and high school science, I will discuss the power of formative assessment in informing the design of instructional activities. Join me as I introduce the premise behind a framework for planning differentiated science lessons and model straightforward classroom-tested differentiation strategies.

#### **Exploring the Science Encountered in the Young Child's World: Nurturing, Observing, Questioning, Investigating, Thinking, and Talking About Science**

(Grades P–6)

B14, Convention Center

Science Focus: GEN, SEP1, SEP5, SEP8

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

Find out how to use everyday examples of science that comprise the young child's world to create rich, engaging instruction and to motivate students.

#### **First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference?**

(General)

Ballroom A (B21A), Convention Center

Science Focus: GEN

#### **NSTA Board and Council**

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



★ **Using Citizen Science to Build Community Partnerships**

(Grades 5–12)

E21A, Convention Center

Science Focus: INF, CCC

**Robert Dillon** (@ideaguy42; rdillon@afftonschoools.net), Affton School District, St. Louis, Mo.

Citizen Science engages learners in authentic science that can change the community and beyond. Join me for a look at opportunities, resources, and how to get started.

**8:00–9:00 AM Hands-On Workshops**



**Protecting Our Watersheds to Sustain Ecosystems and Human Health: Examining the Concepts of Bioavailability, Bioaccumulation, and Biomagnification**

(Grades 6–College)

B13, Convention Center

Science Focus: INF, CCC2, CCC3, CCC4, CCC5, CCC7, ESS, ETS, LS, SEP1, SEP2, SEP3, SEP4

**Dana Haine** (@Dana\_Haine; dhaine@unc.edu), The University of North Carolina at Chapel Hill

Examine how scientists are studying bioavailability of chemical contaminants in our waters to evaluate risk, inform cleanup, and protect our watersheds. Engage in a role-play activity and assume roles of different organisms in an aquatic food chain to distinguish between bioaccumulation and biomagnification.



**Through the Wormhole**

(Grades 3–7)

B15A, Convention Center

Science Focus: INF

**Adrienne Sawyer** (@scitech; adrienne.sawyer@cpschools.com), Chesapeake (Va.) Public Schools

Dig into the past by making natural connections between science, history, math, reading, and technology as we travel back in time from early history through the Civil War.



**Rain to Drain: Fighting the Flow of Pollution**

(Grades 4–9)

B15B, Convention Center

Science Focus: INF, ESS3.C

**Page Hutchinson** (page.hutchinson@deq.virginia.gov), Virginia Dept. of Environmental Quality, Richmond

Stormwater runoff is an issue of concern for Virginians as a leading cause of reduced water quality, stream bank degradation, and habitat destruction. Learn about the latest in stormwater management and engage in activities that help make stormwater runoff and best management practices relevant and exciting for students.

**“Seeing” the Invisible: Making the EMS Spectrum Concrete**

(Grades 6–10)

B18, Convention Center

Science Focus: PS3.A, PS3.C

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

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

**NASA STEM Spanish Immersion: Head in the Clouds Edition**

(Grades 5–9)

E24A, Convention Center

Science Focus: INF, ESS2.C, ESS2.D, ESS3.C, PS4.B, PS4.C

**Marile Colon Robles** (marile.colonrobles@nasa.gov), NASA Langley Research Center, Hampton, Va.

Learn about NASA hands-on activities in Spanish and discover how to use clouds, climate, and weather through NASA’s Students Cloud Observations On-Line (S’COOL) project to engage students in physical and Earth sciences.

**Developing Testable Questions**

(General)

E25A, Convention Center

Science Focus: GEN, SEP1

**Laura Delo**, Monelison Middle School, Madison Heights, Va. Determining the testability of a question is an important first step of inquiry. Let’s discuss important aspects of testable questions as well as work through the process of recognizing simple questions in order to develop them into more testable ones. Criteria and user-friendly activities will be presented.





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

(Grades K–5) *Governors Room (B20), Convention Center*  
 Science Focus: GEN, INF, SEP8

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

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

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

**Enchanted Engineering: Discover the STEM in Fairy Tales**

(Grades K–6)

*Salon E, Marriott*

Science Focus: GEN, NGSS

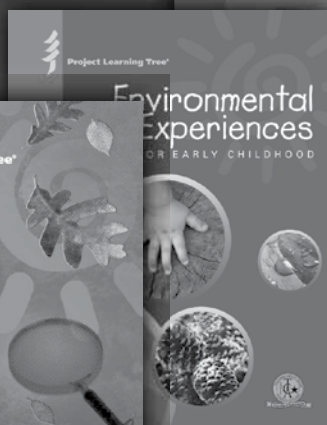
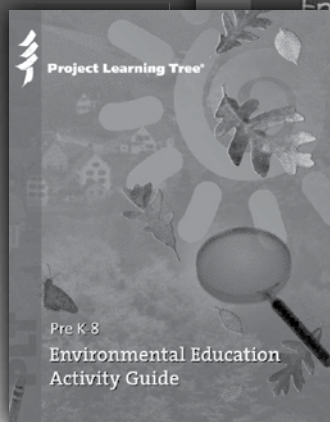
**Wendy Goldfein and Cheryl Nelson**, Newington Forest Elementary School, Springfield, Va.

Learn how to engineer “happily ever after” and “once upon a time” with our integrated STEM activities. Handouts! Freebies! Resources!

# Project Learning Tree

**Use PLT and the environment to engage students in real world applications of STEM.**

- Investigative, student-led learning
- Inquiry-based activities
- GreenSchools! investigations
- Grants for service-learning projects



**Get free PLT materials at NSTA**

- Visit Exhibit Booth 333
- Participate in a PLT session:

Teaching STEM with Project Learning Tree

October 17, 2014  
 8:00 AM - 9:00 AM  
 Richmond Marriott, Salon C/D

Or, get PLT materials by attending a PLT workshop in your state. Contact your state’s PLT Coordinator for details.

**www.plt.org**

## 8:00–9:15 AM Exhibitor Workshops

### A STEM Approach to Teaching Electricity and Magnetism

(Grades 5–12)

E10A, Convention Center

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

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

The new CPO Science Link™ Wind Turbine learning module lets students learn in a tablet-based and hands-on learning environment 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.

### Science, the Literacy Connection, and the CCSS ELA

(Grades K–6)

E10B, Convention Center

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky.

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

### Engineering Design in the FOSS Next Generation Program

(Grades 3–5)

E10C, Convention Center

Science Focus: ETS

Sponsor: Delta Education/School Specialty Science—FOSS

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

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

### Investigating Gas Exchange

(Grades 6–8)

E10D, Convention Center

Science Focus: LS1

Sponsor: LAB-AIDS®, Inc.

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

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

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

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

(Grades K–5)

E11A, Convention Center

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

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

### Making Failure Fun: Amplify Science Games

(Grades 6–8)

E11B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Amplify

**Alan Dang**, Amplify, Brooklyn, N.Y.

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

### Using the Polymerase Chain Reaction to Identify Genetically Modified Foods

(Grades 8–College)

E11C, Convention Center

Science Focus: LS3.A

Sponsor: Edvotek Inc.

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

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

**8:30–9:00 AM Presentation**

**From STEM to Sunshine—How to Integrate Eco-Energy into Your Curriculum**

(Grades P–6) **CANCELED** Salon G/H, Marriott  
 Science Focus: ESS3.A, ESS3.C, ESS3.D, ETS1, ETS2, LS1.A, LS1.B, LS1.C, LS2.A, LS2.B, LS2.C, PS3.A, PS3.B, PS3.D, CCC2, CCC5, SEP

**Jessica Carr**, Eco Energy for Schools, Bristol, Tenn.  
 Join me for an exciting interdisciplinary curriculum that can engage students in collaborative hands-on learning activities on a range of elementary science education topics, from plant science to energy conservation and resource education, while using technology.



**9:15–10:30 AM General Session**

**Selling the Science Story**

(General) Ballroom C, Convention Center  
 Science Focus: GEN

Sponsored by National Geographic Learning



**Brendan Mullan**

@BrendanLMullan  
 mullanb@carnegiesciencecenter.org  
 Astrobiologist and Science Educator,  
 2013 National Geographic Emerging  
 Explorer, and Director, Buhl Plan-  
 etarium, Carnegie Science Center,  
 Pittsburgh, Pa.

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

Platform Guests: Brendan Mullan; Juliana Texley; Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Mathematics and Science Partnership, Cleveland, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; David Helm, NSTA Director, District VIII, and Fayette County Public Schools, Lexington, Ky.; J. Michael Foreman, Virginia Office of Environmental Education, Richmond; Candace Lutzow-Felling, Chairperson, NSTA Richmond Area Conference, NSTA Director, Informal Science, and UVA/Blandy Ecological Field Research Station, Boyce, Va.; Patricia Simmons, Program Coordinator, NSTA Richmond Area Conference, 2011–2012 NSTA President, and North Carolina State University, Raleigh; David L. Evans, NSTA Executive Director, Arlington, Va.

Where is everybody? Aliens are all around us in pop culture, but where are they in real life? Join astrobiologist and science communicator Brendan Mullan for a discussion of new avenues in SETI (the search for extraterrestrial intelligence), and the types of 21st-century skills your students will need to become “interstellar archaeologists.”

*Brendan Mullan explores innovative ways to communicate astronomy to the public and inspire a new generation of scientists. He is a 2013 National Geographic Emerging Explorer, the national champion of the 2012 U.S. FameLab science communication competition, and director of the Buhl Planetarium and Observatory at the Carnegie Science Center in Pittsburgh.*

*Brendan thinks scientists should reach out—to schoolchildren, college undergraduates, folks in the neighborhood, curious web browsers, and everyone in between. His astronomy research tackles some of astrobiology’s most complex questions, but his public outreach efforts bring astronomy and astrobiology out of the ivory tower to make science more accessible, engaging, and entertaining.*

## 10:00–11:15 AM Exhibitor Workshops

### Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School

(Grades 5–8)

B15C, Convention Center

Science Focus: GEN

Sponsor: Flinn Scientific, Inc.

**Janet Hoekenga** ([jhoekenga@flinnsci.com](mailto:jhoekenga@flinnsci.com)), Flinn Scientific, Inc., Batavia, Ill.

Hands-on science leads to minds-on learning! Flinn Scientific presents relevant and age-appropriate activities for middle school—integrating life, Earth, and physical science topics. Come perform and observe experiments designed to capture the curiosity and engage the energy of adolescent students. Handouts provided for all activities.

### Exploring Genetics and Heredity with Crazy Traits

(Grades 5–12)

E10A, Convention Center

Science Focus: LS

Sponsor: CPO Science/School Specialty Science

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

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

### Solving the Mystery of STEM Using Forensic Science

(Grades 5–12)

E10B, Convention Center

Science Focus: GEN

Sponsor: Frey Scientific/School Specialty Science

**Lou Loftin**, Nevada’s Northwest Regional Professional Development Program, Reno

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

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

(Grades 1–6)

E10C, Convention Center

Science Focus: GEN, SEP

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

Join FOSS Next Generation Program developers to learn about the scientific practices within the context of the student investigations. You will experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson.

### Chemical Formula and Amino Acids

(Grades 9–12)

E10D, Convention Center

Science Focus: PS1

Sponsor: LAB-AIDS®, Inc.

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

What is the difference between subscripts and coefficients? What does “balancing” a chemical equation mean? Many students have trouble with these concepts. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for intuitive lessons for all students to master the formula, gaining a deeper understanding of chemistry.

### Integrating Common Core Writing, Speaking, and Listening Strategies into Science Instruction

(Grades K–8)

E11A, Convention Center

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Explore ways to provide students with *Common Core* writing, speaking, and listening strategies through inquiry-based instruction. These skills lead to better understanding in writing, speaking, and reading science.



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

(Grades K–5) *E11B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Amplify

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

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

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

(Grades 8–College) *E11C, Convention Center*

Science Focus: LS

Sponsor: Edvotek Inc.

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

More than 380 million people worldwide have diabetes, a disease that causes high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early treatment, diabetes causes severe medical complications. We will diagnose diabetes using simulated urinalysis and ELISA tests. Free flash drive/T-shirt drawing.

**The “E” in STEM: 3-D STEM Engineering**

(Grades 5–College) *E21B, Convention Center*

Science Focus: ETS

Sponsor: WhiteBox Learning

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

Engage your students in the complete engineering design process. WhiteBox Learning provides standards-, web-, and project-based applied STEM learning applications. Gliders2.0, Rover2.0, Structures2.0, Prosthetics2.0, MousetrapCar2.0, GreenCar2.0, Rockets2.0, and Dragster2.0 allow students to build, analyze, and simulate their designs, and compete “virtually,” 24/7, all around the world...how cool is that!?

**MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started**

(Grades 6–9) *E21C, Convention Center*

Science Focus: ETS, SEP

Sponsor: LEGO Education

**Eileen Malick**, Atlee High School, Mechanicsville, Va.

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

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

*Exhibits Entrance, Hall A, Convention Center*

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

Welcoming Remarks: Candace Lutzow-Felling, Chairperson, NSTA Richmond Area Conference; NSTA Director, Informal Science; and UVA/Blandy Ecological Field Research Station, Boyce, Va.

Special Guests: Bill Badders, NSTA Retiring President, and Retired Director, Cleveland Mathematics and Science Partnership, Cleveland, Ohio; Carolyn Hayes, NSTA President-Elect, and Indiana University, Indianapolis; David Helm, NSTA Director, District VIII, and Fayette County Public Schools, Lexington, Ky.; J. Michael Foreman, Virginia Office of Environmental Education, Richmond; Patricia Simmons, Program Coordinator, NSTA Richmond Area Conference, 2011–2012 NSTA President, and North Carolina State University, Raleigh; David L. Evans, NSTA Executive Director, Arlington, Va; Jason Sheldrake, Assistant Executive Director, Sales, NSTA, Arlington, Va.

Musical Entertainment: Steward School Varsity Jazz Band under the direction of John McAlister

**Meet the Presidents and Board/Council**

Come “meet and greet” with your elected NSTA officers on your way to the exhibits. Share some face-to-face time with the President, President-Elect, and Retiring President along with your Board and Council members. This Thursday special session runs from 11:10 AM to 12:10 PM at the entrance to the Exhibit Hall (page 50).

### 11:05 AM–5:00 PM Exhibits

*Hall A, Convention Center*

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

### 11:10 AM–12:10 PM Special Session

#### Meet the Presidents and Board/Council

*(General) NSTA Exhibits entrance in Hall A, Convention Center*  
Science Focus: GEN

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

### 12:30–1:00 PM Presentation

#### Scenic Rivers Grassroots Efforts for Conservation, Water Quality, and Economic Vitality

*(Grades 11–College) B17, Convention Center*  
Science Focus: ESS3.A, ESS3.C

**Lynn Crump** ([lynn.crump@dcr.virginia.gov](mailto:lynn.crump@dcr.virginia.gov)), Virginia Dept. of Conservation and Recreation, Richmond

This presentation will include discussion on how the Scenic Rivers program supports communities through collaboration to conserve land, improve water quality, and strengthen economic vitality. Emphasis will be placed on several success stories where the designation of a river corridor helped a community protect its resources and quality of life.

### Evaluate Your Sessions Online!

This year, we're giving away a Kindle Fire HD 7" to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See page 14 for details.)

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

#### ✓ Selfies, Superheros, and Tardigrades: Everyday Life, Science Fiction, and Game Experiences and Their Role in Developing Interest in STEM Pathways

*(General) Lecture Hall (B10), Convention Center*  
Science Focus: GEN



**June Ahn** (@ahnjune; [juneahn@umd.edu](mailto:juneahn@umd.edu)), Assistant Professor, iSchool and College of Education, University of Maryland, College Park

Presiders: Emily Hestness, Strand Co-Leader, Integrating Science with Other Disciplines, University of Maryland, College Park, and Kelly Riedinger, Co-Leader, Integrating

Science with Other Disciplines, David Heil & Associates, Portland, Ore.

In this talk, June will discuss several projects that explore ways of using social media, science fiction storytelling, and alternate reality games (ARGs) as ways to broaden participation and interest in STEM for young people. June and his collaborators are examining how to design engaging experiences, new media, and technology in efforts to understand how to foster an interest in STEM pathways for young learners. Join June as he shares some findings and motivates a broader conversation for science educators about how to create holistic learning experiences that bridge formal and informal contexts, and school and everyday life interests, in efforts to deepen young people's learning trajectories over time.

*An assistant professor at the University of Maryland, College Park, June Ahn holds a joint appointment in the College of Information Studies (iSchool) and College of Education. In the iSchool, he is an affiliate faculty member of the Human Computer Interaction Lab and a senior fellow in the Center for the Advanced Study of Communities and Information. In the College of Education, he works in the Department of Teaching and Learning, Policy and Leadership.*

*June's core research interest is in understanding how technology and information can enhance the way we learn and deliver education. He conducts design-based research to understand how technology and new media can be used to enhance learning for young people, in addition to studies that try to understand the sociotechnical systems around education and technology; or how the combination of technology, education settings (formal and informal), and people (educators, learners etc.) can combine and lead to positive learning or social outcomes.*

**12:30–1:30 PM Presentations**

**Authors Wanted! Learn How to Submit an Article for Publication in an NSTA Journal**

(General) *B11, Convention Center*

Science Focus: GEN

**Ken Roberts**, Assistant Executive Director, Journals, NSTA, Arlington, Va.

Meet with editors to learn how to successfully prepare and submit an article for publication in an NSTA journal.

**Gray Matter: Learning and Teaching Science with the Brain in Mind**

(General) *B12, Convention Center*

Science Focus: GEN, NGSS

**Carolyn Hayes** (*caahayes@comcast.net*), NSTA President-Elect, and Indiana University, Indianapolis

Experience through science activities how discoveries in cognitive neuroscience are applied to NGSS teaching strategies and the principles of how students learn science.

**Using NSTA Resources for Professional Development**

(General) *B14, Convention Center*

Science Focus: GEN, NGSS

**Steve Rich** (*@bflyguy*; *bflywriter@comcast.net*), NSTA Director, Professional Development, and West GYSTC, Douglasville, Ga.

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



**Let's Go Outside—Getting Nature into the School Day**

(Grades 6–12)

*B15B, Convention Center*

Science Focus: INF

**Sally Lewis**, Kecoughtan High School, Hampton, Va.

Overcome the challenges of getting students engaged with nature during the school day with tried-and-true projects and activities. Web resources and a how-to activities planning guide provided.

**3-D Printers—Adding a New Dimension to Science Instruction**

(Grades 6–12)

*B19, Convention Center*

Science Focus: GEN, NGSS

**Jim Lehman** (*jlehman@mymisc.org*), MathScience Innovation Center, Richmond, Va.

Learn how easy it is to design and print your own custom science gadgets and equipment using a 3-D printer. Be your own science supplier!



## 12:30–1:30 PM Hands-On Workshops



### Bring the Great Lakes and Oceans Watersheds to Your Landlocked Classrooms!

(Grades 8–12)

B13, Convention Center

Science Focus: ESS

**Elizabeth Overmier** ([elizabeth.overmier@ecotoh.net](mailto:elizabeth.overmier@ecotoh.net)), ECOT, Columbus, Ohio

Walk away with resources, lesson plans, and strategies to help students learn the importance of watersheds in the United States.

### Supporting Literacy Using Scientific Reading Material and Discussion

(Grades 8–12)

B18, Convention Center

Science Focus: GEN, SEP1, SEP3, SEP4, SEP6, SEP7, SEP8

**Amanda Whitener** ([@TheAWhitener](mailto:@TheAWhitener); [awhitener@envisionexperience.com](mailto:awhitener@envisionexperience.com)) and **Jan Sikorsky** ([jsikorsky@envisionexperience.com](mailto:jsikorsky@envisionexperience.com)), Envision EMI, Vienna, Va.

Scientific readings and case studies have many applications and can be used in the classroom to develop scientific thinking in literary and historical contexts. In this workshop, we will use an article from a scientific publication and a health-based patient and epidemiology case study as a platform for the development of these interdisciplinary practices, communication skills, and information synthesis.

### Exploring the Science and Engineering Practices

(Grades K–12)

Ballroom A (B21A), Convention Center

Science Focus: GEN, SEP

**Ted Willard** ([@Ted\\_NSTA](mailto:@Ted_NSTA); [twillard@nsta.org](mailto:twillard@nsta.org)), Program Director, COMPASS, NSTA, Arlington, Va.

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

### SAGE III on the ISS: A Collaborative Effort—Science, Engineering, Math, and Art

(Grades K–5)

E24A, Convention Center

Science Focus: ESS

**Kristyn Damadeo** ([kristyn.damadeo@nasa.gov](mailto:kristyn.damadeo@nasa.gov)), SSAI/NASA Langley Research Center, Hampton, Va.

SAGE III stands for the Stratospheric Aerosol and Gas Experiment III on the International Space Station. Engage your students in atmospheric science by demonstrating science, engineering, and math concepts through art and hands-on activities and classroom videos relating to this NASA mission.

### Planning and Designing Safe and Sustainable Science Facilities that Meet the NGSS (Science Facilities 101)

(General)

E25A, Convention Center

Science Focus: GEN

**LaMoine Motz** ([llmotz@comcast.net](mailto:llmotz@comcast.net)), 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.

**Sandra West Moody** ([sw04@txstate.edu](mailto:sw04@txstate.edu)), Texas State University, San Marcos

**Juliana Texley** ([@Juliana.Texley](mailto:@Juliana.Texley); [juliana.texley@nsta.org](mailto:juliana.texley@nsta.org)), NSTA President, Boca Raton, Fla.

Presider: LaMoine Motz

So you want new science facilities? Does your curriculum define your science teaching facility? With more than 15 years of conducting visits and presentations of new/renovated school science facilities, the author team for the *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present the “basics” of science facility planning for safe, ergonomically designed, and sustainable facilities.



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

(Grades P–5)

Governors Room (B20), Convention Center

Science Focus: GEN, INF, CCC

**Emily Morgan** ([@EmilyMorganNTYS](mailto:@EmilyMorganNTYS); [emily@picture-perfectscience.com](mailto:emily@picture-perfectscience.com)), Picture-Perfect Science, West Chester, Ohio

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

### EXENTHUNCO—What Is That?

(Grades 6–8)

Salon C/D, Marriott

Science Focus: INF

**Fred Maier** ([fredmaier@sbcglobal.net](mailto:fredmaier@sbcglobal.net)), Village of Itasca Nature Center, Itasca, Ill.

**Roy Tison** ([globes@comcast.net](mailto:globes@comcast.net)), Lincoln Marsh Natural Area, Wheaton, Ill.

Species populations change over time. This workshop presents a program taking students on a 100-year journey where some species thrive, and some go extinct.

### NGSS—Make Your Lessons 3-D

(Grades 1–5)

Salon E, Marriott

Science Focus: GEN, NGSS

**Karen Ostlund** ([klostlund@utexas.edu](mailto:klostlund@utexas.edu)), 2012–2013 NSTA President, and The University of Texas at Austin

Experience model lessons designed to integrate the three dimensions in the NGSS—science and engineering practices, crosscutting concepts, and disciplinary core ideas.



## ✓ ID Scat Using Edible Dough

(Grades 2–8)

Salon F, Marriott

Science Focus: INF

**Emily Ford** ([emilyford@virginia.edu](mailto:emilyford@virginia.edu)), UVA Blandy Experimental Farm, Boyce, Va.

Wild animals, mammals in particular, are often difficult to observe with children but by using the signs they leave behind, students can learn about the size of a population as well as the age, health, and diet of an individual animal. Using easily made dough to model scat provides an engaging hands-on STEM activity. Participants will make models and discuss using them for different teaching scenarios.



## 12:30–1:45 PM Exhibitor Workshops

### Advanced Inquiry Labs for AP Chemistry from Flinn Scientific

(Grades 9–12)

B15C, Convention Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

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

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

### Fun with Atom Building Games and the Periodic Table

(Grades 5–12)

E10A, Convention Center

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

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

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

### Teaching Argumentation for Our Next Generation

(Grades K–6)

E10B, Convention Center

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky.

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

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

(Grades 1–6)

E10C, Convention Center

Science Focus: GEN, CCC

Sponsor: Delta Education/School Specialty Science–FOSS

**Brian Campbell**, The Lawrence Hall of Science, University of California, Berkeley

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



### Using the Engineering Design Process to Understand Heat

(Grades 9–12)

E10D, Convention Center

Science Focus: ETS1, PS1

Sponsor: LAB-AIDS®, Inc.

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

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

### Introduction to Wisconsin Fast Plants®

(Grades K–12)

E11A, Convention Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

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

### Immerse Students into the World of Scientists and Engineers by Putting Sims at the Center of Learning

(Grades 6–8)

E11B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Amplify Education, Inc.

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

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

### Biotechnology Basics

(Grades 6–College)

E11C, Convention Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

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

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

(Grades P–5)

E21B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Activate Learning

**Marilyn Schmidt**, Retired Educator, Aurora, Colo.

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

### Stellar Evolution Made Easy

(Grades 6–12)

E21C, Convention Center

Science Focus: ESS1.A

Sponsor: Simulation Curriculum Corp.

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

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

### 1:00–1:30 PM Presentations

#### Chesapeake Bay Foundation's Education Programs

(General) *B17, Convention Center*  
 Science Focus: INF, NGSS

**Cindy Duncan** (*cduncan@cbf.org*), Chesapeake Bay Foundation, Richmond, Va.

The Chesapeake Bay Foundation's (CBF) environmental education programs seek to prepare the next generation of environmental stewards to face environmental challenges head-on. Join us for an overview of CBF's educational programs for students, teachers, and principals.

#### Integrating Hands-On STEM Activities with Math and Reading in the CCSS

(Grades K–5) *Salon G/H, Marriott*  
 Science Focus: GEN, DCI, SEP

**Chih-Che Tai** (*cctai59@gmail.com*), East Tennessee State University, Johnson City

Join us as we discuss ideas to integrate math, reading, and science (e.g. force and motion, weather) into K–5 classrooms to build confidence about using reading and math as tools to understand STEM literacies.

### 1:00–2:30 PM Exhibitor Workshop

#### Identify Patient Zero of a Zombie Apocalypse

(Grades 9–College) *E23 A/B, Convention Center*  
 Science Focus: LS, CCC, SEP

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*sherri\_andrews@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

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

### 2:00–2:30 PM Presentation

#### CSSS Session: Presidential Awards Program

(Grades K–12) *B12, Convention Center*  
 Science Focus: GEN

**Linda Jordan** (*jordan.linda1212@gmail.com*), Council of State Science Supervisors, Nashville, Tenn.

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the nation's highest honors for teachers of mathematics and science (including computer science). Eligibility requirements and the application process for this prestigious award program will be reviewed.

### 2:00–3:00 PM Presentations

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

(College) *B11, Convention Center*  
 Science Focus: GEN

**Al Byers** (*abyers@nsta.org*), Assistant Executive Director, Government Partnerships and e-Learning, NSTA, Arlington, Va.

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

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

#### Engage Students Through Problem-Based Learning

(Grades 3–College) *B14, Convention Center*  
 Science Focus: GEN, CCC, SEP2, SEP3, SEP5, SEP8

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

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

Discover how to integrate subjects into authentic learning situations with Problem-Based Learning. Share ideas for meeting CCSS expectations and developing 21st-century skills.

✓ **Diving Deeper into Science Practice and Crosscutting Concepts with NOAA**

(Grades 6–College) *B15A, Convention Center*  
Science Focus: ESS, ETS, LS, CCC1, CCC2, CCC4, CCC5, CCC7, SEP3, SEP5, SEP6, SEP8

**Frank Niepold** (@NOAAClimate; #TeachingClimate; *frank.niepold@noaa.gov*), NOAA Climate Program Office, Silver Spring, Md.

Join NOAA educators for an exploration of NGSS and CCSS connections to climate, energy, and ocean literacy through the use of cutting-edge life and Earth systems science, data, and NOAA education products.



**What Is Envirothon? North America's Largest Environmental Education Competition!**

(Grades 9–12) *B15B, Convention Center*  
Science Focus: ESS, LS, CCC, SEP1, SEP5, SEP8

**Beth Sokolik** (*elizabeth.sokolik@vaswcd.org*), Virginia Association of Soil & Water Conservation Districts, Mechanicsville  
**Stephanie DeNicola** (*stephanied@culpeperswcd.org*), Culpeper Soil & Water Conservation District, Culpeper, Va.

Join us to learn more about Envirothon and how to be involved with North America's largest environmental education competition!



**Extinctions—Past, Present, and Future**

(Grades 6–12) *B17, Convention Center*  
Science Focus: GEN

**Len Sharp**, Retired Educator, Earth Science Consultant, Liverpool, N.Y.

Discussion centers on examining how fragile the interrelationships are concerning Earth's systems such as the atmosphere, hydrosphere, geosphere, cryosphere, and the biosphere specifically relating to mass extinctions. By illustrating the crosscutting relationships between science, technology, geoen지니어ing, and math in exploring Earth's past, the data analyzed may help to devise solutions through geoen지니어ing to mitigate catastrophic events of the present and in the future.

**Enhance Student Understanding with Experiential Learning**

(Grades 7–12) *B19, Convention Center*  
Science Focus: INF, ESS2.A, ESS2.C, ESS2.D, ESS2.E, ESS3, ETS1, ETS2, LS1.C, LS1.D, LS2, LS3, LS4.C, LS4.D, PS3, PS4, CCC, SEP

**Laura McDonald** (*lmcdonald@gvsvd.org*), Great Valley Middle School, Malvern, Pa.

Learn how hands-on experiential learning outside the classroom brings curriculum to life and is essential to improving students' understanding, engagement, and long-term interest in science.

★ **The Marketing Agency for STEM**

(Grades 3–College) *E21A, Convention Center*  
Science Focus: INF

**Chuck English** (*cenglish@smv.org*), Science Museum of Virginia, Richmond

Effective collaboration means moving to evoke inspiration, enthusiasm, and exploration. Come join the Science Museum of Virginia and they share their partnership with the Boys & Girls Clubs of Metro Richmond. The purpose of the partnership has been to engage inquiring minds and to grow a STEM pipeline toward STEM careers.



**2:00–3:00 PM Hands-On Workshops****Climate Education for a Changing Bay***(Grades 9–12)**B13, Convention Center*

Science Focus: ESS, INF, SEP

**Jaclyn Beck** (*jacmil@vims.edu*) and **Sarah McGuire** (*@slm0713; mcguire@vims.edu*), Chesapeake Bay National Estuarine Research Reserve, Gloucester Point, Va.

Improve climate literacy within your high school! Participants address climate change topics using locally relevant environmental data and information, while constructing a mock marsh transect.

**Using the Next Generation Science Standards in Chemistry Classes***(Grades 9–12)**B18, Convention Center*

Science Focus: PS, CCC, SEP

**Michael Mury** (*m\_mury@acs.org*), American Chemical Society, Washington, D.C.

With the development of the *Next Generation Science Standards*, it is now more vital than ever to include connections among the sciences. Come find out how to incorporate aspects of the NGSS into your chemistry class.

**What Is Your Cosmic Connection to the Elements?***(Grades 9–12)**E24A, Convention Center*

Science Focus: PS1.A

**Barbara Mattson** (*@NASAUniverseEdu; barb.mattson@nasa.gov*), USRA, NASA Goddard Space Flight Center, Greenbelt, Md.

Expand the walls of your learning with activities and curricula from NASA that discover the origin of the periodic elements. Workbook, poster, and *Imagine the Universe* DVD are highlighted and given to participants.

**Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102)***(General)**E25A, Convention Center*

Science Focus: GEN

**LaMoine Motz** (*llmotz@comcast.net*), 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.

**Sandra West Moody** (*sw04@txstate.edu*), Texas State University, San Marcos

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

Presider: LaMoine Motz

Is your district planning for new science facilities? Are you involved? If not, you need to be before it is too late. In an advanced course (an extension of the Science Facilities

101 session) the author team for the *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present more detailed information and examples of safe, ergonomically correct, and functional science facilities for STEM-based science. Budgeting, working with architects, technology, and special adjacencies will be addressed. Handouts!

**NSTA Press® Session: Teaching Science Through Trade Books—Exemplars from the Book and Featured Columns***(Grades 2–6)**Governors Room (B20), Convention Center*

Science Focus: GEN, SEP8

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

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

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

NSTA Press authors will share exemplar activities from the book *Teaching Science Through Trade Books* as well as featured columns from *Science & Children*. This session will engage participants with highlighted activities that feature the integration of quality trade books and content-enriching science lessons.

**Action Science: Relevant Teaching and Active Learning for Grades 6–8 in Physical Science***(Grades 6–8)**Salon C/D, Marriott*

Science Focus: PS2, PS3.A, PS3.C

**William Robertson** (*@drskateboard; robertson@utep.edu*), The University of Texas at El Paso

Ramp up new learning in your middle school classroom with activities and materials focused on skateboarding and BMX. The classroom activities cover topics such as velocity, acceleration, center of gravity, and centrifugal/centripetal forces.

**NMLSTA Session: What Can a Roll of Painters Tape Teach?***(Grades P–12)**Salon E, Marriott*

Science Focus: GEN

**Sharon Cumiskey**, NBCT Teacher, Lakeville, Mass.

Come learn how to create interactive lessons your students will enjoy and remember using a cheap roll of painters tape and some open space. Leave with a lesson ready to roll for your classroom!

**2:00–5:00 PM Short Course**

**Engineering Using Underwater ROVs (SC-1)**

(Grades 5–12) *Georgian, Crowne Plaza*

Science Focus: ETS, PS, SEP2, SEP3, SEP6

**Tickets Required; \$20**

**Shannon Ricles** (*shannon.ricles@noaa.gov*) and **Lauren Heesemann** (*lauren.heesemann@noaa.gov*), NOAA Monitor National Marine Sanctuary, Newport News, Va.

For description, see page 36.



**2:15–3:30 PM Exhibitor Workshops**

**Envelope Graphic Organizers—UnFOLDing the Possibilities**

(General) *B15C, Convention Center*

Science Focus: GEN

Sponsor: Dinah-Might Adventures, LP

**LaVonda Popp**, Dinah-Might Adventures, LP, San Antonio, Tex.

In this fast-paced, interactive session, discover how to transform basic classroom materials and manila envelopes into 3-D graphic organizers, also known as Foldables®. See the possibilities unFOLD before you and depart with ideas ready to use on Monday that are evidence based, kinesthetic, and integrative.

**Exploring Genetics and Heredity with Crazy Traits**

(Grades 5–12) *E10A, Convention Center*

Science Focus: LS

Sponsor: CPO Science/School Specialty Science

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

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

**How Do They Use FOSS in Their School District?**

(Grades P–6) *E10B, Convention Center*

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

**Leslie Lausten, Scott Elchenko, and Lauren Hanahan**, Hartwood Elementary School, Fredericksburg, Va.

Looking for ideas on how to use and implement FOSS in your school district? Join staff from Hartwood Elementary School as they share what they’ve done to make learning and doing science at their school successful. Leave with great ideas.

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

(Grades 5–8) *E10C, Convention Center*

Science Focus: ESS, SEP

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

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

**Using Climate Proxies to Learn About Earth’s Climate History**

(Grades 6–8) *E10D, Convention Center*

Science Focus: ESS1.C, ESS2

Sponsor: LAB-AIDS®, Inc.

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

How can scientists tell what Earth’s climate was like thousands of years before human measurements? This NSF-supported unit simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph replica samples of these organisms to determine warm and cold periods in the past 200,000 years.

**Engineer Excitement in Your Classroom with a Carolina STEM Challenge®**

(Grades 6–12) *E11A, Convention Center*  
 Science Focus: PS  
 Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Catapult, float, and race your way into hands-on activities that engage your middle school and high school students while fostering both critical thinking and creative problem-solving skills! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes!

**National Geographic Explorers and STEM—From the World to Your Classroom!**

(Grades 2–5) *E11B, Convention Center*  
 Science Focus: GEN, SEP  
 Sponsor: National Geographic Learning

**Tom Hinojosa**, National Geographic School Publishing, Monterey, Calif.

National Geographic provides students with exciting examples of an integration of disciplines that is “STEM.” Focusing on innovation and the applied process of addressing questions and designing solutions, Emerging Explorers provide ideal role models to teach awareness of STEM fields and occupations so you can integrate STEM teaching into your classroom.

**Case of the Missing Records**

(Grades 8–College) *E11C, Convention Center*  
 Science Focus: LS  
 Sponsor: Edvotek Inc.

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

Explore genetic diversity using forensic science! Your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Free flash drive/T-shirt drawing.

**Genes, Genomes, and the New World of Personalized Medicine**

(Grades 9–College) *E21B, Convention Center*  
 Science Focus: LS1.A, LS1.D, LS3, CCC, SEP1, SEP2, SEP6  
 Sponsor: MSOE Center for BioMolecular Modeling

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

Introduce students to the new science of genomics and personalized medicine with interactive tools, such as the DNA Discovery Kit, new Flow of Genetic Information Kit, and gene maps. We will tell a “genomic story” you can use to engage students by personalizing biologic genomic processes.

**Plate Tectonics: Continents on the Move**

(Grades 6–12) *E21C, Convention Center*  
 Science Focus: ESS2.B  
 Sponsor: Simulation Curriculum Corp.

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

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

**3:00–4:30 PM Exhibitor Workshop**

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

(Grades 9–College) *E23 A/B, Convention Center*  
 Science Focus: GEN  
 Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*sherri\_andrews@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

How comfortable do your students feel about engaging in inquiry? Learn new ways to advance inquiry—from guided to open—by establishing a strategy that integrates essential and real-world scientific practices. From generating scientifically reasonable questions to developing the procedure to interpreting the data, the glowing bacteria from pGLO™ leads the way.

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



#### Water in a Changing World Offers Much to Teach About

(General)

Lecture Hall (B10), Convention Center

Science Focus: ESS



**Louisa Koch** (*louisa.koch@noaa.gov*), Director of Education, NOAA, Washington, D.C.

Presider: Marily DeWall, Program Representative, NSTA Richmond Area Conference, and Science Education Consultant, Newport News, Va.

Our world is changing rapidly. In this new world, coastal communities factor sea-level rise into their hurricane response plans. Cities and towns manage their water use with information about what drought, floods, and snowpack are expected. Farmers and landscapers plant crops and gardens to withstand more frequent and harsher downpours, extreme heat waves, and extended drought. The NRC *Framework* and the *Next Generation Science Standards* give teachers a great opportunity to equip students to thrive in this new world.

*Louisa Koch is NOAA's director of education responsible for enhancing public understanding about the role of the ocean, coasts, Great Lakes, and atmosphere in the global environment and developing the next generation of Science, Technology, Engineering, and Math (STEM) professionals capable of understanding and managing those resources. She served as NOAA's deputy assistant administrator for Research from 1998 through 2005.*

*Before joining NOAA, Louisa served as the commerce branch chief at the Office of Management and Budget. She served as a presidential management intern at the Department of Defense and as an economist with the Joint Economic Committee in the U.S. Congress.*

### 3:30–4:30 PM Presentations

#### Write Your Way to Success: Grant Writing Strategies for You and Your Chemistry Students

(Grades 9–12)

B12, Convention Center

Science Focus: GEN

**Kenetia Thompson**, American Chemical Society, Washington, D.C.

Learn about the key components and strategies to writing a fundable proposal and the available ACS grant opportunities for high school chemistry teachers and students.

#### Engineering NGSS into Your High School Science Classroom

(Grades 7–College)

B14, Convention Center

Science Focus: GEN, SEP

**Eric Wilson** (*emwilson00@yahoo.com*), Red Lion (Pa.) Area School District

Implementing curriculum changes to meet the NGSS? Need help interpreting science and engineering practices vs. inquiry? Discussion centers on activities focusing on these NGSS concepts.



#### Regional Celebrations of Environmental Education Efforts

(Grades 4–College)

B15B, Convention Center

Science Focus: INF

**Elaine Tholen** (*@ElaineTholen; evtholen@fcps.edu*), Fairfax County Public Schools, Fairfax, Va.

Hear how NoVA Outside and George Mason University sponsor a School Environmental Action Showcase each April. Student teams attend to network, showcase their work, and meet environmental professionals. NoVA Outside also sponsors an annual conference for early childhood teachers.

#### Student-driven Inquiry in Plate Tectonics

(Grades 7–12)

B17, Convention Center

Science Focus: ESS, CCC1, CCC4, CCC6, SEP

**Nathan Shotwell** (*nshotwell@henrico.k12.va.us*), Holman Middle School, Glen Allen, Va.

When a student forms a hypothesis and then proves it is incorrect, a meaningful learning experience has occurred. We will explore a Google Earth–based inquiry approach to teaching plate tectonics. Students form and test their own hypotheses, gather data to support or refute their ideas, and then share their ideas. Laptops/tablets encouraged.



**Organize a STEM Day at Your School!***(Grades 5–12)**B19, Convention Center*

Science Focus: INF

**Patty McGinnis** (@patty\_mcginis; pattymcginnis1@gmail.com), NSTA Director, Middle Level Science Teaching, and Arcola Intermediate School, Eagleville, Pa.

Learn how a middle school organizes an annual STEM Career Day during which practicing scientists get kids excited about STEM careers.

★ **Make Broader Impacts: A Network for Connecting Students to Real Science**

*(General)**E21A, Convention Center*

Science Focus: ESS, ETS, LS, PS, INF, CCC, SEP

**Nick LaFave**, Clover High School, Clover, S.C.

Join a collaborative network of teachers and scientists through an easy-to-use, one-stop resource for citizen science, research opportunities, synthetic data, and student-to-scientist connections.

**Defining Science Learning and Teaching for Early Childhood***(Preschool)**Salon G/H, Marriott*

Science Focus: GEN

**Linda Froschauer** (fro2@me.com), 2006–2007 NSTA President, Westport, Conn.

**Cynthia Hoisington** (@CAHoisy; choisington@edc.org), Education Development Center, Inc., Waltham, Mass.

**Peggy Ashbrook** (scienceissimple@yahoo.com), NSTA Early Years Columnist, Alexandria, Va.

**Beth Van Meeteren** (beth.vanmeeteren@uni.edu), University of Northern Iowa, Cedar Falls

**Rosemary Geiken** (geiken@etsu.edu), East Tennessee State University, Johnson City

Join a panel of early childhood educators for an in-depth look at the recently released NSTA Position Statement on Early Childhood Science, endorsed by NAEYC. The teacher's role will be explored through examples using photos, videos, and panel presentations.

**3:30–4:30 PM Hands-On Workshops****Incorporating Climate Change into Your Biology Curriculum***(Grades 9–College)**B13, Convention Center*

Science Focus: ESS, ETS, LS, CCC2, CCC3, CCC4, CCC5, CCC7, SEP1, SEP2, SEP3, SEP4, SEP5, SEP8

**Dana Haine** (@Dana\_Haine; dhaine@unc.edu), The University of North Carolina at Chapel Hill

**Minda Berbeco** (@MindaBerbeco; berbeco@ncse.com), National Center for Science Education, Oakland, Calif.

Gain ideas for introducing your students to the impacts of climate change on living organisms and ecosystems.

**Using Modeling Activities in the High School Chemistry Class***(Grades 9–12)**B18, Convention Center*

Science Focus: PS1, PS2, PS3, CCC4, SEP2, SEP6

**Michael Mury** (m\_mury@acs.org), American Chemical Society, Washington, D.C.

Visualization is difficult for many students. Join me as I discuss and demonstrate several modeling activities you can use in your chemistry class. Topics covered will include molecular structure, reactions, kinetic molecular theory, concentration, and solutions.

**NASA's SMAP Mission and the GLOBE Program***(Grades 5–12)**E24A, Convention Center*

Science Focus: ESS, CCC

**Brian Campbell**, Sigma Space Corp., Wallops Island, Va.

Learn about a new protocol called the SMAP Block Pattern Soil Moisture Protocol designed to take measurements in tandem with measurements taken by NASA's SMAP (Soil Moisture Active Passive) Mission. Engage in hands-on soil activities, as well as be introduced to a suite of protocols dealing with soil moisture, soil characterization, and soil temperature.



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

(Grades 9–12)      Governors Room (B20), Convention Center  
Science Focus: GEN, NGSS

**Victor Sampson** ([victor.sampson@gmail.com](mailto:victor.sampson@gmail.com)), The University of Texas at Austin

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

**Food Chains: Using Field Surveys That Give Real Numbers**

(Grades 6–8)      Salon C/D, Marriott  
Science Focus: INF

**Fred Maier** ([fredmaier@sbcglobal.net](mailto:fredmaier@sbcglobal.net)), Village of Itasca Nature Center, Itasca, Ill.

**Roy Tison** ([globes@comcast.net](mailto:globes@comcast.net)), Lincoln Marsh Natural Area, Wheaton, Ill.

Join us as we demonstrate three hands-on survey techniques that allow students to calculate actual numbers of plants, herbivores, and carnivores in creating a food chain.

**Evidence for a Wimpy Kid**

(Grades 3–5)      Salon E, Marriott  
Science Focus: GEN, SEP

**Ed Robeck** ([ecrobeck@aqiweb.org](mailto:ecrobeck@aqiweb.org)), American Geosciences Institute, Alexandria, Va.

**Claudia Burgess**, Salisbury University, Salisbury, Md.

Help the Wimpy Kid! Learn how to develop problem-solving scenarios based on popular books such as *Diary of a Wimpy Kid*. We'll make use of skills from across core disciplines, providing opportunities to integrate curricula and apply elements of creative arts. Participants will collect evidence and draw conclusions using geocaching and other skills.

**Talking About Science with Literature**

(Grades 3–6)      Salon F, Marriott  
Science Focus: GEN, SEP4, SEP6, SEP7, SEP8

**Elizabeth Edmondson** ([ewedmondson@vcu.edu](mailto:ewedmondson@vcu.edu)), Virginia Commonwealth University, Richmond

**Jillian Wendt** ([jwendt@viu.edu](mailto:jwendt@viu.edu)), Virginia International University, Fairfax

**Diana Yesbeck** ([dianayesbeck@rmc.edu](mailto:dianayesbeck@rmc.edu)), Randolph-Macon College, Ashland, Va.

Are you using discourse/talk strategies effectively? Explore and communicate science thinking using practiced steps. This interactive workshop will model a discourse session using children's nonfiction literature.

**4:00–5:15 PM Exhibitor Workshops****Modeling in Engineering Design—From Ideas to Reality***(Grades 6–9)**B15C, Convention Center*

Science Focus: ETS1.B, ETS1.C, SEP2

Sponsor: eCYBERMISSION

**Matthew Hartman**, eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

Do you struggle with integrating engineering design into your middle school classroom or relaying the importance of models? We will discuss the use of models/prototypes and share ways to implement these ideas and engineering design into your science class. Hear about eCYBERMISSION, a free STEM competition, and how it can help integrate engineering design and models into your classroom.

**Building an Electric Motor the STEM Way***(Grades 5–12)**E10A, Convention Center*

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

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

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

**STEM Projects, Science Fairs, and Other Student Projects***(Grades K–6)**E10B, Convention Center*

Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky.

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

**Evidence for Plate Movement with FOSS Earth History for Middle School***(Grades 5–8)**E10C, Convention Center*

Science Focus: ESS, SEP

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

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

**Investigating Stem Cell Differentiation***(Grades 9–12)**E10D, Convention Center*

Science Focus: LS3

Sponsor: LAB-AIDS®, Inc.

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

The human body is made up of more than 200 types of cells, yet they all arise from a single fertilized egg cell. In this hands-on high school biology activity from SEPUP's *Science and Global Issues: Biology* program, experience how your students could investigate the development of specialized stem cells and consider bioethical issues in stem cell research.

**AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs***(Grades 6–12)**E11A, Convention Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Considering the popularity of today's forensic science-based TV shows, this "real" classroom autopsy is sure to be a hit with your students. Participants learn about mammalian structure and function by dissecting a Carolina's Perfect Solution pig—while modeling the protocols of a forensic pathologist. Free materials and door prizes!

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

(Grades 8–College)

E11C, Convention Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

Model organisms allow us to study fundamental questions in biology that are difficult to study in humans. Learn how to culture the nematode *C. elegans* in your classroom. Explore how mutations affect alcohol metabolism using a simple locomotion assay. Data is collected and analyzed using statistics. Free flash drive/T-shirt drawing.

### The Many Jobs of Proteins: Modeling Proteins and Enzymes

(Grades 8–College)

E21B, Convention Center

Science Focus: LS1.A, PS1.A, PS1.B, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2

Sponsor: MSOE Center for BioMolecular Modeling

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), 3D Molecular Designs, Milwaukee, Wis.

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

### Straw Rocket Launchers—Impulses, Optimal Launch Angles, Distances, and Hang Times

(Grades 6–11)

E21C, Convention Center

Science Focus: PS, SEP2, SEP3, SEP4, SEP7, SEP8

Sponsor: Pitsco Education

**Eileen Malick** ([emalick@hanover.k12.va.us](mailto:emalick@hanover.k12.va.us)), Atlee High School, Mechanicsville, Va.

Using independent impulse variables on a Straw Rocket Launcher, determine the optimal trajectory angle by charting hang time *vs.* distance as you launch your rockets into airborne parabolas. Join us for this active workshop that's sure to keep you on your toes, with all of the projectiles made out of clay, index cards, and straws.

### 5:00–5:30 PM Presentation

#### Enhancing Teacher Effectiveness Through Modeling Instruction

(Grades 6–College)

B14, Convention Center

Science Focus: GEN

**Brian Utter** ([@QuantumTweep](https://twitter.com/QuantumTweep); [utterbc@jmu.edu](mailto:utterbc@jmu.edu)), James Madison University, Harrisonburg, Va.

Hear about the key components and goals of the Modeling Instruction Academies offered through James Madison University's Content Teaching Academy. The session will end with Q&A time and information on how you can become involved in the Modeling Instruction Academies as a participant, supporter, or Earth science beta tester.

### 5:00–6:00 PM Presentations



#### Texas-STEM Coalition: Partnerships for Success

(General)

E21A, Convention Center

Science Focus: INF

**Marguerite Sognier** ([masognie@utmb.edu](mailto:masognie@utmb.edu)), The University of Texas Medical Branch at Galveston

Learn successful partnering strategies used by the Texas-STEM Coalition—seven partnering STEM centers working together to improve STEM education by building and using an extensive network of partnerships to ultimately prepare students to thrive in a 21st-century global economy.

#### Using Technology as a Tool for Differentiated Instruction (DI) in the Science Classroom

(Grades K–6)

Salon G/H, Marriott

Science Focus: GEN

**Robert Snyder**, Slippery Rock University, Slippery Rock, Pa. Join me as I share DI strategies along with tools for elementary teachers to address any science topic. Topics covered include Choice Boards, Learning Menus, Think Cubes, Think Dots, Role-Audience-Format-Topic (RAFT), Structured Academic Debate (SAC), and tiered lessons.

#### Discover the Amazing World of Engaging Discrepant Event Science Demonstrations

(Grades 6–9)

Salon I/J, Marriott

Science Focus: GEN, SEP

**Vince Mancuso** ([vince\\_mancuso@bcisd.org](mailto:vince_mancuso@bcisd.org)), Brighton Central School District, Rochester, N.Y.

Discrepant event demonstrations are surprising and engaging. Learn numerous discrepant events and discover how they can most effectively promote rich learning opportunities through scientific inquiry.



## 5:00–6:00 PM Hands-On Workshops



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

(Grades 9–12)

B13, Convention Center

Science Focus: ESS

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

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

### Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events

(Grades 8–College)

B15A, Convention Center

Science Focus: ESS1.C, ESS2.A, ESS3.C, ETS2.A, PS3.B, PS4.B, CCC1, CCC4, CCC5, SEP3, SEP4, SEP6, SEP8

**Donna Young** ([donna@aavso.org](mailto:donna@aavso.org)), AAVSO, Cambridge, Mass.

Apply absolute and relative dating techniques with high-resolution ice core data, volcanic eruptions, and solar photon events to correlate and date historic supernova events.



### Seeing Math Patterns in Nature with Kids of All Ages

(General)

B15B, Convention Center

Science Focus: ETS1.A, ETS2, LS1.A, LS1.B, LS2.A, LS4.C, INF, CCC1, CCC3, CCC6, SEP1, SEP2, SEP4, SEP7, SEP8

**Mary Van Dyke** ([@maryvandyke4](mailto:@maryvandyke4); [maryvandyke4@gmail.com](mailto:maryvandyke4@gmail.com)), Virginia Cooperative Extension, Arlington

Branch out with new lessons in your classroom exploring mathematical patterns in nature. We'll cover pinecones, sunflowers, pineapples, Fibonacci-type numbers/sequences, and more. Join me and let's model them.

### Engineering: The Missing Piece of the Puzzle!

(Grades 6–12)

B18, Convention Center

Science Focus: ETS, CCC, SEP

**Greg Dodd** ([gbdodd@gmail.com](mailto:gbdodd@gmail.com)), George Washington High School, Charleston, W.Va.

Let's construct explanations (for science) and design solutions (for engineering) via an activity designing a device to minimize thermal energy transfer. Technology will be used to gather and analyze data. Handouts!



### Sky Art: Sharing in the Beauty of Nature While Learning the Science Behind It

(General)

E24A, Convention Center

Science Focus: ESS, INF

**Kristyn Damadeo** ([kristyn.damadeo@nasa.gov](mailto:kristyn.damadeo@nasa.gov)), SSAI/NASA Langley Research Center, Hampton, Va.

Engage students in atmospheric science concepts through hands-on activities and classroom videos by using art, photography, and social media as a gateway.

### A PERFECT Interpretation—Grad Students Design Activities to Convey Cutting-Edge Science

(Grades 6–College)

E25A, Convention Center

Science Focus: GEN, NGSS

**Carol Hopper Brill** ([chopper@vims.edu](mailto:chopper@vims.edu)), Virginia Institute of Marine Science, Gloucester Point

Graduate Fellows take their cutting-edge research into secondary classrooms. Using board games, scavenger hunts, and research reenactments, they highlight the real-world applications of science.

### Your Student Are Scientists! Scaffolding Science Practices in Elementary Grades

(Grades 2–5)

Salon E, Marriott

Science Focus: GEN, SEP

**Emily Ford** ([emilyford@virginia.edu](mailto:emilyford@virginia.edu)), UVA Blandy Experimental Farm, Boyce, Va.

Learn how to build your elementary students' science process skills. Explore how science investigation practices scaffold using scientific tools.

### Growing Through STEM

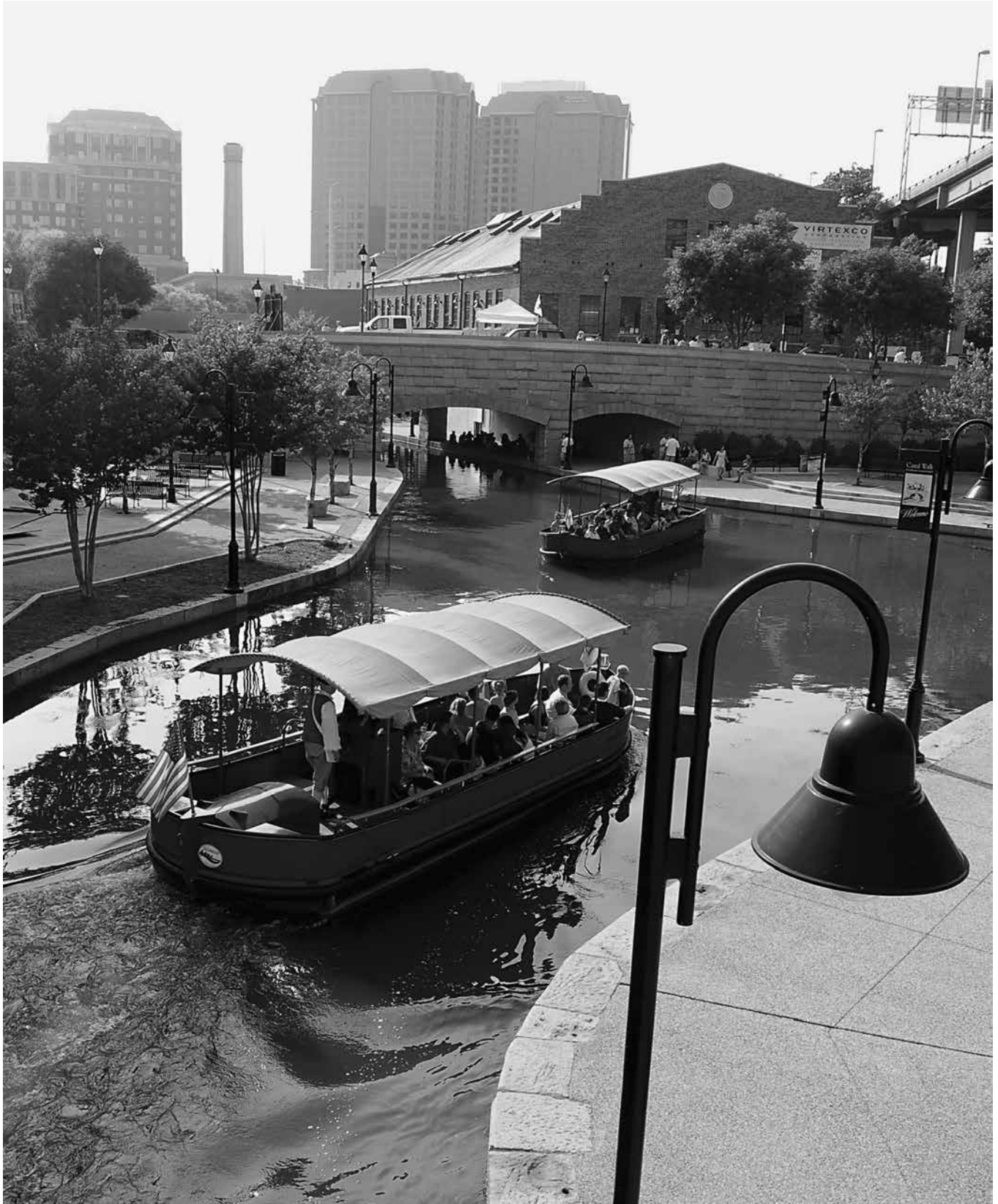
(Grades 3–6)

Salon F, Marriott

Science Focus: GEN

**Elizabeth Ferguson** ([@Elizabe31515581](mailto:@Elizabe31515581); [eferguson@glnd.k12.va.us](mailto:eferguson@glnd.k12.va.us)), Randolph Elementary School, Crozier, Va.

Receive an overview of a STEM design challenge and see how students work in groups to complete the challenge. We'll share two projects we created and have done with grade 4 students. Enhance your students' public speaking, collaboration, time management, organization, and creativity with this make-and-take workshop.



—Photo of CanalWalk courtesy of Richmond Region Tourism

**8:00–8:30 AM Presentation**



**Dive Underwater and Explore Your Nation’s Estuaries**

(Grades 6–12) *B13, Convention Center*

Science Focus: ESS, INF

**Sarah McGuire** (@slm0713; mcguire@vims.edu), Chesapeake Bay National Estuarine Research Reserve, Gloucester Point, Va.

**Jaclyn Beck** (jacmil@vims.edu), Chesapeake Bay National Estuarine Research Reserve, Gloucester Point, Va.

Immerse yourself in learning about estuaries. Get inspired to connect your students with real-time data to help them better understand estuarine and ocean environments. Learn about an easy-to-use curriculum and data interface.



**8:00–9:00 AM Presentations**

**Game On!**

(Grades 6–12) *B11, Convention Center*

Science Focus: GEN

**Neil Couturier** (couturin@glencoeschools.org), Central School, Glencoe, Ill.

Integrate a gaming philosophy into your classroom and unlock the special “powers” of student learning. Gamification takes the elements from video and board games that make them so compelling and engaging. In this model, students go up “levels,” providing short-term attainable goals.

**What Science Teachers Ask Students to Do in Class**

(Grades 6–10) *B14, Convention Center*

Science Focus: GEN

**Renmin Ye** (rye@houstonisd.org) and **Carla Stevens**, Houston (Tex.) ISD

**Shu-Ling Lai**, Asia University, Taichung, Taiwan

Using TIMSS, this study investigates and compares what grade 8 science teachers in Chinese Taipei, Japan, and the United States ask students to do in their classrooms. Join us as we discuss the findings.

**Students’ Cloud Observations Online—From Observing to Understanding Through Classroom-ready Games!**

(Grades K–12) *E24A, Convention Center*

Science Focus: ESS

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

**Sarah Crecelius** (sarah.a.crecelius@nasa.gov), SSAI/NASA Langley Research Center, Hampton, Va.

Students’ Cloud Observations Online (S’COOL) is a hands-on project that supports NASA research on Earth’s climate.

Engage students in making cloud and weather observations for NASA. Through the use of classroom activities and games, your students will gain a better understanding of clouds and have fun at the same time!

**The NGSS@NSTA Hub**

(Grades K–12) *Lecture Hall (B10), Convention Center*

Science Focus: NGSS

**Ted Willard** (@Ted\_NSTA; twillard@nsta.org), Program Director, COMPASS, NSTA, Arlington, Va.

This session will feature a tour of the NGSS@NSTA Hub, a digital destination to support teaching and learning of the *Next Generation Science Standards*. Hear about the work of 55 NGSS@NSTA curators—a group of educators from all across the U.S. working to identify resources that support the standards.

**Elementary Engineers: Engaging Students in STEM Through Bridges, Structures, and Designs**

(Grades 1–5) *Salon G/H, Marriott*

Science Focus: ETS, SEP1, SEP2, SEP6, SEP8

**Melissa Daniels**, Woodholme Elementary School, Pikesville, Md.

Come find out how our first- and fifth-grade students researched structures of bridges through inquiry circles, technology, Skype sessions with expert engineers in the field, and with students across the country. Discover how vertical pairing of first-graders with fifth-graders was a positive experience for students, teachers, and the community.

### Stormwater Literacy Project

(Grades 6–8)

Salon I/J, Marriott

Science Focus: ESS, INF, SEP

**Jaclyn Austin** (@jaclyn\_austin; [jaclyn\\_austin@hcpss.org](mailto:jaclyn_austin@hcpss.org)) and **Ann Strozyk** (@AnnStrozyk; [ann\\_strozyk@hcpss.org](mailto:ann_strozyk@hcpss.org)), Howard County Public School System, Ellicott City, Md.

Learn ways to partner with schools, bridging the gap between singular and sustained learning experiences, promoting depth and application of knowledge around the issue of stormwater. The Stormwater Literacy Project engages students in authentic and relevant issues-based investigations incorporating multiple content areas focusing on the issue of stormwater, its effect on the local watershed environment, solutions for its management within their community, and how students can impact change.



### 8:00–9:00 AM Hands-On Workshops

#### Life Cycle of the Monarch Butterfly

(Grades K–12)

B12, Convention Center

Science Focus: GEN

**Grant Bowers** and **Katie-Lyn Bunney**, University of Minnesota Monarch Lab, St. Paul

**Dolores (De) Cansler** ([decansler@gmail.com](mailto:decansler@gmail.com)), Adjunct Teacher Trainer, Monarchs in the Classroom, Rochester, Minn.

**Jim O’Leary** ([oleary@mdsci.org](mailto:oleary@mdsci.org)) and **Maureen Sullivan**, Maryland Science Center, Baltimore

Examine the four stages of the monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

#### ★ Family STEM Explorations Created by Community Partnerships

(Grades 1–6, College)

E21A, Convention Center

Science Focus: INF, SEP

**Wendy Goldfein** and **Cheryl Nelson**, Newington Forest Elementary School, Springfield, Va.

Team up with business and higher education organizations in your community to host family STEM events using fun hands-on activities that engage the entire family.

#### 📖 NSTA Press® Session: *It’s Debatable: Using Socio-scientific Issues to Develop Scientific Literacy, K–12*

(Grades K–12)

Governors Room (B20), Convention Center

Science Focus: GEN, INF, NGSS

**Sami Kahn** ([samikahn@mail.usf.edu](mailto:samikahn@mail.usf.edu)), Collegiate School, New York, N.Y.

During this interactive workshop, participants will model the use of controversial societal issues related to science to develop their students’ scientific literacy.



#### Creek Freaks: Outdoor Ed Meets Science, Technology, and Exploration!

(Grades 4–8)

B15B, Convention Center

Science Focus: INF

**Erin Johnson** (@creekfreaks1; [erjohnson@iwla.org](mailto:erjohnson@iwla.org)), Izaak Walton League of America, Gaithersburg, Md.

Creek Freaks engages children in exploring, monitoring, and protecting local streams. In this session, experience Creek Freaks activities hands on, tour the online tools, and pick up the curriculum.

*Note:* Hands-on activities available to the first 45 participants.

**Teaching STEM with Project Learning Tree***(Grades K–8)**Salon C/D, Marriott*

Science Focus: INF

**Anne Mannarino** ([amannarino@wm.edu](mailto:amannarino@wm.edu)), College of William & Mary, Williamsburg, Va.

Emphasis will be placed on strategies to incorporate new learning techniques that support the NGSS for inquiry and STEM awareness into environmental education activities.

**Middle School Chemistry—Big Ideas About the Very Small***(Grades 6–8)**Salon F, Marriott*

Science Focus: PS1, CCC2, CCC4, CCC6, SEP1, SEP2, SEP5

**Patti Galvan** ([p\\_galvan@acs.org](mailto:p_galvan@acs.org)), American Chemical Society, Washington, D.C.

Conduct hands-on activities on solids, liquids, and gases from the free resource *middleschoolchemistry.com*. The 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans and molecular animations are freely available for use in the classroom.

**8:00–9:15 AM Exhibitor Workshops****Fantastic Physical Science Demonstrations from Flinn Scientific***(Grades 6–12)**B15C, Convention Center*

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

**Janet Hoekenga** ([jhoekenga@flinnsci.com](mailto:jhoekenga@flinnsci.com)) and **Mike Marvel**, Flinn Scientific, Inc., Batavia, Ill.

Amaze your students with quick demonstrations that teach common physical science topics, including density, motion, force and equilibrium, rotation, waves, light and color, energy, pressure, and scientific inquiry. More than a dozen effective demonstrations will be performed. Handouts provided for all activities.

**Lizards and Finches and Wallace, Oh My!***(Grades 9–College)**E10A, Convention Center*

Science Focus: LS4

Sponsor: Howard Hughes Medical Institute

**Ann Brokaw**, Rocky River High School, Rocky River, Ohio  
Join HHMI's BioInteractive team and delve into the worlds of speciation, phylogeny, evolution, and biodiversity. Take home free classroom-ready resources to teach all levels of biology, including first year, AP, IB, and undergraduate courses.

**Project-Based Inquiry Science™: Blending Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms***(Grades 6–8)**E10B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: It's About Time

**Presenter to be announced**

Blending practices, core ideas, and crosscutting concepts is made easy with Project-Based Inquiry Science. Experience how students collaborate to develop core ideas as they com-

plete projects and science investigations that blend modeling, asking questions, and other science and engineering practices. Take home an activity idea and learn how PBIS makes learning science meaningful.

**Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab!***(Grades 9–12)**E10C, Convention Center*

Science Focus: LS

Sponsor: PASCO scientific

**Diana Roofner**, PASCO scientific, Roseville, Calif.

Get hands on with biology experiments that include Enzyme Activity and Cellular Respiration for accurate and fast results. See the latest in PASCO technology, including the Optical Dissolved Oxygen Sensor, Wireless Spectrometer, and data sharing in SPARKvue®—compatible with iPad, Windows, Mac OS, Android, and Chromebooks. Free sensor set for five attendees!

**DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life!***(Grades 6–12)**E10D, Convention Center*

Science Focus: ETS2, LS2

Sponsor: LAB-AIDS®, Inc.

**Jessica Jones**, Chatham Middle School, Chatham, Va.

Help students sprout and grow with a different approach to teaching photosynthesis cellular respiration and plant food storage that connects to the carbon cycle. Challenge and excite your students with inquiry activities, such as dissecting a plant seed and treating it with reagents differentiating between plant food stored as a simple sugar or as a starch.



**Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens**

(Grades 6–12)

E11A, Convention Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Animals look different, but are they really that different on the inside? Students find out firsthand with this hands-on dissection of a pig, rat, shark, and frog. It's a fascinating comparative dissection activity that features our very best Carolina's Perfect Solution vertebrate specimens. Free dissection supplies and great door prizes!

**Biotechnology Basics**

(Grades 6–College)

E11C, Convention Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

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

**Beyond Climate to Global Change—Welcome to the Anthropocene!**

(Grades 6–12)

E21B, Convention Center

Science Focus: ESS

Sponsor: Pearson

**Joseph Levine**, Author, Boston, Mass.

We live in a new geological epoch—the Anthropocene—in which human activity drives global change. Learn approaches and resources that teach about human ecology in ways that follow NGSS strategies and practices while informing students in ways that empower them to make informed decisions and take positive actions.

**Hurricanes and Typhoons: Nature on the Rampage**

(Grades 6–12)

E21C, Convention Center

Science Focus: ESS2.D

Sponsor: Simulation Curriculum Corp.

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

Join us as we use Simulation Curriculum's *The Layered Earth Meteorology* to investigate two of the most destructive storms of recent times—Hurricane Sandy and Typhoon Haiyan. With the help of classroom-ready lessons, we will trace the causes, paths, and destructive effects of these superstorms, as well as learn how to track future storms.



**8:00–9:30 AM Exhibitor Workshop****Chemistry and Biology with Vernier***(Grades 7–College)**E11B, Convention Center*

Science Focus: LS, PS

Sponsor: Vernier Software &amp; Technology

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

In this hands-on workshop, you will use various digital tools—including our new wireless sensors—to conduct experiments from our popular chemistry and biology lab books. Use LabQuest Mini with a computer, or LabQuest 2 as a stand-alone device, with a computer, or wirelessly with iPad, Chromebook, and BYOD environments.

**8:30–10:00 AM Exhibitor Workshop****What Fish Is That? Have Fun with PCR, Fish Flash Cards, and Jeopardy! to Perform DNA-based Identification***(Grades 9–College)**E23 A/B, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** ([sherri\\_andrews@bio-rad.com](mailto:sherri_andrews@bio-rad.com)), Bio-Rad Laboratories, Hercules, Calif.

Use games to explore barcoding of fish. Learn how to extract DNA, amplify it with PCR, and classify species using sequencing/bioinformatics to determine if that fish you bought is really what's on the label. Hear how students can contribute to the International Barcode of Life, a global genetic repository for barcodes of all species.

**8:30–11:30 AM Short Course****Developing a Naturalist Approach in the Teaching of Science Concepts and Inquiry (SC-2)***(Grades 5–College)**Raleigh/Elizabethan, Crowne Plaza*

Science Focus: GEN

**Tickets Required; \$55****Bill Klein**, Western Iowa Tech Community College, Sioux City, Iowa

For description, see page 36.

**9:00 AM–5:00 PM Exhibits***Hall A, Convention Center*

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

**9:30–10:30 AM Featured Presentation****★ Building Bridges: Supporting Youth Trajectories in STEM***(General**Lecture Hall (B10), Convention Center*

Science Focus: INF



**Preeti Gupta** ([pgupta@amnh.org](mailto:pgupta@amnh.org)), Director of Youth Learning and Research, American Museum of Natural History, New York, N.Y.

President: Patricia Simmons, Program Coordinator, NSTA Richmond Area Conference, 2011–2012 NSTA President, and North Carolina State University, Raleigh

Learning is a lifelong endeavor. Youth spend a considerable amount of time in formal school environments, which is a small percentage of time over their lifespan. Yet, formal learning environments are critical in shaping and mediating the trajectories of children and youth. What is the role of informal learning institutions in developing youth's interest in lifelong learning? What kinds of activities support children and youth to develop an interest in science, and potentially pursue careers in STEM? In what ways can we work together to shape and direct a young person's trajectory for science learning? Using examples from around the country and sharing key research findings from how youth learn, this talk will engage formal and informal science educators to identify strengths and challenges to support young people to pursue STEM careers.

*Preeti Gupta, director for Youth Learning and Research, is responsible for strategic planning, program development and research, and evaluation for out-of-school-time youth initiatives at the American Museum of Natural History. Her portfolio also includes leading the summer museum residency components of the newly initiated Masters of Arts in Teaching program for Earth science teachers.*

*Prior to this, Preeti served as senior vice president for Education and Family Programs at the New York Hall of Science. In that role, she led the internationally replicated Science Career Ladder Program, key initiatives in school change, teacher professional development, and family programs.*

*In 2005, Preeti won the Inaugural National Roy L Schaffer Leading Edge Award for Experienced Leadership in the Field from the Association for Science-Technology Centers. Her research interests are focused on the trajectories of youth's experiences with science in and out of school settings, the role that museums play in motivation and deepening engagement with STEM and STEM careers, youth employment and workforce development, and the factors that mediate how youth identify with the scientific enterprise.*



### 9:30–10:30 AM Presentations

#### Writing for Literacy with the DuPont Challenge

(Grades 7–12) *B11, Convention Center*

Science Focus: GEN

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

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

#### The Basics of Materials Science in Everyday Objects

(Grades 7–12)

*B17, Convention Center*

Science Focus: PS

**Caryn Jackson** ([cjackson@tollestechn.com](mailto:cjackson@tollestechn.com)) and **Todd Bolenbaugh** ([bolenbaugh4@gmail.com](mailto:bolenbaugh4@gmail.com)), Tolles Career & Technical Center, Plain City, Ohio

Learn the basics of materials science in everyday objects by investigating the properties of metals, ceramics, polymers, and composites.

#### Integrating Teacher and Student Learning in Watershed Science Education

(Grades 3–5, College)

*B13, Convention Center*

Science Focus: ESS, INF

**Greg Eaton** ([eaton@lynchburg.edu](mailto:eaton@lynchburg.edu)), Lynchburg College, Lynchburg, Va.

Join us as we share the learning gains that resulted from our three-year NOAA Bay Watershed Education and Training (B-WET) grant providing meaningful watershed education experiences to grades 3–5 students and their teachers in central Virginia.

#### Creating an Interpretive Trail

(Grades 5–12)

*B19, Convention Center*

Science Focus: INF

**Patty McGinnis** ([@patty\\_mcginis](mailto:@patty_mcginis); [pattymcginnis1@gmail.com](mailto:pattymcginnis1@gmail.com)), NSTA Director, Middle Level Science Teaching, and Arcola Intermediate School, Eagleville, Pa.

Technology + the Great Outdoors = Learning! Learn how my class used technology to create an interpretive trail for our local community.

#### NSELA Session: Tools for Science Leaders, Part 1

(General)

*B14, Convention Center*

Science Focus: GEN

**Craig Gabler** ([cgabler@esd113.org](mailto:cgabler@esd113.org)), Educational Service District 113, Tumwater, Wash.

Presenter: Kenn Heydrick, The University of Texas at Tyler  
Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

#### Effective Middle School PLCs

(Grades 6–8)

*Salon I/J, Marriott*

Science Focus: GEN, NGSS

**Lori Khan** ([lori.khan@dpsnc.net](mailto:lori.khan@dpsnc.net)), Middle College High School, Roxboro, N.C.

**Lauren Copley** ([copleyl@person.k12.nc.us](mailto:copleyl@person.k12.nc.us)), Southern Middle School, Roxboro, N.C.

Hear how effective professional learning communities at your school translate into increased scientific literacy and above-average state test scores, and discover how to build science culture in your community.

**9:30–10:30 AM Hands-On Workshops****Life Cycle of the Monarch Butterfly***(Grades K–12)**B12, Convention Center*

Science Focus: GEN

**Grant Bowers** and **Katie-Lyn Bunney**, University of Minnesota Monarch Lab, St. Paul**Dolores (De) Cansler** (*decansler@gmail.com*), Adjunct Teacher Trainer, Monarchs in the Classroom, Rochester, Minn.**Jim O’Leary** (*oleary@mdsci.org*) and **Maureen Sullivan**, Maryland Science Center, Baltimore

Examine the four stages of the monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

 **Working the NGSS into Your Curriculum Through Ocean Exploration***(Grades 5–12)**B15A, Convention Center*

Science Focus: ESS

**Elizabeth Day-Miller** (*bethday-miller@comcast.net*), Bridge-Water Education Consulting, Bridgewater, Va.

Dive into hands-on and computer-based activities focused on multi-beam sonar mapping of the ocean floor. Lessons integrate science and engineering practices as well as focus on how the ocean is explored and the state-of-the-art technology involved.

**Atlantic Sturgeon in and Around the Bay***(Grades 9–College)**B15B, Convention Center*

Science Focus: INF, NGSS

**Anne Wright** (*abwright@vcu.edu*), Virginia Commonwealth University, Richmond**Susan Gilley** (*suzie.gilley@dgif.virginia.gov*), Virginia Dept. of Game and Inland Fisheries, Richmond

Sturgeon are an amazing natural resource swimming in our own backyard. Have your students follow Atlantic sturgeon in the James River and beyond with the help of high-tech tracking technology, “smart” buoys, and classroom kits.

**Using Broom Ball to Teach Newton’s First Law of Motion***(Grades 6–12)**B18, Convention Center*

Science Focus: PS, CCC4, SEP2, SEP4, SEP7, SEP8

**Timothy Couillard** (*timothy\_couillard@ccpsnet.net*), James River High School, Midlothian, Va.Presider: David Wright (*dwright@tcc.edu*), Tidewater Community College, Virginia Beach, Va.

Engage in a modeling lab intended to help students develop a model for Newton’s First Law of Motion. Q&amp;A time and a door prize giveaway.

**CESI Session: Integrating Science and Literacy: Proven Strategies Using Evidence-based Practices***(Grades 1–5)**Ballroom B (B21B), Convention Center*

Science Focus: GEN, NGSS

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

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

**Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts***(Grades 6–12)**Ballroom C (B21C), Convention Center*

Science Focus: ESS, CCC, SEP

**Roberta Johnson Killeen** (*rmjohnsn@nestanet.org*), National Earth Science Teachers Association, Boulder, Colo.**Michael Passow** (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.

This NESTA hands-on workshop highlights lessons and strategies using NGSS crosscutting concepts to unite core ideas and science practices for classroom Earth system science.

**NSTA Press® Session: Bringing Outdoor Science In***(Grades K–8)**Governors Room (B20), Convention Center*

Science Focus: GEN, INF, CCC

**Steve Rich** (*@bflyguy; bflywriter@comcast.net*), NSTA Director, Professional Development, and West GYSTC, Douglasville, Ga.Taking it outside or *Bringing Outdoor Science In*, explore school yard resources for crosscutting concepts, and how sticks and stems bring in STEM. Free seeds!

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

(Grades K–8)

Salon E, Marriott

Science Focus: ESS

**Cherry Brewton** ([cbrewton@georgiasouthern.edu](mailto:cbrewton@georgiasouthern.edu)), Science Education Consultant, Statesboro, Ga.

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

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**10:00–11:15 AM Exhibitor Workshops**

**Cool! Can We Do That Again?!**

(Grades 4–10)

B15C, Convention Center

Science Focus: PS

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 color, light, and mirrors. Your students will be asking if they can do that again! Door prizes, freebies, and fun!

**Of Oil and Obesity—Exploring the Science of Fat**

(Grades 6–College)

E10A, Convention Center

Science Focus: LS1

Sponsor: Howard Hughes Medical Institute

**Tamica Stubbs**, Phillip O. Berry Academy of Technology, Charlotte, N.C.

Learn more about one of nature’s most interesting biomolecules—fat! Using instructional strategies, free resources from HHMI’s *BioInteractive.org* website, and a lab simulation, uncover the science of fat from chemical composition to regulation in the human body. Leave with stimulating ideas and free resources to enrich your biology courses.

**Earth and Space Science—More Pertinent Today, More Important to Our Future**

(Grades 9–12)

E10B, Convention Center

Science Focus: ESS

Sponsor: It’s About Time

**Gary Curts**, Dublin Coffman High School, Dublin, Ohio  
Recent developments and the increasing societal importance of Earth-related issues have created a need for understanding Earth’s systems. Experience how the American Geosciences

**The Periodic Table and Bonding**

(Grades 6–8)

Salon F, Marriott

Science Focus: PS1.A, PS1.B, PS3, CCC1, CCC4, CCC5, CCC6, SEP4

**Patti Galvan** ([p\\_galvan@acs.org](mailto:p_galvan@acs.org)), American Chemical Society, Washington, D.C.

Explore the periodic table and bonding through a card game, molecular model animations, and videos of chemical reactions from the free, completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *middleschoolchemistry.com*.

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Institute’s new edition of EarthComm® can help educators successfully deepen Earth science learning using a truly STEM project-based approach in their classroom.

**Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology**

(Grades 9–12)

E10C, Convention Center

Science Focus: PS

Sponsor: PASCO scientific

**Diana Roofner**, PASCO scientific, Roseville, Calif.

Get hands on with PASCO technology that empowers students to construct meaning from easily collected, analyzed, and shared data! Use sensors to experiment with concepts like pH titrations. See the latest PASCO technology including the Advanced Chemistry Sensor, Wireless Spectrometer, and data sharing in SPARKvue®—compatible with iPad, Windows, Mac OS, Android, and Chromebooks. Free sensor set for five attendees!

**Waves, Energy, and Color**

(Grades 6–8)

E10D, Convention Center

Science Focus: ETS2, PS4

Sponsor: LAB-AIDS®, Inc.

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

Although we live an EM waves-enabled lifestyle, most of us have no idea how they work. Join LAB-AIDS for an NGSS-based waves activity from SEPUP’s *Issues and Physical Science* program. Explore light properties by investigating colors of the visible spectrum and their energy levels using phosphorescent material. SEPUP embeds research-based practices and real issues for powerful content learning.



**Hands-On Science with Classroom Critters***(Grades K–12)**E11A, Convention Center*

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Add action and excitement to your science class with live organisms! Discover fun, simple hands-on activities you can use in your labs with pill/sow bugs, termites, bess bugs, and butterflies. Learn about care and handling as well as easy ways to introduce inquiry. Free product samples and literature!

**Case of the Missing Records***(Grades 8–College)**E11C, Convention Center*

Science Focus: LS

Sponsor: Edvotek Inc.

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

Explore genetic diversity using forensic science! Your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Free flash drive/T-shirt drawing.

**Reflecting on Engineering Design***(Grades K–12)**E21B, Convention Center*

Science Focus: ETS, PS

Sponsor: Pearson

**Karen Ostlund**, 2012–2013 NSTA President, and The University of Texas at Austin

Join us and build a kaleidoscope, analyzing the kaleidoscope system to learn how manipulating light and reflection can create patterns, and use this knowledge to improve the kaleidoscope design.

**Protein Modeling: A Science Olympiad Event and the NGSS***(Grades 9–12)**E21C, Convention Center*

Science Focus: ETS1.A, ETS1.B, LS1.A, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2, SEP4

Sponsor: MSOE Center for BioMolecular Modeling

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), 3D Molecular Designs, LLC, Milwaukee, Wis.

Through modeling, an authentic practice of science, students learn by both using models and constructing models. By using these popular kits—the Water Kit, Amino Acid Starter Kit, and Insulin: mRNA to Protein Kit—you can prepare your students to compete in the Protein Modeling Event and meet the NGSS.

**10:00–11:30 AM Exhibitor Workshop****Integrate iPad, Chromebook, and BYOD with Vernier Technology***(Grades 3–College)**E11B, Convention Center*

Science Focus: GEN, SEP4

Sponsor: Vernier Software &amp; Technology

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

In this hands-on workshop, you will use Vernier's digital tools—including our new wireless sensors—to conduct investigations using Graphical Analysis for iOS and Android, or Vernier Data Share for Chromebooks and BYOD environments. These tools can help you address the NGSS, as well as many states' standards.

**10:30 AM–12 Noon Exhibitor Workshop****DNA Detectives: Who Killed Jose?***(Grades 9–College)**E23 A/B, Convention Center*

Science Focus: LS

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** ([sherri\\_andrews@bio-rad.com](mailto:sherri_andrews@bio-rad.com)), Bio-Rad Laboratories, Hercules, Calif.

In this hands-on lab, solve a theatrical crime scene using biotechnology skills such as DNA gel electrophoresis, restriction digestion, and pipetting. Learn about the Innocence Project and how the wrongly accused can be exonerated.

**11:00–11:30 AM Presentations****Connecting Young Children to Nature: Activities and Resources Appropriate for PreK–2***(Grades P–2)**B13, Convention Center*

Science Focus: INF, ESS1, ESS2, LS2, LS3, LS4, PS1

**Michael Bentley** ([@greenprof2](mailto:@greenprof2); [greenprof2@gmail.com](mailto:greenprof2@gmail.com)), Virginia Museum of Natural History, Martinsville

Given the technology obsession of today's youth and Louv's nature deficit disorder, connecting children to nature must begin before school and into early education. Considering the problem, we'll share outdoor activities and practical resources.

**Marine Science Education Through Fishing and Bahamas Community Center Development***(General)**B19, Convention Center*

Science Focus: INF

**Lucas Metropulos** ([@F4FN](mailto:@F4FN); [lmotropulo@gmail.com](mailto:lmotropulo@gmail.com)), Fishing for Families in NEED, Boca Raton, Fla.

Join me as I share how I founded two organizations to improve environmental education in the United States and Bahamas by using the sport of fishing and developing community centers.

## 11:00 AM–12 Noon Featured Presentation

### Connecting Environmental Outcomes with Community Concerns

(General)

Lecture Hall (B10), Convention Center

Science Focus: INF



**Akiima Price** (@bflyconsulting; [akiima@apriceconsulting.com](mailto:akiima@apriceconsulting.com)), Environmental Education Consultant, Akiima Price Consulting, Washington, D.C.

Presider: Candace Lutzow-Felling, Chairperson, NSTA Richmond Area Conference; NSTA Director, Informal Science; and UVA/Blandy Ecological

Field Research Station, Boyce, Va.

Considering the increasing number of people, especially children, living in poverty or economically stressed communities in the U.S., it is important that we as educators grow our capacity to consider this in our work. For the past four years, Akiima has been conducting listening sessions and hosting online learning communities, as well as documenting best practices in this work. In her talk, she will share insight into innovative strategies that consider ways to connect environmental outcomes with issues of concern to low-income communities.

*For the past 20 years, Akiima has worked with numerous environmental organizations throughout the United States creating and implementing innovative programs that build bridges into low-income communities. One of her earliest experiences was as a National Park Service interpretation ranger at Lake Mead National Recreation Area. It was there that she discovered her passion and awareness of nature as a powerful medium to engage youth and families in meaningful, positive experiences that can affect the way they feel about themselves, their communities, and their place on Earth.*

*Akiima is one of the leading African-American environmental educators in the country, helping to bring more capacity and inclusion to the environmental field. She is currently working through Cornell University leading the EECapacity Project, the national environmental education training program of the EPA. Through her work on the project she is developing a national platform for emerging environmental educators and developing cutting-edge guidelines for an emerging practice called Community Environmental Education. Her specialty is engaging as a bridge builder between people and resources and developing thoughtful curricula and education materials that consider community wellness issues.*

## 11:00 AM–12 Noon Presentations

### NSELA Session: Tools for Science Leaders, Part 2

(General)

B14, Convention Center

Science Focus: GEN

**Pat Shane**, 2009–2010 NSTA President, and Educational Consultant, Chapel Hill, N.C.

**Elizabeth Allan** ([eallan@uco.edu](mailto:eallan@uco.edu)), University of Central Oklahoma, Edmond

**Lisa Bohn**, Arkansas State University, State University, Ark.

Come learn about the various tools and strategies that science leaders can use to enhance teaching and learning in their outreach.

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

(Grades 5–12)

B17, Convention Center

Science Focus: ESS

**June Teisan**, Einstein Fellow, NOAA, Washington, D.C. NOAA is the lead agency on coral reef monitoring and protection. Learn about ocean acidification through the context of coral ecosystems. A variety of free NOAA resources will be highlighted, including demos, labs, activities, and multimedia.

### Using the NGSS Practices in Middle School Classrooms

(Grades 6–9)

E21A, Convention Center

Science Focus: SEP

**Matthew Hartman** (@ecybermission; [mhartman@nsta.org](mailto:mhartman@nsta.org)), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

Join us as we discuss classroom activities for middle school students that make use of the science and engineering practices from the *Next Generation Science Standards*. We'll also share information about the eCYBERMISSION competition.

### Encouraging Scientific Habits of Mind Through Literacy Instruction

(Grades K–12)

E22A, Convention Center

Science Focus: GEN

**Jillian Wendt** ([jwendt@viu.edu](mailto:jwendt@viu.edu)), Virginia International University, Fairfax

As achievement in science is in many ways dependent on formation of habitual scientific habits of mind, this presentation will highlight strategies to integrate literacy instruction with the purpose of increasing opportunities for development of key scientific habits of mind.

**Data Visualization Made Easy Through the MY NASA DATA Live Access Server**

(Grades K–12) *E24A, Convention Center*  
 Science Focus: ESS

**Daniel Oostra** (@danieloostra; *daniel.h.oostra@nasa.gov*) and **Preston Lewis** (*preston.lewis@nasa.gov*), NASA Langley Research Center, Hampton, Va.

Engage your digital learners by using MY NASA DATA as a visualization tool for NASA Earth systems satellite data. It's online, free, and easy to use!


**Inside-Out: Integrating Environmental Literacy into STEM at the Elementary Level**

(Grades 1–5) *Salon G/H, Marriott*  
 Science Focus: GEN

**Sarah Haines** (*shaines@towson.edu*) and **Robert Blake, Jr.** (*rblake@towson.edu*), Towson University, Towson, Md.

**Kelly Mangum** and **Jan Stewart**, Hickory Elementary School, Bel Air, Md.

Hear how an environmental literacy course for inservice elementary teachers jump-started innovative ideas for integrating environmental education into traditional STEM subject areas.

**11:00 AM–12 Noon Hands-On Workshops** **Sea Turtles and STEM**

(Grades P–5) *B15A, Convention Center*  
 Science Focus: ETS1, ETS2, LS1.B, LS4.C, LS4.D

**Megan Ennes** (@AFishNamedMeg; *megan.ennes@ncaquariums.com*), North Carolina Aquarium at Fort Fisher, Kure Beach

Join me for a fun-filled hands-on workshop that is sure to be “fin-tastic”! Learn how to use sea turtles to teach STEM. We will have hands-on activities and lesson plans you can implement on Monday.

**2,400 Years of Electricity from Amber to Batteries**

(Grades 6–College) *B18, Convention Center*  
 Science Focus: PS, SEP1, SEP2

**Robert Morse** (*ramorse@rcn.com*), Retired Physics Teacher, Washington, D.C.

Presider: David Wright (*dwright@tcc.edu*), Tidewater Community College, Virginia Beach, Va.

Inexpensive hands-on qualitative experiences with electricity from 600 BCE to 1800 CE bring electrical magic to classrooms from middle school to college.

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

(Grades P–8) *Ballroom B (B21B), Convention Center*  
 Science Focus: GEN

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

Presented by CESI members, come see a variety of elementary science ideas that can be integrated with other subjects. Walk away with handouts to implement in your classroom.

**How Weird Can It Get? Developing Weather and Climate Literacy**

(Grades 6–12) *Ballroom C (B21C), Convention Center*  
 Science Focus: ESS, CCC, SEP

**Roberta Johnson Killeen** (*rmjohnsn@nestanet.org*), National Earth Science Teachers Association, Boulder, Colo.

**Michael Passow** (*michael@earth2class.org*), Dwight Morrow High School, Englewood, N.J.


Explore the scientific foundations of what we know about weather, climate, and climate change through effective hands-on and data-rich classroom activities from NESTA.

**AMSE Session: The Smarts Are There—Create Classroom Climates Saturated with High Expectations for All Students Using “Inclusive Teaching and Inquiry-based Learning”**

(Grades K–12) *E25A, Convention Center*  
 Science Focus: GEN, NGSS

**Sue Ford** (*top9teach6@aol.com*), Retired Educator, Rocky Mount, N.C.

Join this dialogue! Discover the learning fun in the connectivity between the NGSS, CCSS, and the real world while challenging ALL students. Make the atmosphere say, “You belong in here!” Handouts!

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

(Grades 3–6) *Governors Room (B20), Convention Center*  
Science Focus: INF, NGSS

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

**Steve Rich** (@bflyguy; *bflywriter@comcast.net*), NSTA Director, Professional Development, and West GYSTC, Douglasville, Ga.

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

**Roller Coaster Science**

(Grades 1–8) *Salon C/D, Marriott*  
Science Focus: ETS, SEP

**Sherry Scott** (*swhscott@tntech.edu*) and **Stephanie Wendt**, Tennessee Tech University, Cookeville

WARNING: This Roller Coaster unit may bring high levels of excitement to your classroom! Examples of nonfiction and informational text—plus building a roller coaster!

**Infusing an Elementary Classroom with S.T.E.A.M. Power**

(Grades K–5) *Salon E, Marriott*  
Science Focus: ETS, CCC1, CCC3, CCC6, SEP1, SEP2, SEP4, SEP7

**Susan Bardenhagen** (*smb4steam@gmail.com*), Virginia Association of Science Teachers, Manassas

In an elementary classroom where all subjects are taught, it is difficult to address everything. Learn how to infuse science, technology, engineering, and mathematics instructional strategies with the arts, using kits of manipulatives made from everyday materials. *Note:* Hands-on activities available for the first 100 participants.

**Richmond Region Tourism has an Information Booth located in the registration lobby of the Convention Center. See page 14 for details and hours.**

**12 Noon–1:15 PM Exhibitor Workshops**

**Making Science Notebooks FOLD-tastic via Notebook Foldables®**

(General) *B15C, Convention Center*  
Science Focus: GEN

Sponsor: Dinah-Might Adventures, LP

**LaVonda Popp**, Dinah-Might Adventures, LP, San Antonio, Tex.

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

**Implementing Math and Statistics in the Biology Classroom**

(Grades 9–College) *E10A, Convention Center*  
Science Focus: LS, SEP5

Sponsor: Howard Hughes Medical Institute

**Ann Brokaw**, Rocky River High School, Rocky River, Ohio  
Learn strategies for incorporating math and statistics into biology courses in line with AP and IB biology, NGSS, CCSS, and the undergraduate Vision-and-Change curricula. We will cover statistical and mathematical methods in biological research and introduce participants to free resources from HHMI’s *BioInteractive.org* website that can be immediately implemented.

**Active Chemistry and Active Physics: Project-Based Inquiry Science™ That Engages Students**

(Grades 9–12) *E10B, Convention Center*  
Science Focus: PS

Sponsor: It’s About Time

**Arthur Eisenkraft**, 2000–2001 NSTA President, and UMass Boston, Mass.

Active Chemistry and Active Physics are NSF research-based curricula that make chemistry and physics accessible to ALL high school students. Find out how Active Chemistry and Active Physics can enhance your instruction. Watch what can happen to the quality of students’ work when they take ownership of real-world scientific challenges that matter to them.



### Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software!

(Grades 9–12)

*E10C, Convention Center*

Science Focus: PS

Sponsor: PASCO scientific

**Diana Roofner**, PASCO scientific, Roseville, Calif.

Learn how PASCO lab equipment can make your classroom demonstrations easy and reliable. During this workshop, we will present the top PASCO physics demos in rotation, induction, and waves. You'll also get hands-on experience with the newest in PASCO physics apparatus and Capstone video analysis. Free sensor set for five attendees!

### DuPont Presents: The Science of Food Safety

(Grades 6–12)

*E10D, Convention Center*

Science Focus: ETS2, LS1

Sponsor: LAB-AIDS®, Inc.

**Jessica Jones**, Chatham Middle School, Chatham, Va.

We need to feed the world in a safe manner. Explore food safety issues such as food-borne illness, chemical additives, packaging to prevent microbial growth, fresh fruit oxidation, and enhanced nutrient content. Investigate the ability of chemicals to inhibit growth of a simulated microbe and determine how additives can be used to increase food supply safety.

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

(Grades 9–12)

*E11A, Convention Center*

Science Focus: PS

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Hate it when a lab activity fizzles? Explore easy, engaging, safe chemistry activities that work every time—so they're sure to produce a reaction from students. Whether you're new to chemistry or feeling out of your element, you'll learn new ways to create excitement. Free materials and giveaways!

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

(Grades 8–College)

*E11C, Convention Center*

Science Focus: LS

Sponsor: Edvotek Inc.

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

More than 380 million people worldwide have diabetes, a disease that causes high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early treatment, diabetes causes severe medical complications. We will diagnose diabetes using simulated urinalysis and ELISA tests. Free flash drive/T-shirt drawing.

### Blast into NGSS by Designing a STEM Project

(Grades K–12)

*E21B, Convention Center*

Science Focus: ETS

Sponsor: Pearson

**Mary Philpott**, Pearson Education, Richmond, Va.

STEM, STEM, STEM for all ages!—we will model how to engage students in real-world problem solving using a hands-on engineering lesson. Join us and learn how to use STEM projects to meet the NGSS engineering practices and performance expectations. Take home an exciting ready-to-use STEM prototype for instant implementation.

### Streamline Your Preparation and Presentation with Student Notebooks

(Grades 6–10)

*E21C, Convention Center*

Science Focus: GEN

Sponsor: LearnEd Notebooks

**Doug Miller** ([dougm@learnednotebooks.com](mailto:dougm@learnednotebooks.com)), LearnEd Notebooks, Lincolnton, N.C.

As an educator, how much time do you spend preparing notes, researching activities, and writing tests (not to mention your many other responsibilities)? Through the use of a unique notebooking system, find out how you can spend more time focusing on your presentation and less time on your preparation. Join us for free lesson plans and class-set giveaways.



### 12 Noon–1:30 PM Exhibitor Workshop

#### Integrate iPad, Chromebook, and BYOD with Vernier Technology

(Grades 3–College)

E11B, Convention Center

Science Focus: GEN, SEP4

Sponsor: Vernier Software & Technology

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

In this hands-on workshop, you will use Vernier's digital tools—including our new wireless sensors—to conduct investigations using Graphical Analysis for iOS and Android, or Vernier Data Share for Chromebooks and BYOD environments. These tools can help you address the NGSS, as well as many states' standards.

### 12:30–1:30 PM Presentation



#### NSTA Press® Session: Including Students with Disabilities in Advanced Science Classes

(Grades 9–College) Governors Room (B20), Convention Center

Science Focus: GEN

**Lori Howard** and **Paula Kaplan**, Marshall University, South Charleston, W.Va.

**Elizabeth Potts** (@TeachPotts; [potts@virginia.edu](mailto:potts@virginia.edu)), University of Virginia, Falls Church

Join us as we provide suggestions for successfully including students with a wide variety of disabilities into advanced science classes. Lab safety, testing accommodations, and confidentiality will be addressed.

### 12:30–6:30 PM Symposium

#### Flight of the Monarch Butterflies (SYM-1)

(Grades K–12) Challenge Lab, Science Museum of Virginia

Science Focus: GEN

**Tickets Required; \$54**

**Grant Bowers** and **Katie-Lyn Bunney**, University of Minnesota Monarch Lab, St. Paul

**Dolores (De) Cansler** ([decansler@gmail.com](mailto:decansler@gmail.com)), Adjunct Teacher Trainer, Monarchs in the Classroom, Rochester, Minn.

**Jim O'Leary** ([oleary@mdsci.org](mailto:oleary@mdsci.org)) and **Maureen Sullivan**, Maryland Science Center, Baltimore

For description, see page 33.

*Note:* Meet your instructor at the Marshall Street entrance of the Convention Center by 12:15 PM.

### 1:30–2:30 PM Exhibitor Workshop

#### Are Worms Smarter than Your Students? (AP Big Ideas 1, 2, 3, 4)

(Grades 9–College)

E23 A/B, Convention Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** ([sherri\\_andrews@bio-rad.com](mailto:sherri_andrews@bio-rad.com)), Bio-Rad Laboratories, Hercules, Calif.

How do genes influence behavior? Using *C. elegans* (a nematode), compare normal and mutant worm behavior in a classical conditioned learning experiment (think Pavlov's worms). Explore worm taste preferences in a simple chemotaxis assay and examine how our worm mutant links to human diseases. A great alternative to the AP fruit fly behavior lab!

### 1:30–4:30 PM Short Course



#### Build a Classroom Planetarium While Building Math and Science Skills (SC-3)

(Grades 4–12)

Raleigh/Elizabethan, Crowne Plaza

Science Focus: ESS, CCC, SEP

**Tickets Required; \$30**

**Bruce Hemp** ([bhemp@ntelos.net](mailto:bhemp@ntelos.net)), Fort Defiance High School, Fort Defiance, Va.

**Jeffery Adkins** (@astronomyteacher; [astronomyteacher@mac.com](mailto:astronomyteacher@mac.com)), Deer Valley High School, Antioch, Calif.

For description, see page 36.



**2:00–3:00 PM Featured Presentation****Using the Tools of the NGSS to Support Quality Science Instruction***(General)**Ballroom A (B21A), Convention Center*

Science Focus: NGSS



**Stephen Pruitt** (@DrSPruitt), Senior Vice President, Content, Research and Development, Achieve Inc., Washington, D.C.

President: David L. Evans, NSTA Executive Director, Arlington, Va.

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

*Stephen L. Pruitt is senior vice president at Achieve. For the past several years, he has been leading the development of the Next Generation Science Standards. Stephen began his career as a high school chemistry teacher in Georgia, where he taught for 12 years. In 2003, he joined the Georgia Department of Education as program manager for Science. Until 2010, he held various roles in the agency culminating with him being named Chief of Staff to State School Superintendent, coordinating the work of the agency.*

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

**2:00–3:00 PM Presentations****NARST Session: Building Evidence-based Reasoning Skills Among Nonscience Majors at a Community College***(Grades 9–College)**B14, Convention Center*

Science Focus: SEP4, SEP6

**Steve Bennett** (*benne455@msu.edu*), Michigan State University, East Lansing

Evidence-based reasoning can improve student engagement in labs, but it is a skill that can present challenges to both instructors and learners.

✓ **Developing Spatial Visual Skills of Middle School Girls Through 3-D Printing in Informal Science Settings**

*(Grades 5–College)**B15A, Convention Center*

Science Focus: INF, ETS2, CCC3, SEP4, SEP8

**Christi Whitworth** (@astronomy\_PARI, @ncChristi; *whitworth@pari.edu*), Pisgah Astronomical Research Institute, Rosman, N.C.

Attention will be paid to strategies and methods that enhance spatial visual skills and engage middle school girls in STEM programs using 3-D printers as an educational tool.

**Captivate Your Students Using Data Visualizations and Learn How to Integrate Global Environmental Data into Your Classroom***(Grades K–12)**B17, Convention Center*

Science Focus: ESS, CCC

**June Teisan**, Einstein Fellow, NOAA, Washington, D.C.

Find out how data visualizations from NOAA can enhance your Earth system science content with stunning animated and still images.

**How to Teach WITHOUT Teaching to the State Test!***(Grades 6–10)**B19, Convention Center*

Science Focus: GEN, CCC

**Lori Khan** (*lori.khan@dpsnc.net*), Middle College High School at DTCC, Roxboro, N.C.

Learn five practical tips to increase your test scores without teaching to the test! I'll share tried-and-tested techniques to enhance your students' scientific literacy.

★ **Spark Students’ Interest in Chemistry with Resources from the American Chemical Society**

(Grades 9–12) *E21A, Convention Center*  
 Science Focus: PS

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

This presentation is an overview of free resources from the ACS, including the Chemical Education Digital Library (ChemEd DL), *ChemMatters* video podcasts, developed lesson plans, a high school energy website, and a collection of ChemClub activities.

**Working with Natural Teachers: Tips for Supporting K–12 Outdoor Learning**

(General) *E22A, Convention Center*  
 Science Focus: INF

**Tamra Willis** (*twillis@mbc.edu*), Mary Baldwin College, Staunton, Va.

Teachers who use the outdoors for integrated science lessons must think outside of the schoolroom box. What do research and experience tell us about how we can best support these efforts?

**The Engineering Grand Challenges as a Focus of Cross-Curricular Project Based Learning**

(Grades 9–12) *E24A, Convention Center*  
 Science Focus: ETS, CCC, SEP

**Evelyn Baldwin** (*@ebciteach; ebaldwin@wcpss.net*) and **William Burgess** (*@stemburgess; wburgess@wcpss.net*), Wake NCSU STEM Early College High School, Raleigh, N.C.

Incorporate science and engineering into your high school curricula with PBL projects via the Engineering Grand Challenges. Join us as we showcase example projects and student work.

**Tissue Paper Balloons—Building Middle School Connections**

(Grades 5–8) *Salon G/H, Marriott*  
 Science Focus: GEN

**Brian Holtzhafer** (*holtzhaferb@parklandsd.org*), Parkland School District, Orefield, Pa.

Expand your students’ literacy and math skills as well as learn about scientific principles with a unique activity that applies to all disciplines. Building tissue paper balloons is affordable and aids in team building.


**2:00–3:00 PM Hands-On Workshops**

**2015: The Year of Pluto**

(Grades 1–12) *B12, Convention Center*  
 Science Focus: ESS, SEP

**Kerri Beisser**, *Johns Hopkins University Applied Physics Laboratory, Laurel, Md.*

In 2015, New Horizons will help us understand worlds at the edge of our solar system by making the first reconnaissance of “planet” Pluto. Prepare for the “Year of Pluto” by learning more about NASA’s New Horizons mission and the lesson plans and activities you can take into your classroom.

 **A Drop in My Drink—Diving into Water Activities Through Trade Books**

(Grades 3–6) *B13, Convention Center*  
 Science Focus: ESS3.A, ESS3.C

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

Delve into elementary and intermediate grade investigations that help explore watersheds and water quality. Activities are paired with literature-based connections for integrated learning opportunities.

 **Climate Change: Integration Through Activity**

(Grades 6–12) *B15B, Convention Center*  
 Science Focus: INF

**Mary McCumber**, Chincoteague Bay Field Station, Wallops Island, Va.

Do I really need to integrate climate change information into my curriculum? Join Chincoteague Bay Field Station staff as they demonstrate several activities and provide resources for educators.

**Engaging Students in Research Through Science and Health/Physical Education**

(Grades 6–12) *B18, Convention Center*  
 Science Focus: LS1.B, LS1.D, LS3.B, LS4.B, LS4.C, CCC2, SEP1, SEP3, SEP4, SEP6, SEP8

**Suzanne Kirk** (*svkirk@vcu.edu*), **Lisa Abrams** (*lmabrams@vcu.edu*), **Tammy McKeown**, and **Patricia Slattum** (*pwslattu@vcu.edu*), Virginia Commonwealth University, Richmond

**Amy Canada** (*amy\_canada@ccpsnet.net*) and **Caroline Kirsh** (*caroline\_kirsh@ccpsnet.net*), Robious Middle School, Midlothian, Va.

How do genetics and community factors influence health? Use inquiry activities and online resources to promote student engagement in research, encourage cross-curricular collaboration, and foster community involvement.

### Climate Change Classroom Activities (I): Light, CO<sub>2</sub>, and Global Warming

(Grades 9–12) Ballroom B (B21B), Convention Center

Science Focus: PS

**Jerry Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), Wisconsin Initiative for Science Literacy, Madison

The energy of electromagnetic radiation (light) is evident to anyone standing in the sunlight on a bright summer day. Less obvious is the radiation emitted by the warmed planetary surface. The characteristics of these electromagnetic radiations and their consequences are important for maintaining life as we know it. Engage in activities, discussion, analyses, and assessment that enhance understanding of the relationships among basic chemical concepts and human activities that are changing Earth. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

### Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists

(Grades 6–12) Ballroom C (B21C), Convention Center

Science Focus: ESS, CCC, SEP

**Roberta Johnson Killeen** ([rmjohnsn@nestanet.org](mailto:rmjohnsn@nestanet.org)), National Earth Science Teachers Association, Boulder, Colo.

**Michael Passow** ([michael@earth2class.org](mailto:michael@earth2class.org)), Dwight Morrow High School, Englewood, N.J.

This NESTA workshop presents exemplary NGSS-focused activities for the geology classroom that bring fundamental concepts in Earth science to life for your students. Handouts!



### NSTA Press® Session: Breathtaking Science: Exploring the Hidden and Unexpected Worlds at the Nanoscale

(Grades 6–12) Governors Room (B20), Convention Center

Science Focus: GEN

**M. Gail Jones, Elysa Corin** ([encorin@ncsu.edu](mailto:encorin@ncsu.edu)), and **Rebecca Hite** ([@sciencebecca](mailto:@sciencebecca); [rlhite@ncsu.edu](mailto:rlhite@ncsu.edu)), North Carolina State University, Raleigh

Experience the amazing world of nanoscale science with a partnership of engineers, and formal/informal science educators. Participants will conduct investigations related to properties of nanomaterials, new innovative nanosensors, and nano computing. Obtain lesson plans and summer research information.

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

(Grades P–4)

Salon C/D, Marriott

Science Focus: PS

**Juliana Texley** ([@Juliana.Texley](mailto:@Juliana.Texley); [juliana.texley@nsta.org](mailto:juliana.texley@nsta.org)), NSTA President, Boca Raton, Fla.

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

Don't look now—but the CCSS asks that you teach physical sciences as early as kindergarten, and the NGSS have very specific goals for early primary. No more procrastinating! The good news is that you have your equipment. Come get easy activities, lit basics, and basic teacher background so that you can start right away!

### K–2 STEM—It's Easier than You Think

(Grades K–2)

Salon E, Marriott

Science Focus: ETS, SEP

**Teresa Leahy** ([tleahy@mysmic.org](mailto:tleahy@mysmic.org)), MathScience Innovation Center, Richmond, Va.

Come participate in STEM activities and learn strategies for integrating them into an existing curriculum. Leave with ideas for spreading the excitement of STEM within your school community. The session will showcase lessons written and taught by educators at the MathScience Innovation Center.

### Inquiry in Action: Investigating Matter Through Inquiry

(Grades 3–8)

Salon F, Marriott

Science Focus: PS1, CCC1, CCC6, SEP3, SEP7

**Patti Galvan** ([p\\_galvan@acs.org](mailto:p_galvan@acs.org)), American Chemical Society, Washington, D.C.

Conduct simple tests on four identical-looking household liquids to tell them apart. Molecular model animations show why each liquid behaves as it does. Everything is at [www.inquiryinaction.org](http://www.inquiryinaction.org).

## 2:00–3:15 PM Exhibitor Workshops

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

(Grades 6–9)

*B15C, Convention Center*

Science Focus: ETS1.B, SEP1, SEP6, SEP8

Sponsor: eCYBERMISSION

**Matthew Hartman**, eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

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

### **Integrating Online Learning into the Science Classroom**

(Grades 1–10)

*E10A, Convention Center*

Science Focus: GEN, NGSS

Sponsor: NewPath Learning

**George Nassis** and **Melissa Hughes**, NewPath Learning, Victor, N.Y.

Experience NewPath Learning’s online program sponsored by the National Institutes of Health that allows teachers to assign and present ready-to-use, standards-based multimedia lessons; interactive activities; lab simulations; and assessments, as well as track student progress. Additionally, the program provides easy-to-use authoring tools and templates to develop customized, interactive lessons. Join us and receive a free trial subscription.

### **Engineering the Future®: A Practical Approach to STEM for High School**

(Grades 9–12)

*E10B, Convention Center*

Science Focus: ETS

Sponsor: It’s About Time

**Lee Pulis**, Museum of Science, Boston, Mass.

STEM—it’s a real need. Engineering the Future is a real answer. See how the Museum of Science, Boston has packaged a solution that makes implementing STEM easy. Find out how Engineering the Future’s real-world projects give students an opportunity to see engineering as part of their everyday world.

### **Investigating a Cliff Model**

(Grades 6–8)

*E10D, Convention Center*

Science Focus: ESS2, ETS2

Sponsor: LAB-AIDS®, Inc.

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

Here’s your chance to engineer a coastal breakwater. Using a unit from LAB-AIDS’ *Issues and Earth Science*, analyze design trade-offs. Explore how the natural world is influenced by our engineered world, creating more societal issues that must be solved through engineering. SEPUP embeds the engineering practices and uses real issues to deliver powerful content learning.

### **Bring Visual Science into Grades 6–8 Classrooms—It’s a Game Changer!**

(Grades 6–8)

*E11A, Convention Center*

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

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

### **Using the Polymerase Chain Reaction to Identify Genetically Modified Foods**

(Grades 8–College)

*E11C, Convention Center*

Science Focus: LS

Sponsor: Edvotek Inc.

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

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





### The “E” in STEM: How Do I Incorporate Engineering Practices in a Science Classroom?

(Grades K–12)

E21B, Convention Center

Science Focus: ETS

Sponsor: Pearson

**Zipporah Miller**, Anne Arundel County Public Schools, Brooklyn, Md.

Engage in a challenge-based lesson that models how to enhance your science curriculum by using the engineering design process. Emphasis will be placed on grasping how to engage learners in student-centered activities that reinforce 21st-century skills. Connections to language arts and mathematics will be highlighted.

### The “E” in STEM: 3-D STEM Engineering

(Grades 5–College)

E21C, Convention Center

Science Focus: ETS

Sponsor: WhiteBox Learning

**Graham Baughman** ([graham@whiteboxlearning.com](mailto:graham@whiteboxlearning.com)), Whitebox Learning, Louisville, Ky.

Engage your students in the complete engineering design process. WhiteBox Learning provides standards-, web-, and project-based applied STEM learning applications. Gliders2.0, Rover2.0, Structures2.0, Prosthetics2.0, Mouse-trapCar2.0, GreenCar2.0, Rockets2.0, and Dragster2.0 allow students to build, analyze, and simulate their designs, and compete “virtually,” 24/7, all around the world—how cool is that?!

### 2:00–3:30 PM Exhibitor Workshop

#### Physics and Physical Science with Vernier

(Grades 7–College)

E11B, Convention Center

Science Focus: PS

Sponsor: Vernier Software & Technology

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

In this hands-on workshop, you will use various digital tools—such as probeware—to conduct experiments from our popular physics and physical science lab books. Use LabQuest Mini with a computer, or LabQuest 2 as a stand-alone device, with a computer, or wirelessly to iPad, Chromebook, and BYOD environments.

### 3:00–4:00 PM Exhibitor Workshop

#### Communicating Science Through Lab Notebooking

(Grades 9–College)

E23 A/B, Convention Center

Science Focus: GEN, NGSS

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** ([sherri\\_andrews@bio-rad.com](mailto:sherri_andrews@bio-rad.com)), Bio-Rad Laboratories, Hercules, Calif.

Maintaining a proper lab notebook is key to communicating processes and findings to build on results as well as making a difference in awarding patents. Find out what the critical elements are to properly document results and how to assess student notebooks using a rubric.

### 3:30–4:30 PM Presentations

#### The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators

(General) *B11, Convention Center*

Science Focus: GEN

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

**Al Byers** (*abyers@nsta.org*), Assistant Executive Director, Government Partnerships and e-Learning, NSTA, Arlington, Va.

Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 11,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the Learning Center has the answers! Get free resources and ICE CREAM!

#### NARST Session: Research Apprenticeships for Diverse High School Students

(Grades 9–12) *B14, Convention Center*

Science Focus: GEN, SEP

**Stephen Burgin** (*sburgin@odu.edu*) and **William McConnell** (*wmcco001@odu.edu*), Old Dominion University, Norfolk, Va.

Discussion centers on the impact of a research apprenticeship program developed for diverse students and possible implications for both in- and out-of-school science education. Emphasis will be placed on issues of authenticity and science and engineering practices as presented in the NGSS.

#### ✓ Cultivating Collaboration to Promote Environmental Literacy in D.C.

(Grades 1–12) *B15A, Convention Center*

Science Focus: GEN, INF

**Rebecca Davis** (*@DCEEC; rnjidavis@gmail.com*), DC Environmental Education Consortium, Washington, D.C. Hear how District of Columbia non-formal and formal educators are developing and piloting an Environmental Literacy Framework integrating competing initiatives, such as Sustainable DC, NGSS, STEM, and an Environmental Literacy Plan.

#### Using Real-Time NOAA Data to Support the NGSS

(Grades 6–12) *B17, Convention Center*

Science Focus: ESS, CCC

**June Teisan**, Einstein Fellow, NOAA, Washington, D.C. Learn about a wide variety of free online NOAA data resources that are readily available and easy to use in your classroom. Resources range from fisheries data, to oceanic and atmospheric data, to paleoclimatology data, and much more.

#### Simple Ways to Modify Existing Lessons to Deepen Student Thinking

(Grades 7–12) *B19, Convention Center*

Science Focus: GEN, NGSS

**Robbie Higdon** (*rhigdon72@yahoo.com*), James Madison University, Harrisonburg, Va.

**Elizabeth Moon** (*emoon@richlandone.org*), Dreher High School, Columbia, S.C.

**Stephanie Green** (*sgreen@anderson2.k12.sc.us*), Belton-Honea Path High School, Honea Path, S.C.

Observe several approaches we have used to transform favorite labs, lessons, and instructional activities to support guiding principles of the CCSS and NGSS.

#### ★ Strategies for STEM Success

(Grades P–12) *E21A, Convention Center*

Science Focus: GEN

**Marguerite Sognier** (*masognie@utmb.edu*), The University of Texas Medical Branch at Galveston

Hear about proven strategies used by the Southeast Regional Texas-STEM Center to achieve school success! Transform your class from traditional into STEM. Comparative student data shared.

#### Life-threatening “Allergies” in Schools: A Call to Action

(General) *E22A, Convention Center*

Science Focus: GEN

**Nancy Grim-Hunter** (*ngrim@csu.edu*), Chicago State University, Chicago, Ill.

The Centers for Disease Control reports that the number of school-age children with food allergies has significantly increased in the last decade. Attention will be paid to policies and interdisciplinary curricula on life-threatening allergies and chemical sensitivities in schools for students, teachers, and other school leaders.


#### Elementary GLOBE Storybooks: Building Science Inquiry and Literacy Skills

(Grades K–5) *E24A, Convention Center*

Science Focus: ESS, CCC, SEP

**Tina Harte** (*tina.r.harte@nasa.gov*) and **Lin Chambers** (*larc-globe-partner@lists.nasa.gov*), NASA Langley Research Center, Hampton, Va.

Challenged on how to integrate science into day-to-day instruction? These free storybooks enable teachers to use reading block time to teach about Earth science.


**NSTA Press® Session: Showcasing How Elementary Preservice Interns Teach Inside Out**

(Grades 3–5) *Governors Room (B20), Convention Center*  
Science Focus: ESS

**Robert Blake, Jr.** ([rblake@towson.edu](mailto:rblake@towson.edu)), **Sarah Haines** ([shaines@towson.edu](mailto:shaines@towson.edu)), and **Lisa Trattner** ([ltrattner@towson.edu](mailto:ltrattner@towson.edu)), Towson University, Towson, Md.

Join us as we showcase how the materials from *Inside-Out: Environmental Science in the Classroom and the Field, Grades 3–8* are used in the classroom by preservice elementary education students.

**Helping Students Discover the Connection Between the Environment and Human Health**

(Grades 6–9) *Salon G/H, Marriott*  
Science Focus: INF, ESS3.A, ESS3.C, ETS1.B, ETS2, LS2.A, CCC1, CCC2, CCC5, SEP1, SEP2, SEP3, SEP6, SEP7, SEP8

**Latonya Waller** ([lwaller2@richmond.k12.va.us](mailto:lwaller2@richmond.k12.va.us)), Richmond (Va.) Public Schools

**Alla Keselman**, National Library of Medicine, Bethesda, Md.

Hear about a free National Library of Medicine curriculum, “Discovering the Connection: Your Environment, Your Health,” and lessons learned from its implementation in several schools and an after-school science club. Attendees are encouraged, but not required, to bring a personal device that can access the internet. Larger screen is a plus, but also not required.

**Literacy Practices in Middle School Science**

(Grades 5–8) *Salon I/J, Marriott*  
Science Focus: GEN, CCC

**Amy Baggett** ([@amyconnorsmom](mailto:@amyconnorsmom); [amy.baggett@pcsstn.com](mailto:amy.baggett@pcsstn.com)), Prescott South Middle School, Cookeville, Tenn.

Come learn how to practice literacy standards within the middle school science classroom. Explore using a variety of methods, including graphic organizers, manipulatives, websites, and more.

**3:30–4:30 PM Hands-On Workshops**
**The Case of the Hungry Heron: A PBL Unit on Ecosystems and Experimental Design**

(Grades 7–12) *B12, Convention Center*  
Science Focus: ESS, LS, PS, CCC1, CCC2, CCC4, CCC5, CCC7, SEP

**Kevin Goff** ([kdgoff@vims.edu](mailto:kdgoff@vims.edu)), Virginia Institute of Marine Science, Gloucester Point

Students drive the learning and decision-making process as they tackle an environmental mystery, discovering the complexity of ecosystems while learning to design sophisticated experiments.


**Explore With Me™—Bringing Science to Students and Their Families**

(Grades P–4) *B13, Convention Center*  
Science Focus: INF, NGSS

**Suzanne Gilchrist-Thompson** ([sgilchristthompson@harrisonburg.k12.va.us](mailto:sgilchristthompson@harrisonburg.k12.va.us)), Spotswood Elementary School, Harrisonburg, Va.

**Hunter Rush** ([@SrRush](mailto:@SrRush); [hrush@harrisonburg.k12.va.us](mailto:hrush@harrisonburg.k12.va.us)), Smithland Elementary School, Harrisonburg, Va.

Learn about an innovative program that integrates science, language, art, and design in projects that are completed by students and their families in the home.


**Jump into the Garden**

(Grades P–4) *B15B, Convention Center*  
Science Focus: GEN, INF

**Tammy Maxey** ([tammy.maxey@vafb.com](mailto:tammy.maxey@vafb.com)), Agriculture in the Classroom, Richmond, Va.

Jump into the garden with Agriculture in the Classroom! We’ll review AITC’s newest resource, “Jump Start Your School Garden,” designed for elementary classrooms.

**The Mutualism of Biology and Math**

(Grades 7–12) *B18, Convention Center*  
Science Focus: LS, CCC

**Jeff Lukens** ([jeffrey.lukens@k12.sd.us](mailto:jeffrey.lukens@k12.sd.us)), Roosevelt High School, Sioux Falls, S.Dak.

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



### **Climate Change Classroom Activities (II): CO<sub>2</sub> Chemistry and Ocean Acidification**

(Grades 9–12) *Ballroom B (B21B), Convention Center*  
Science Focus: PS

**Jerry Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), Wisconsin Initiative for Science Literacy, Madison

Aqueous solutions of carbon dioxide, including your blood and the oceans, are essential to life on Earth. Upsetting the acid/base balance of these important solutions can be a matter of life and death. Engage in activities, discussion, analyses, and assessment that enhance understanding of the relationships among basic chemical concepts and human activities that are changing Earth. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

### **Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists**

(Grades 6–12) *Ballroom C (B21C), Convention Center*  
Science Focus: ESS, CCC, SEP

**Roberta Johnson Killeen** ([rmjohnsn@nestanet.org](mailto:rmjohnsn@nestanet.org)), National Earth Science Teachers Association, Boulder, Colo.

**Michael Passow** ([michael@earth2class.org](mailto:michael@earth2class.org)), Dwight Morrow High School, Englewood, N.J.

This NESTA-ESIP hands-on workshop highlights freely available lessons and strategies integrating data acquisition, analysis, and interpretation in the classroom—engaging students in the scientific process.

### **Use Your Local Community as an Environmental Science Laboratory: Planning Land Use with Students (PLUS)**

(Grades 9–College) *E25A, Convention Center*  
Science Focus: INF, SEP1, SEP5, SEP6, SEP8

**Margie Turrin** ([mkt@ldeo.columbia.edu](mailto:mkt@ldeo.columbia.edu)), Lamont-Doherty Earth Observatory, Palisades, N.Y.

Environmental science is the nexus between humans and Earth/environment. Engage students by using their own community as a laboratory, examining the history, economics, social structure, and environmental factors that result from human decision-making and interaction. Come ready to work collaboratively making land-use decisions in this hands-on session.

### **Engineering: Build a Better Kaleidoscope!**

(Grades 3–8) *Salon C/D, Marriott*  
Science Focus: ETS, CCC, SEP

**Karen Ostlund** ([klostlund@utexas.edu](mailto:klostlund@utexas.edu)), 2012–2013 NSTA President, and The University of Texas at Austin

Build a better kaleidoscope by using an Engineering Design Process integrating the NGSS three dimensions—practices, crosscutting concepts, and disciplinary core ideas.

### **STEM Activities for Early Childhood Classrooms**

(Grades K–4) *Salon E, Marriott*  
Science Focus: SEP

**Robert Snyder**, Slippery Rock University, Slippery Rock, Pa.

Walk away with examples and ideas for incorporating developmentally appropriate STEM activities into the early childhood classroom. Receive ideas and lesson plans for immediate use in the classroom.

### **Differentiating Science Practices**

(Grades 3–8) *Salon F, Marriott*  
Science Focus: GEN, NGSS

**Jacquelyn Melin** ([melinj@gvsu.edu](mailto:melinj@gvsu.edu)) and **Ellen Schiller** ([schillie@gvsu.edu](mailto:schillie@gvsu.edu)), Grand Valley State University, Allendale, Mich.

Learn how to differentiate instruction as you teach science concepts and practices in this actively involved hands-on workshop. Hear lessons learned from a university/public school partnership project on differentiating instruction in science.

**4:00–5:15 PM Exhibitor Workshops****Implementing the Eight NGSS Practices with Research-based Curriculum***(Grades 6–8)**E10A, Convention Center*

Science Focus: GEN, SEP

Sponsor: Activate Learning

**Marilyn Schmidt**, Retired Educator, Aurora, Colo.

Find out how to integrate the NGSS practices into middle school science instruction using IQWST, the latest researched-based curriculum developed for grades 6–8. IQWST is Investigating and Questioning our World through Science and Technology. Leave with a sample lesson and strategies to implement practices and pedagogies that increase student achievement.

**Implementing an NGSS-based Middle School PBIS™ Curriculum with Fidelity***(Grades 6–8)**E10B, Convention Center*

Science Focus: GEN

Sponsor: It's About Time

**Presenter to be announced**

Discover the online support to help implement a research-based science curriculum and the tool to help you know if you're doing it right. It's About Time's NSF-funded Cyberlearning Professional Development Model addresses barriers to the successful implementation and scaling-up of research-based curricula. Leave with online resources and an observation protocol to implement with fidelity.

**DuPont Presents: Power Up and Design Your Own Battery***(Grades 6–12)**E10D, Convention Center*

Science Focus: ETS2, PS3

Sponsor: LAB-AIDS®, Inc.

**Jessica Jones**, Chatham Middle School, Chatham, Va.

Although we live in a battery-powered lifestyle, most of us have no idea how batteries work. Join us as we make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries. The strategies modeled move toward active learning and open inquiry.

**An Invitation: Moving Forward with the NRC Framework and NGSS***(Grades K–8)**E11A, Convention Center*

Science Focus: GEN

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

From crosscutting concepts to science and engineering practices, take away strategies and approaches that can bring the NRC Framework and NGSS to life in your district.

**Biotechnology Basics***(Grades 6–College)**E11C, Convention Center*

Science Focus: LS

Sponsor: Edvotek Inc.

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

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

**Using Problem-Based Learning to Up Your NGSS Game***(Grades 6–12)**E21B, Convention Center*

Science Focus: GEN, NGSS

Sponsor: Pearson

**Michael Padilla**, 2005–2006 NSTA President, and Clemson University, Clemson, S.C.

The NGSS seeks to incorporate more scenario-based and Problem-Based Learning. To help prepare students in school and beyond, students need to be doing science and seeing how it fits into their daily lives. Join Pearson author Mike Padilla as he brings PBL into the science classroom to help prepare students for future science and technology careers.



**New Modeling Kits: Flow of Genetic Information and Phospholipid and Membrane Transport Kits**

(Grades 8–College) *E21C, Convention Center*  
Science Focus: LS1.A, LS1.D, LS3, CCC, SEP1, SEP2, SEP6  
Sponsor: 3D Molecular Designs

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

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

**5:00–5:30 PM Presentation**

**Learning Science Outside of School: A Cross-cultural Study**

(Grades 6–10, College) *E22A, Convention Center*  
Science Focus: GEN

**Renmin Ye** (*rye@houstonisd.org*) and **Carla Stevens**, Houston (Tex.) ISD

**Shu-Ling Lai**, Asia University, Taichung, Taiwan  
Using PISA, this study investigated 102,724 students across 12 countries on their usage of four manners for science learning outside of school: watching television, reading books, visiting websites, and reading magazines/newspapers. Join us as we discuss the findings.

**5:00–6:00 PM Presentations**



**Yes, No, Maybe? The Importance of Environmental Decision-Making**

(Grades 4–12) *B13, Convention Center*  
Science Focus: GEN, INF, NGSS

**Anne Mannarino** (*amannarino@wm.edu*), College of William & Mary, Williamsburg, Va.

Rev up student learning by energizing students to make environmental decisions based on scientific data. Leave with ideas, activities, and tools that increase environmental literacy.



**Informally Learning**

(General) *B15A, Convention Center*  
Science Focus: INF

**Chuck English** (*cenglish@smv.org*), Science Museum of Virginia, Richmond

Come join the Science Museum of Virginia and learn new ways to enrich the field trip experience. Discover methods that help students to better learn in their new setting, and how to elicit their understanding from the experience. How do you use chaperones—is there a way to help them become more of an active resource for the students? Explore with the Science Museum of Virginia as we detail some of our successes and learn to watch out for certain pitfalls.



**How NOAA's Educational Resources and Funding Advance K–12 Watershed Education**

(Grades K–12) *B15B, Convention Center*  
Science Focus: ESS, INF

**Andrew Larkin** (*andrew.w.larkin@noaa.gov*), NOAA Chesapeake Bay Office and NOAA National Ocean Service, Norfolk, Va.

Join NOAA staff as they illustrate how this environmental science agency supports watershed education both in the field and classroom by discussing their grant programs and demonstrating their educational tools.

**MY NASA DATA: An Authentic STEM Experience**

(Grades K–12) *E24A, Convention Center*  
Science Focus: ESS

**Preston Lewis** (*preston.lewis@nasa.gov*) and **Daniel Oostra** (*@danieloostra; daniel.h.oostra@nasa.gov*), NASA Langley Research Center, Hampton, Va.

Engage your students in using MY NASA DATA as a visualization tool for NASA Earth systems satellite data and incorporate this easy-to-use tool right into your current curriculum.

**5:00–6:00 PM Hands-On Workshops****Examining Skewed Scientific Data: Scientific Literacy Activities for Students**

(Grades 7–12) *B12, Convention Center*  
 Science Focus: GEN, SEP3, SEP7, SEP8

**Susan Poland** (*spoland3@gmu.edu*), George Mason University, Fairfax, Va.

Participate in the “Soda Taste-Off,” an activity you can complete with your students illustrating how scientific information can become biased. Related activities will be discussed.

**Insects, Inquiry, and Interest**

(Grades 7–12) *B18, Convention Center*  
 Science Focus: LS1, LS2.A, LS2.B, LS2.D, LS4.B, LS4.C, CCC1, CCC2, CCC5, CCC6, CCC7, SEP

**Timothy Crane** (*timothy\_crane@ccpsnet.net*), James River High School, Midlothian, Va.

Ant lions, crickets, and a praying mantis egg, oh my! Use insects in the classroom to spark interest and to institute inquiry-based laboratory activities in your biology classroom—from life science to AP biology.

**National Earth Science Teachers Association Rock & Mineral Raffle**

(General) *Ballroom C (B21C), Convention Center*  
 Science Focus: ESS

**Roberta Johnson Killeen** (*rmjohnsn@nestanet.org*), National Earth Science Teachers Association, Boulder, Colo.

NESTA offers more than 50 specimens to choose from—for a chance to win display-quality specimens of rocks, minerals, fossils, and other Earth science–related materials.

 **NSTA Press® Session: Phenomenon-based Learning Using Gadgets and Gizmos**

(Grades 3–College) *E21A, Convention Center*  
 Science Focus: INF, CCC2, CCC4, CCC5, CCC6, CCC7, PS, SEP

**Matt Bobrowsky** (*expert\_education@rocketmail.com*), Delaware State University, Dover


Experience the kind of learning that propelled Finland to international leadership in science education—learning not by memorizing facts, but by exploration and discovery.

**Identifying Quality Inquiry-based STEM Lessons**

(Grades K–8, College) *E25A, Convention Center*  
 Science Focus: GEN

**Arlene Vinion-Dubiel** (*dubiel@sbc.edu*) and **Jill Granger** (*granger@sbc.edu*), Sweet Briar College, Sweet Briar, Va.

Participants will use the Science Lesson Plan Analysis Instrument Revised (SxI-SLPAI-R) to determine the extent to which STEM lessons use an inquiry pedagogy. Join us as we share results from a professional development project *STEM4Teachers.org* in which the SxI-SLPAI-R was used in a modified lesson study to develop STEM lessons for grades 4–5.

 **NSTA Press® Session: Scientific Argumentation in Biology: 30 Classroom Activities**

(Grades 6–12) *Governors Room (B20), Convention Center*  
 Science Focus: GEN, DCI, SEP

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

Receive a brief overview of scientific argumentation and introduction to three different approaches for engaging students in scientific argumentation. Experience one of the approaches firsthand.

**NMLSTA Session: Student-created Interactive Journals**

(Grades 5–12) *Salon C/D, Marriott*  
 Science Focus: GEN

**Sharon Cumiskey**, NBCT Teacher, Lakeville, MA

Come learn how to engage teenaged brains! We’ll make a journal adaptable for use in any classroom as well as experience the excitement of creativity. Walk away with a physical journal and information that allows you to adapt this booklet for your classroom.

**Crosscutting STEM (and STEAM) into Picture Books for Elementary Students**

(Grades P–3) *Salon E, Marriott*  
 Science Focus: INF

**Ava Pugh** (*apugh@ulm.edu*), **Rhonda Mann** (*mann@ulm.edu*), and **Dorothy Schween** (*schween@ulm.edu*), University of Louisiana at Monroe

This STEM workshop provides hands-on activities for Science inferencing, Technology implementation, Engineering by Synectics, and Math tessellations featuring the trade book *Brown Bear, Brown Bear*.

### 7:00–9:00 PM Networking Opportunity

#### Ice Cream Social Sponsored by the Virginia Office of Environmental Education (VOEE) and the Mid-Atlantic Marine Education Association (MAMEA)

*(Complimentary Tickets Required)*

*Salon F, Marriott*

The Virginia Office of Environmental Education and the Mid-Atlantic Marine Education Association (MAMEA) are sponsoring this ice cream social. All conference attendees are welcome, however complimentary tickets are required for admission and are available at the VRUEC booth located in the registration area (Hall A of the Convention Center) on a first-come, first-served basis until 12 Noon on Friday. At 7:00 PM there will be a brief overview and welcome from J. Michael Foreman, director of the Virginia Office of Environmental Education. He will invite remarks from conference attendees. The Virginia Office of Environmental Education (VOEE) and the Virginia Resource-Use Education Council (VRUEC) are working to establish a membership organization for all people interested in environmental education (EE) and science, technology, engineering, and math (STEM). The formation of this organization will be announced at the social. Organizations that offer environmental education will be present. These representatives can talk with you about what they have to offer to schools and how they can help you with your classroom instruction.



**8:00–8:30 AM Presentation**

**Edu-Tainment: STEM Content Dissemination Using Media and Video Instruction**

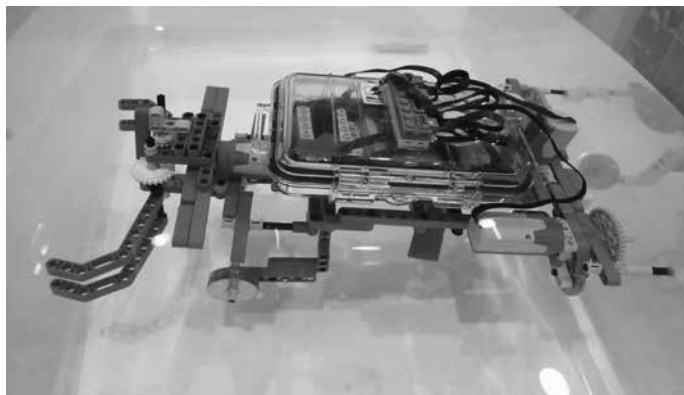
(Grades K–12)

B11, Convention Center

Science Focus: INF, PS

**William Robertson** (@drskateboard; robertson@utep.edu), The University of Texas at El Paso

Find out how to use edutainment, which is the use of media and video instruction, as a method of STEM content dissemination in K–12 classrooms. Learn how to create and deliver hands-on mini-lessons in this unique forum.



**8:00–9:00 AM Presentations**

★ **The Engaged Scientist Project: Lessons from a Decade of Engaging Scientists in Informal Education**

(General)

E21A, Convention Center

Science Focus: INF

**Catherine Vrentas** (cevrentas@gmail.com), Outreach Specialist, Ankeny, Iowa

Explore lessons learned from informal education partnership programs designed and run by junior scientists and learn about connecting with scientists via the Engaged Scientist Network.

✓ **Students' Cloud Observations Online: A Project for Cross-curricular Learning**

(Grades K–6)

E24A, Convention Center

Science Focus: ESS

**Sarah Crecelius** (sarah.a.crecelius@nasa.gov), SSAI/NASA Langley Research Center, Hampton, Va.

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

Students' Cloud Observations Online (S'COOL) is a hands-on project that supports NASA research on Earth's climate. Find out how to engage students in making cloud and weather observations for NASA. While reporting, your students can also be gaining a better understanding of clouds through reading and writing!

📖 **NSTA Press® Session: Inquiring Scientists, Inquiring Readers: Using Literacy Strategies to Support Inquiry Investigations**

(Grades 3–5)

Governors Room (B20), Convention Center

Science Focus: GEN, SEP3, SEP4, SEP6, SEP8

**Terry Shiverdecker** (@InquiringSs; tshiverdecker.1@gmail.com), Ohio Resource Center, Sidney

Learn how the authors of *Inquiring Scientists*, *Inquiring Readers* select nonfiction texts and integrate literacy strategies into learning cycle investigations. You'll also experience Classroom Curling!

**Teaching Forensic DNA Using Models, Kinesthetic Learning, STR Activity, and Readings**

(Grades 9–12)

Lecture Hall (B10), Convention Center

Science Focus: LS

**Anthony Bertino** (nolanp@nycap.rr.com) and **Patricia Nolan Bertino** (nolanp@nycap.rr.com), Retired Educators, Scotia, N.Y.

Increase comprehension and interest in forensic DNA using inexpensive models, kinesthetic learning activities, and non-fiction readings. Perform a STR activity to identify suspects, paternity, or missing persons. Free resource CD!

## 8:00–9:00 AM Hands-On Workshops



### Water Quality Monitoring and Service Learning at the Chesapeake Bay Governor's School for Marine and Environmental Science

(Grades 9–12)

B13, Convention Center

Science Focus: ESS, INF

**James Beam** ([jbeam@cbgs.k12.va.us](mailto:jbeam@cbgs.k12.va.us)), Chesapeake Bay Governor's School for Marine and Environmental Science, Tappahannock, Va.

**Lowery Pemberton** ([lowery.pemberton@riverfriends.org](mailto:lowery.pemberton@riverfriends.org)), Friends of the Rappahannock, Fredericksburg, Va.

Students at CBGS are immersed in watershed learning from camping in the Blue Ridge to fossil exploring on the banks of the Potomac. Students conduct monthly water quality monitoring collaborating with local environmental groups.



### Out of the Box: 4-H in the Classroom

(Grades K–6)

B15B, Convention Center

Science Focus: INF

**Tara Brent** ([tbrent@vt.edu](mailto:tbrent@vt.edu)), Virginia Cooperative Extension 4-H, Heathsville

Bring the hands-on/minds-on focus of 4-H into your science classroom. Leave with tools to enhance your instruction.

### Using Real Earthquake Data in Middle School and High School Plate Tectonics and Natural Hazards Lessons

(Grades 5–College)

E10A, Convention Center

Science Focus: ESS, CCC1, CCC3, CCC7, SEP1, SEP4, SEP7

**Patrick McQuillan** ([mcquillan@iris.edu](mailto:mcquillan@iris.edu)), IRIS, Washington, D.C.

Enhance plate tectonics and natural hazards lessons using real earthquake data. A global earthquake database will be explored using IRIS software, NGSS-focused lessons, and live maps.

### Exciting Young People About Science Through Insects!

(Grades K–12)

E10C, Convention Center

Science Focus: INF, LS1.A, LS1.B, LS1.D, LS2.A, LS2.C, LS2.D, LS3, LS4, CCC2, CCC6

**Thomas Green** ([tom@entfdn.org](mailto:tom@entfdn.org)), The Entomological Foundation, Madison, Wis.

Get the latest buzz on techniques for using insects to teach crosscutting concepts and core ideas in the life sciences for K–12. Learn from entomologists and educators how to use insects as a fun and engaging way to teach science both inside and outside of the classroom!

### iPad—Next Step to a Digital Classroom

(Grades 6–12)

Salon C/D, Marriott

Science Focus: GEN, NGSS

**Greg Dodd** ([gbdodd@gmail.com](mailto:gbdodd@gmail.com)), George Washington High School, Charleston, W.Va.

As schools implement one-to-one iPads, teachers need training in the use of iPads effectively for science instruction. Come learn how to use the iPad to create a digital classroom.

### The George Washington Carver DISCO STEAM InVenTures™

(Grades P–K)

Salon E, Marriott

Science Focus: INF, NGSS

**Akil Rahim** ([akrahim@mac.com](mailto:akrahim@mac.com)), AKRA AC Learning Design Studios, Ellicott City, Md.

In the spirit of George Washington Carver, discover, investigate, simulate, and create opportunities for science, technology, engineering, art, and math InVenTures with preschoolers and kindergartners.



**8:00–9:15 AM Exhibitor Workshops****Using Climate Proxies to Learn About Earth's Climate History***(Grades 9–12)**E10D, Convention Center*

Science Focus: ETS2, ESS2

Sponsor: LAB-AIDS®, Inc.

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

How can scientists tell what Earth's climate was like thousands of years before human measurements? This NSF-supported unit simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph replica samples of these organisms to determine warm and cold periods in the past 200,000 years.

**Dive In with Magnetic Water Molecules***(Grades 5–College)**E21C, Convention Center*

Science Focus: LS1.A, LS2.B, PS1.A, PS1.B, PS2.A, PS2.B, CCC1, CCC2, CCC3, CCC4, CCC5, CCC6, SEP1, SEP2  
Sponsor: 3D Molecular Designs

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

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

**8:30 AM–1:00 PM Short Course****Earth Systems Science on the James River (SC-4)***(Grades 4–College) Off-site, Belle Isle, James River Park System*

Science Focus: INF, ESS2.A, ESS2.C, ESS2.E, ESS3.A, ESS3.C, LS2.A, LS2.B, LS2.C, LS4.C, CCC4, CCC5, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

**Tickets Required; \$50**

**Rachel Martin** (*rmartin@mymsic.org*), **Carroll Ellis** (*cellis@mymsic.org*), **Wayne Gilchrest** (*wgilchrest@mymsic.org*), **Patricia Miller** (*pmiller@mymsic.org*), and **Steve Oden** (*soden@mymsic.org*), MathScience Innovation Center, Richmond, Va.

For description, see page 36.

*Note:* Meet your instructor at the Marshall Street entrance of the Convention Center by 8:15 AM.

**9:00–9:50 AM Special Session****A Celebration of Literacy & Science: What Does Literacy Mean? How Do Science and Literacy Connect?***(Grades K–12)**Grand Ballroom C, Convention Center*

Science Focus: GEN

**Bill Badders** (*@baddersb; baddersb@roadrunner.com*), NSTA Retiring President, Cleveland, Ohio**Marcie Craig Post**, International Reading Association, Newark, Del.

Come hear NSTA Retiring President Bill Badders and Marcie Craig Post, executive director of the International Reading Association, talk about “literacy” in the context of science, and provide concrete examples.

**9:00 AM–12 Noon Exhibits***Hall A, Convention Center*

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

**9:30–10:30 AM Presentations****Do You Need a New Science Lab?***(Grades 6–12)**B11, Convention Center*

Science Focus: GEN

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

Come learn how to win a Shell Science Lab Makeover (\$20,000 value) for your school. You will have an opportunity to actually begin to complete the application and have your questions answered. The Shell Science Lab Challenge invites middle school and high school science teachers (grades 6–12) in the United States and Canada (with special attention to urban and underrepresented groups) to illustrate replicable approaches to science lab instruction using limited school and laboratory resources.

**Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century***(General)**B15A, Convention Center*

Science Focus: GEN, NGSS

**Mark McCaffrey** (*@McCaffreyMark; mccaffrey@ncse.com*), National Center for Science Education, Oakland, Calif. Join the author of *Climate Smart & Energy Wise* as he covers the challenges and opportunities to infuse climate, energy, and related literacy throughout the K–12 curricula, including all the sciences, mathematics, and language arts, as well as social studies, civics, and arts.

### Implementing Global Collaborative Projects in the Science Classroom

(Grades 4–12) *E10B, Convention Center*

Science Focus: GEN, SEP

**Selena Connealy** (*selena.connealy93@gmail.com*), New Mexico EPSCoR, Albuquerque

**Aletha Williams** (*aletha.williams@ttu.edu*), Jane Long Futures Academy, Houston, Tex.

**Jill Nugent** (@ntxscied; *jill.nugent@ttu.edu*), Texas Tech University, Lubbock

This presentation outlines the different types of global collaborative science projects, ranging from independent projects with a global focus to fully interactive and collaborative projects between classrooms in different countries. Leave with strategies for implementing and adapting projects based on the NGSS, student characteristics, and technology capacity.

### The Secret Life of Toys and Water Bottles

(Grades 6–12) *E11C, Convention Center*

Science Focus: GEN, NGSS

**Sherri Rukes** (*scrukes@comcast.net*), Libertyville High School, Libertyville, Ill.

Find out how some toys that are made out of various plastics could be turned into something else. Ideas for incorporating this into your curriculum will also be discussed as well as activities and demos that could be used to teach it. Take home a CD with information and activities.

### ★ Arizona STEM Club Guide and Network

(General) *E21A, Convention Center*

Science Focus: INF

**Stephaine Frimer** (*sfrimer@sfaz.org*), Science Foundation Arizona, Phoenix

Receive an overview of the Arizona STEM Club Guide and Online Network and the benefits of STEM clubs. Find out how to replicate the process to create your own STEM club and statewide STEM club network.

### NASA's High-Energy Vision—Chandra and the X-Ray Universe

(Grades 6–College) *E24A, Convention Center*

Science Focus: ESS1.A, ETS1, ETS2, PS1, PS2.B, PS2.C, PS3.B, PS4.B, CCC1, CCC2, CCC3, CCC4, CCC5, CCC7

**Donna Young** (*donna@aavso.org*), AAVSO, Cambridge, Mass.

Expand the walls of your learning environment. Learn about the latest scientific discoveries, including massive black holes, neutron stars, white dwarfs, supernovas, star formation, colliding galaxies, X-ray binaries, and dark matter.



### NSTA Press® Session: Special Needs Students in Science

(Grades 4–College) *Governors Room (B20), Convention Center*

Science Focus: GEN, NGSS

**Ed Linz** (*erlinz@fcps.edu*), Teacher/Author, Springfield, Va.

**Mary Jane Heater** (*mjheater@ymail.com*), West Springfield High School, Springfield, Va.

If your classroom has students with special needs, or if you co-teach, this interactive session provides background, tools, and strategies to improve the success of ALL learners.

### Teach Engineering Principles on the Cheap with Concrete

(Grades 9–12) *Lecture Hall (B10), Convention Center*

Science Focus: ETS

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

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

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

### Family Science Day Runs Full-STEAM Ahead

(Grades P–8) *Salon G/H, Marriott*

Science Focus: INF, SEP1, SEP2, SEP3, SEP4

**Sara McCubbins** (@CeMaST\_ISU; *samccub@ilstu.edu*), Illinois State University, Normal

**Bethany Thomas** (*bthomas@normal.org*), Children's Discovery Museum, Normal, Ill.

Learn strategies on how to combine resources and expertise to create a one-day STEAM event that addresses scientific and engineering practices.

**9:30–10:30 AM Hands-On Workshops****Watershed and Wetlands Sustainability***(Grades 3–11)**B13, Convention Center*

Science Focus: INF, GEN, NGSS

**Judith Lucas-Odom**, Toby Farms Elementary School, Brookhaven, Pa.

Wade into using the engineering design process to teach about watersheds and wetlands. Integrate the NGSS while showing your students their importance in maintaining life all around us and how to keep them viable.

**Captivate Students' Interests Beyond the Classroom with Chemistry***(Grades 8–12)**E10A, Convention Center*

Science Focus: INF, PS

**Karen Kaleuati** (@ACSCChemClubs; [k\\_kaleuati@acs.org](mailto:k_kaleuati@acs.org)), American Chemical Society, Washington, D.C.

The ACS ChemClub program provides—at no cost to schools—fun, valuable resources. Learn about the program, experience a meeting, and take home a copy of the resources.

**Be a Butterfly Doctor Doing Citizen Science with Project MonarchHealth***(Grades 1–12)**E10C, Convention Center*

Science Focus: INF, LS1.B, LS2.A, LS2.B, CCC2, CCC7, SEP2

**Donna Gast** ([dlgast@ix.netcom.com](mailto:dlgast@ix.netcom.com)), Oconee County Middle School, Watkinsville, Ga.

Presider: Regina Bundy, Hines Middle School, Newport News, Va.

Learn techniques used by scientists studying diseased monarchs via safe, high-interest activities and find out how students can contribute data to Project *MonarchHealth*. Lesson plans and freebies!

**How Weather Becomes Climate, Using Graphs***(Grades K–5)**Salon E, Marriott*

Science Focus: ESS, CCC, SEP

**Skyler Wiseman** ([skylerb@wustl.edu](mailto:skylerb@wustl.edu)), Washington University in St. Louis, Mo.

How does a third-grader progress from collecting local weather data to thinking about global climate patterns? This workshop reviews the field-tested results of a new MySci unit on weather and climate. Join me and precipitate new learning in your classroom.

**10:00–11:15 AM Exhibitor Workshops****Waves, Energy, and Color***(Grades 6–8)**E10D, Convention Center*

Science Focus: ETS2, PS4

Sponsor: LAB-AIDS®, Inc.

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

Although we live an EM waves-enabled lifestyle, most of us have no idea how they work. Join LAB-AIDS for an NGSS-based waves activity from SEPUP's *Issues and Physical Science* program. Explore light properties by investigating colors of the visible spectrum and their energy levels using phosphorescent material. SEPUP embeds research-based practices and real issues for powerful content learning.

**Telling Molecular Stories with David Goodsell's Cellular Landscapes***(Grades 9–College)**E21C, Convention Center*

Science Focus: LS1.A, LS1.D, LS4.D, CCC1, CCC2, CCC3, CCC4, CCC6, SEP1, SEP2

Sponsor: 3D Molecular Designs

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), 3D Molecular Designs, Milwaukee, Wis.

These amazing landscapes allow you to tell molecular stories. In “Your Flu Shot in Action” story, students trace the expression of an antibody gene from the nucleus to the endoplasmic reticulum where docked ribosomes synthesize it. Then the antibody continues to the cell surface via the Golgi and secretory vesicles.



10:00–11:30 AM Special Session



**A Celebration of Literacy & Science: AUTHORS! INSPIRATION!**

(General) *Grand Ballroom C, Convention Center*

Science Focus: GEN

**Molly Bang**, Children's Book Author and Illustrator, Falmouth, Mass.

**Loree Griffin Burns**, Children's Book Author, West Boylston, Mass.

**Vicki Cobb**, Children's Book Author, White Plains, N.Y.

**Emily Morgan**, Picture-Perfect Science, West Chester, Ohio

**Melissa Stewart**, Children's Book Author, Acton, Mass.

**Pamela Turner**, Children's Author, Oakland, Calif.

**Joy Hakim**, Author, Englewood, Colo.

**Gail Hedrick**, Author, Bradenton, Fla.

A panel discussion of the nation's best authors of science trade books will share what inspires them, how they do their work, and how their books can be used in classrooms. These authors have been honored by the Children's Book Council, AAAS/Subaru, and other national organizations.



11:00 AM–12 Noon Presentations

**Before and After Retirement: Practicalities and Possibilities**

(General) *B11, Convention Center*

Science Focus: GEN

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

**Joyce Gleason**, Educational Consultant, Punta Gorda, Fla. The NSTA Retired Advisory Board invites you to a vibrant and useful information sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

**Hollywood BAD Science**

(Grades 6–College) *E10B, Convention Center*

Science Focus: GEN

**Daryl Taylor** (*daryl261@gmail.com*), Greenwich High School, Greenwich, Conn.

Come spend some relaxing time giggling about the over-the-top silly science portrayed in popular media. Freebies for all participants!

**Polymer Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewViar**

(Grades 8–12) *E11C, Convention Center*

Science Focus: PS, INF

**Sherri Rukes** (*scrukes@comcast.net*), Libertyville High School, Libertyville, Ill.

Serve up new learning in your classroom with connections to food science and basic chemistry. Polymers are found all around us. This presentation will give a better understanding of the polymers used in cooking—what polymers are found in food as well as in the tools we use to cook with. Take home a CD of activities and information.

★ **Our Common Planet: A Collaborative Venture**

(Grades K–12) *E21A, Convention Center*

Science Focus: INF, NGSS

**Gail Hall**, Vermont Agency of Education, Barre

Join a discussion on how nonformal environmental educators and the Vermont Agency of Education collaborated to develop an NGSS program for all Vermont teachers of science.

**NASA in Your Hands: Launching STEM to ELLs***(Grades 5–10)**E24A, Convention Center*

Science Focus: ESS, ETS, LS

**Marile Colon Robles** ([marile.colonrobles@nasa.gov](mailto:marile.colonrobles@nasa.gov)), NASA Langley Research Center, Hampton, Va.

Discover the many NASA-inspired resources and hands-on activities that are available in different languages—they're perfect to keep English language learners engaged in the classroom. Topics covered in this presentation are Earth system science, life science, Earth/space systems, and technology using NASA and You (*NASA y Tú*), NASA S'COOL project, GLOBE program, and NASA spinoffs.

**NSTA Press® Session: Citizen Science: Diverse Projects That Bring Biology to Life***(Grades 4–12)**Governors Room (B20), Convention Center*

Science Focus: INF, SEP

**LoriAnne Barnett** ([@loriannebarnett](mailto:@loriannebarnett); [lorianne@usanpn.org](mailto:lorianne@usanpn.org)), USA National Phenology Network, Tucson, Ariz.**Jill Nugent** ([@ntxscied](mailto:@ntxscied); [jillfnugent@gmail.com](mailto:jillfnugent@gmail.com)), Texas Tech University, Lubbock

Motivate your students with real data! Meeting standards goes hand in hand with student investigations and contributing data to citizen science. No matter the season, budget, or amount of time and technology you have, we'll show you how to engage your students with citizen science.

**Connecting Students to Scientists and Teachers to Teachers via Twitter—Seriously, This Is for Real!***(Grades 9–12)**Lecture Hall (B10), Convention Center*

Science Focus: GEN, SEP1, SEP7, SEP8

**Adam Taylor**, Overton High School, Nashville, Tenn.**Tricia Shelton** ([@tdishelton](mailto:@tdishelton); [tricia.shelton@boone.kyschools.us](mailto:tricia.shelton@boone.kyschools.us)), Boone County High School, Florence, Ky.

Join the science “twibe.” Find out how to connect your students with scientists through Twitter—so students and teachers can form partnerships in learning that extend beyond classroom walls.

**11:00 AM–12 Noon Hands-On Workshops****Feeding the World with Solar Power***(Grades 6–12)**B15A, Convention Center*

Science Focus: ESS, ETS, LS, PS, CCC3, CCC4, SEP1, SEP2, SEP3

**Pamela Phillips**, South Campus Community School, Smithfield, N.C.

Find out how to integrate science and social studies by teaching about the women of the Sudan who use solar ovens to feed their families. Participants will create solar ovens out of pizza boxes, plastic sheeting, Pringles® cans, and skewers.

**Discover Karst Groundwater Through Project Underground***(Grades 5–College)**B15B, Convention Center*

Science Focus: ESS2.B, ESS2.C, ESS2.D, ESS3.A, ESS3.C

**Carol Zokaite**, Virginia Dept. of Conservation and Recreation, Christiansburg

Where does the water go in karst topography? Discover through activities. Karst has sinkholes, springs, sinking streams, and caves—as well as covers 20% of the U.S.

**Plan a Space Probe Mission!***(Grades 7–College)**E10A, Convention Center*

Science Focus: ESS, CCC1, CCC3, CCC6, SEP4, SEP7

**Jeffery Adkins** ([@astronomyteacher](mailto:@astronomyteacher); [astronomyteacher@mac.com](mailto:astronomyteacher@mac.com)), Deer Valley High School, Antioch, Calif.**Bruce Hemp** ([bhemp@ntelos.net](mailto:bhemp@ntelos.net)), Fort Defiance High School, Fort Defiance, Va.

President: Jacob Cox, Educational Technologies Group, Royal Society of Chemistry, Lexington, Va.

Learn about Kepler's Laws and how to plan a space mission in only four easy steps. Join us for a surefire boost to your classroom instruction.

**Scientists for Tomorrow: A STEM Out-of-School-Time Program in Community Centers***(Grades 6–10)**E10C, Convention Center*

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

**Marcelo Caplan** ([mcaplan@colum.edu](mailto:mcaplan@colum.edu)), Columbia College Chicago, Ill.

Receive an overview of the NSF-ISE Scientists for Tomorrow program and then engage in hands-on activities from the module “Physics of Sound and Mathematics of Music.”



### Plant the STEM...A Program That Kids Dig!

(Grades P–7)

Salon C/D, Marriott

Science Focus: GEN, NGSS

**Kaleela Thompson** (@plantthestem; [klt.myhomehistory@msn.com](mailto:klt.myhomehistory@msn.com)), Teen Author/Entrepreneur, Hampton, Va.

Roll up your sleeves and design and build your own Butterfly Bell habitat. Get set to be amazed on your fantastic journey to Kaleela's butterfly garden.

### Art in Science Class? YES!

(Grades 1–8)

Salon E, Marriott

Science Focus: GEN, NGSS

**Sherry Scott** ([swscott@tntech.edu](mailto:swscott@tntech.edu)) and **Stephanie Wendt**, Tennessee Tech University, Cookeville

Learn the benefits of including art in your science class, see a variety of examples, and be prepared to make some as well! You don't need to be an artist or have a bunch of expensive supplies to create art that is fun and purposeful.

### Genetics Is Elementary—Teaching the Principles of Genetics to Early Elementary Students

(Grades 1–3)

Salon F, Marriott

Science Focus: LS1.A, LS1.B

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

Investigate patterns of inheritance through the eyes of K–3 students as we engage in an interactive lesson that addresses the NGSS and CCSS ELA.

### 11:45 AM–1:15 PM Special Session



#### A Celebration of Literacy & Science: Meet and Greet Outstanding Authors

(General)

Grand Ballroom C, Convention Center

Science Focus: GEN

**Juliana Texley** (@Juliana.Texley; [juliana.texley@nsta.org](mailto:juliana.texley@nsta.org)), NSTA President, Boca Raton, Fla.

**Jean Pelezo**, New Century International Middle School, Fayetteville, N.C.

**Candace Lutzow-Felling**, Chairperson, NSTA Richmond Area Conference; NSTA Director, Informal Science; and UVA/Blandy Ecological Field Research Station, Boyce, Va.

**J. Carrie Launius**, Normandy Schools Collaborative, St. Louis, Mo.

Children and their parents are invited to visit with authors to explore their mutual curiosity and wonder about the natural world. Families and homeschoolers will also be able to tour the NSTA exhibit hall and the NSTA Science Store between 9:00 AM and 12 Noon on Saturday. Lunch will be available at the food court concessions.

### 12:30–1:30 PM Presentations

#### Additive Manufacturing—From Bytes to Bits

(Grades 6–12)

B11, Convention Center

Science Focus: INF

**William Royal**, Clinch School, Sneedville, Tenn.

Thinking about implementing a 3-D printing program from scratch? I'll share lessons learned and successes achieved from starting a 3-D printing program for career technical education and how the activities address the CCSS.

#### Bay to Bay: A Multidisciplinary Watershed Investigation for Teachers

(Grades 5–12)

B13, Convention Center

Science Focus: ESS2.C, ESS2.D, ESS3.A, ESS3.C, ESS3.D, LS2.C, LS4.C, SEP1, SEP3, SEP4

**Christopher Petrone** (@seaPetrone; [petrone@udel.edu](mailto:petrone@udel.edu)), Delaware Sea Grant Marine Advisory Service, Lewes

**Theresa Craig** ([theresa.craig@state.de.us](mailto:theresa.craig@state.de.us)), Delaware Dept. of Services for Children, Youth, and Their Families, Wilmington

**Tamara Hartz**, Laurel Intermediate Middle School, Laurel, Del.

**Kristina Lowe** ([kristina.lowe@irsd.k12.de.us](mailto:kristina.lowe@irsd.k12.de.us)), Indian River School District, Selbyville, Del.

Discussion centers on the design, implementation, and evaluation of a multifaceted teacher-investigation of how watersheds help build our economy and way of life, and how we restore them.



#### ✓ Growing with Water

(Grades 6–12)

B15A, Convention Center

Science Focus: INF, CCC

**Tamara Pellien** ([pellien@aesop.rutgers.edu](mailto:pellien@aesop.rutgers.edu)), Rutgers Cooperative Extension, Toms River, N.J.

Get your hands out of the dirt and into water with "Growing with Water," an interactive school-based gardening program for teachers to implement.



### Planning Field Science Experiences: Lessons Learned from MWEEs

(Grades 6–12)

B15B, Convention Center

Science Focus: INF, SEP2

**Sarah McGuire** (@slm0713; [mcguire@vims.edu](mailto:mcguire@vims.edu)), Chesapeake Bay National Estuarine Research Reserve, Gloucester Point, Va.

**Carol Hopper Brill** ([chopper@vims.edu](mailto:chopper@vims.edu)), Virginia Institute of Marine Science, Gloucester Point

Boost your confidence to take your students on meaningful watershed educational experiences (MWEEs)! Virginia Institute of Marine Science educators will share best practices for planning and conducting MWEEs.

### A Fun and Relevant Way to Teach Physical Science (Chemistry) Concepts

(Grades 9–12)

E10B, Convention Center

Science Focus: PS

**Debbie Goodwin** ([nywin@hotmail.com](mailto:nywin@hotmail.com)), Chillicothe High School, Chillicothe, Mo.

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

Generate grades 9–12 student interest and understanding of STEM with labs and demonstrations that relate automobiles to physical science (chemistry) concepts. Correlations to the CCSS included as well as an informational CD.

### ★ How Delaware Left No Child Inside

(Grades K–12)

E21A, Convention Center

Science Focus: INF, NGSS

**Tonyea Mead** ([tmead@doe.k12.de.us](mailto:tmead@doe.k12.de.us)), Delaware Dept. of Education, Dover

Hear how two agencies, the Department of Education and Department of Natural Resources, worked together to develop an action plan to address the interrelated challenges of providing all children with outdoor experiences, improving children's health, promoting environmental literacy, and increasing student achievement.

### Backward Faded Scaffolding in an Informal Learning Environment—Misconceptions Managed!

(Grades 3–College)

E24A, Convention Center

Science Focus: ESS, INF, CCC, DCI, SEP2, SEP3, SEP6

**Ken Brandt** (@kbrandt1213; [kenneth.brandt@roberson.k12.nc.us](mailto:kenneth.brandt@roberson.k12.nc.us)), Robeson Planetarium and Science Center, Lumberton, N.C.

Backward Faded Scaffolding (BFS) is a method where you start with a concept, and work backwards to arrive at a new model for how that concept operates. Come explore three examples. Students arrive at your facility with a plethora of problematic processing issues regarding basic astronomy concepts. This is one potential method for addressing these and other misbegotten notions of celestial motion.



### NSTA Press® Session: Models and Approaches to STEM Professional Development

(General)

Governors Room (B20), Convention Center

Science Focus: GEN

**Brenda Wojnowski** ([brenda@waieducation.com](mailto:brenda@waieducation.com)), WAI Education Solutions, Dallas, Tex.

**Celestine Pea**, National Science Foundation, Arlington, Va.

**Elaine Woo** ([elainewoo@aol.com](mailto:elainewoo@aol.com)), Elaine Woo Consulting, Bellevue, Wash.

Editors and authors will explore practices and strategies for making STEM professional development more effective through a focus on the research-based underpinnings of reform efforts.

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

(Grades 9–12)

Lecture Hall (B10), Convention Center

Science Focus: GEN, NGSS

**Anthony Bertino** ([nolanp@nycap.rr.com](mailto:nolanp@nycap.rr.com)) and **Patricia Nolan Bertino** ([nolanp@nycap.rr.com](mailto:nolanp@nycap.rr.com)), Retired Educators, Scotia, N.Y.

Solve real-life problems integrating science, technology, and math using free or inexpensive iPad and iPhone apps. We'll cover time of death, anthropology, facial recognition, ballistics, crime scene documentation, and more.

**Foraging, Food, and Flow: Energy and Matter in Food Chains and Food Webs**

(Grades 3–5)

Salon F, Marriott

Science Focus: LS, CCC, SEP

**Amy Trauth-Nare** (*anare@udel.edu*), University of Delaware, Newark

**Amanda McLemore** (*amclem1@students.towson.edu*), Towson University, Towson, Md.

Investigate interactions among producers, consumers, and decomposers and explore the flow of energy in ecosystems in a free, completely developed 5E (Engage, Explore, Explain, Elaborate, Evaluate) lesson plan.

**To Kit or Not to Kit? Analyzing, Implementing, and Evaluating Science Materials and Resources**

(Grades K–8)

Salon G/H, Marriott

Science Focus: GEN, NGSS

**Ellen Schiller** (*schillee@gvsu.edu*) and **Jacquelyn Melin** (*melinj@gvsu.edu*), Grand Valley State University, Grand Rapids, Mich.

With the release of the NGSS, many schools are reexamining the science materials they are using. We will share criteria for selecting and evaluating resources.

**12:30–1:30 PM Hands-On Workshops**

**Fish and Wildlife Conservation Education Tools**

(Grades 3–12)

E10C, Convention Center

Science Focus: INF

**Susan Gilley** (*suzie.gilley@dgif.virginia.gov*), Virginia Dept. of Game and Inland Fisheries, Richmond

Incorporate authentic wildlife and field research into your curriculum. State fish and wildlife agencies provide opportunities that can help bridge the gap between formal school settings and the great outdoors. Take home a CD with a complete set of guides.

**Get Energized: Science + Engineering + Problem-Based Learning EQUALS Success**

(Grades 3–6)

Salon E, Marriott

Science Focus: PS3, CCC5

**Elizabeth Edmondson** (*ewedmondson@vcu.edu*) and **Suzanne Kirk** (*svkirk@vcu.edu*), Virginia Commonwealth University, Richmond

**Victoria Reid** (*vbreid@wm.edu*) and **Anne Mannarino** (*amannarino@wm.edu*), College of William & Mary, Williamsburg, Va.

Engage in science and engineering tasks that can energize your classroom. Explore how to develop Problem-Based Learning (PBL) units that lead to student learning.

**1:15–2:15 PM Special Session**



**A Celebration of Literacy & Science: EUREKA! I Found Gold in the Library**

(General)

Grand Ballroom, Convention Center

Science Focus: GEN, NGSS

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

**Suzanne Flynn**, Lesley University and Cambridge College, Cambridge, Mass.

See how the best of science trade books for children and classrooms are chosen. You will learn how to explore NSTA's searchable database of more than 10,000 materials for classrooms to find the best materials.

**2:00–2:30 PM Presentation**



**Childlike Wonder: Using Science Hobbies and Hobbyists to Facilitate a Lifetime Engagement with Science**

(General)

E21A, Convention Center

Science Focus: GEN, INF

**Elysa Corin** (*encorin@ncsu.edu*), **M. Gail Jones**, and **Rebecca Hite** (*@sciencebecca*; *rhite@ncsu.edu*), North Carolina State University, Raleigh

Science hobbyists are an untapped resource in many communities. Learn how to create partnerships with hobbyist groups to advance STEM education inside and outside your classroom.



**2:00–3:00 PM Presentations****Fairfax County Grade 5 Field Guide Development Project***(Grades 5)**B15B, Convention Center*

Science Focus: INF

**LeAnne Astin** (*leanne.astin@fairfaxcounty.gov*), Fairfax County Dept. of Public Works and Environmental Services, Fairfax, Va.

Fairfax County biologists and teachers developed a local field guide for the public school system's "Fields of Science" grade 5 environmental science study unit. Join me as I share field guide specifics and feedback we've received.

**Garage Physics***(Grades 6–College)**E10B, Convention Center*

Science Focus: GEN

**Daryl Taylor** (*daryl261@gmail.com*), Greenwich High School, Greenwich, Conn.

Go "retro"! Use household items to show real-life applications. Demonstrate abstract topics with "magic," toys, and even food. This session is fast paced and lots of fun—freebies for all!

**Understanding Earth's Energy Budget Using NASA Resources***(Grades 6–College)**E24A, Convention Center*

Science Focus: ESS

**Lin Chambers** (*lin.h.chambers@nasa.gov*) and **Tina Harte** (*tina.r.harte@nasa.gov*), NASA Langley Research Center, Hampton, Va.

Learn about NASA's energy budget diagram based on recent satellite data, as well as receive resources and lesson plans to help your students understand this critical Earth concept.

**Science Content + Literacy = Common Core Success***(Grades 3–8)**Salon G/H, Marriott*

Science Focus: GEN, NGSS

**Linda Linnen** (*lslinnen@aol.com*), Retired Teacher, Littleton, Colo.

Appropriate excerpts from several materials will be used to demonstrate how to simultaneously teach science and literacy to upper elementary and middle school students in support of the *Common Core State Standards*.

**2:00–3:00 PM Hands-On Workshops****NSTA Press® Session: Earth Science Puzzles: Making Meaning from Data***(Grades 8–College)**B15A, Convention Center*

Science Focus: ESS

**Margie Turrin** (*mkt@ldeo.columbia.edu*), Lamont-Doherty Earth Observatory, Palisades, N.Y.

Empower your students to learn science the way scientists do—from collected evidence! Infuse Data Puzzles into your Earth and environmental science curriculum.

**Merging the "Bookends" of STEM: Science and Math***(Grades 7–12)**E10A, Convention Center*

Science Focus: GEN, CCC3, CCC4

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

Integrating science and math should be seamless, natural, and painless. Come see how the philosophy of STEM has been alive for a long time.



**Brain Food: Games and Activities to Teach Reasoning Skills for Science and More**

(Grades 3–College)

*E10C, Convention Center*

Science Focus: INF, CCC, SEP1, SEP4, SEP6, SEP6,8

**Paul Fleisher** ([pfleishe@earthlink.net](mailto:pfleishe@earthlink.net)). Author and Educator, Henrico, Va.

Inductive and deductive reasoning are the logical building blocks for scientific inquiry, as well as reading comprehension and problem solving in other disciplines. This workshop will offer a number of engaging games and team activities to help students develop their logic skills and apply them intentionally.

**Grades 3–5 STEM—It’s Easier than You Think**

(Grades 3–5)

*Salon E, Marriott*

Science Focus: ETS, SEP

**Donna Kouri** ([dkouri@mymusic.org](mailto:dkouri@mymusic.org), [cclark@mymusic.org](mailto:cclark@mymusic.org)), MathScience Innovation Center, Richmond, Va.

Discover the ease of implementing STEM lessons and a STEM atmosphere into grades 3–5 classrooms and within the school community.

**Problem-Based Learning: Adding Rigor and Relevance to STEM Instruction**

(Grades 3–5)

*Salon F, Marriott*

Science Focus: GEN, NGSS

**Stan Hill** ([shill@wakehealth.edu](mailto:shill@wakehealth.edu)), Wake Forest University School of Medicine, Winston Salem, N.C.

This workshop actively engages participants in Problem-Based Learning activities that support the *CCSS Mathematics* and *NGSS*.



Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

Biology/Life Science	B
Chemistry/Physical Science	C
Earth/Space Science	EA
Environmental Science	EN
Integrated/General Science	G
Physics/Physical Science	PH
Professional Development	PD
Technology Education	T

Look for a map display of the Exhibit Hall. Maps are also available via our Conference app. Scan QR code to download.



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Simulation Curriculum

**3D Molecular Designs #446**  
1050 N. Market St., CC130A B, C, EA,  
Milwaukee, WI 53202 EN, PD  
Phone: 414-774-6562 6–12, College  
E-mail: [contactus@3dmoleculardesigns.com](mailto:contactus@3dmoleculardesigns.com)  
Website: [www.3dmoleculardesigns.com](http://www.3dmoleculardesigns.com)

Our innovative, hands-on kits and models focus on core ideas and crosscutting concepts in biology, chemistry, and physical and life sciences. We involve teachers in developing kits, writing materials, and field testing. Kits meet STEM and the NGSS. Ask about our new Enzymes in Action Kit® and ATP Model.

**Accelerate Learning #634**  
5615 Kirby Dr., Suite 310 All  
Houston, TX 77004 PreK–12  
Phone: 713-516-6714  
E-mail: [david@acceleratelearning.com](mailto:david@acceleratelearning.com)  
Website: [www.acceleratelearning.com](http://www.acceleratelearning.com)

Accelerate Learning and Rice University are the creators of STEMscopes, a set of curricula that addresses preK–12 NGSS, state, and early childhood science learning standards. Each curriculum was built from the ground up and focuses on driving student ownership through digital and hands-on inquiry-based learning.

**Activate Learning #540**  
44 AMogerene Crossway All  
Greenwich, CT 06836 K–8  
Phone: 646-502-5231  
E-mail: [tpence@sangariglobaled.com](mailto:tpence@sangariglobaled.com)  
Website: [www.sangariglobaled.com](http://www.sangariglobaled.com)

Activate Learning produces and distributes science curriculum products for grades K–8.

**Albert Einstein Distinguished Educator Fellowship #524**  
PD  
1840 Wilson Blvd., Suite 201 K–12  
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The NSTA Professional Learning team supports science educators in school districts and institutions of higher education through a variety of face-to-face, online, and blended experiences tailored to their specific needs. The Learning Center, NSTA's online learning portal, is designed to enhance the content and

pedagogical knowledge of teachers of science. Visit our booth to learn more about the professional learning opportunities available through NSTA.

**NSTA Science Matters #442**  
1840 Wilson Blvd. All  
Arlington, VA 22201 PreK–12  
E-mail: [sciencemattersonline@nsta.org](mailto:sciencemattersonline@nsta.org)  
Website: [www.nsta.org/sciencematters](http://www.nsta.org/sciencematters)

Science/STEM education plays a critical role in our nation's competitiveness and economic future. NSTA's Science Matters Network of parents and teachers dedicated to quality science education provides information and advocacy to inform key stakeholders—including policy makers, educators, business leaders, and scientists—about quality science/STEM education.

**Nutrients for Life Foundation #214**  
425 Third St. SW, Suite 950 B, EA, EN  
Washington, DC 20024 1–12  
Phone: 202-515-2714  
E-mail: [jmcquire@nutrientsforlife.org](mailto:jmcquire@nutrientsforlife.org)  
Website: [www.nutrientsforlife.org](http://www.nutrientsforlife.org)

The Nutrients for Life Foundation is an education nonprofit that provides information and resources to educators and the public about the vital role fertilizers play in feeding our world.

## NSTA Avenue

**The DuPont Challenge  
Booth #547**  
E-mail: [thechallenge@dupont.com](mailto:thechallenge@dupont.com)  
Website: [thechallenge.dupont.com](http://thechallenge.dupont.com)

**eCYBERMISSION  
Booth #544**  
E-mail: [swhitsett@nsta.org](mailto:swhitsett@nsta.org)  
Website: [www.ecybermission.com](http://www.ecybermission.com)

**NGSS@NSTA  
Booth #440**  
E-mail: [ngss@nsta.org](mailto:ngss@nsta.org)  
Website: [www.nsta.org/ngss](http://www.nsta.org/ngss)

**NSTA Membership  
Booth #441**  
E-mail: [tbirts@nsta.org](mailto:tbirts@nsta.org)  
Website: [www.nsta.org/membership](http://www.nsta.org/membership)

**NSTA Professional Learning  
Opportunities  
Booth #447**  
E-mail: [danderson@nsta.org](mailto:danderson@nsta.org)  
Website: [www.nsta.org/conferences](http://www.nsta.org/conferences)

**NSTA Science Matters  
Booth #442**  
E-mail: [sciencemattersonline@nsta.org](mailto:sciencemattersonline@nsta.org)  
Website: [www.nsta.org/sciencematters](http://www.nsta.org/sciencematters)

**Shell Science Lab Challenge  
Booth #546**  
E-mail: [shellsciencelab@nsta.org](mailto:shellsciencelab@nsta.org)  
Website: [www.nsta.org/shellsciencelab](http://www.nsta.org/shellsciencelab)

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Roseville, CA 95747 K-12, College  
Phone: 800-772-8700  
E-mail: [sales@pasco.com](mailto:sales@pasco.com)  
Website: [www.pasco.com](http://www.pasco.com)

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Moberly, MO 65270-0457 EN, G, PH, T  
Phone: 660-263-9393 K-12, College  
E-mail: [dave@pepcoinc.com](mailto:dave@pepcoinc.com)  
Website: [www.pepcoinc.com](http://www.pepcoinc.com)

PEPCO is a family-owned manufacturer of lab furniture serving school districts nationwide. Utilizing only the finest materials available

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Pittsburg, KS 66762 K-12  
Phone: 620-231-0000  
E-mail: [aricks@pitsco.com](mailto:aricks@pitsco.com)  
Website: [www.pitsco.com](http://www.pitsco.com)

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**Project Learning Tree** #333  
2000 M St. NW, Suite 550 EN, PD  
Washington, DC 20036 PreK-12  
Phone: 202-765-3641  
E-mail: [information@plt.org](mailto:information@plt.org)  
Website: [www.plt.org](http://www.plt.org)

Project Learning Tree is a nationally award-winning environmental education program designed for preK-12 formal and nonformal educators. The supplementary materials provide hands-on/minds-on multidisciplinary activities.

**Renaissance Learning, Inc.** #622  
2911 Peach St. PD, T  
Wisconsin Rapids, WI 54494 K-12  
Phone: 715-424-3636  
E-mail: [julie.veprone@renaissance.com](mailto:julie.veprone@renaissance.com)  
Website: [www.renaissance.com](http://www.renaissance.com)

Renaissance Learning™ is a leading provider of cloud-based assessment and teaching and learning solutions that fit the K-12 classroom, improve school performance, and accelerate learning for all. Renaissance Learning enables educators to deliver highly differentiated and timely instruction while driving personalized student practice in reading, writing, and math every day.

**School Specialty Science** #314  
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Nashua NH 03063

School Specialty Science brings together the very best curriculum with FOSS® and CPO Science; classroom resources, equipment, and

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86475 Gene Lasserre Blvd. B, C, EA, EN,  
Yulee, FL 32097 G, PH, T  
Phone: 904-225-5558 PreK-12, College  
E-mail: [helmut.albrecht@sciencefirst.com](mailto:helmut.albrecht@sciencefirst.com)  
Website: [www.sciencefirst.com](http://www.sciencefirst.com); [www.starlab.com](http://www.starlab.com)

Science First/STARLAB specializes in the design, manufacturing, and marketing of high-quality educational science products such as our Eurosmart data-logging equipment and our portable planetariums. Our classic and digital planetariums create an exciting, immersive, and lasting learning experience.

**Shell Science Lab Challenge** #546  
1840 Wilson Blvd.  
Arlington, VA 22201 6-12  
Phone: 703-312-9378  
E-mail: [shellsciencelab@nsta.org](mailto:shellsciencelab@nsta.org)  
Website: [www.nsta.org/shellsciencelab](http://www.nsta.org/shellsciencelab)

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**Simulation Curriculum** #337  
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Phone: 952-653-0493  
E-mail: [mgoodman@simcur.com](mailto:mgoodman@simcur.com)  
Website: [www.simulationcurriculum.com](http://www.simulationcurriculum.com)

Simulation Curriculum is a developer of award-winning interactive Earth and space science curriculum solutions for elementary school, middle school, high school, and college.

**Skulls Unlimited International, Inc. #621**  
 10313 S. Sunnylane Rd.  
 Oklahoma City, OK 73160  
 Phone: 405-794-9300  
 E-mail: [sales@skullsunlimited.com](mailto:sales@skullsunlimited.com)  
 Website: [www.skullsunlimited.com](http://www.skullsunlimited.com)

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 Kingwood, TX 77339 EN, G, PH, T  
 Phone: 281-312-1297 PreK-12, College  
 E-mail: [david@smartschoolsystems.com](mailto:david@smartschoolsystems.com)  
 Website: [www.smartschoolsystems.com](http://www.smartschoolsystems.com)

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 Website: [www.SouthernTeachers.com](http://www.SouthernTeachers.com)

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 Phone: 877-395-1001  
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 Website: [www.schooltr.com](http://www.schooltr.com)

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 Boston, MA 02117  
 Phone: 781-924-5036  
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**U.S. EPA SunWise Program #627**  
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 Website: [www.epa.gov/sunwise](http://www.epa.gov/sunwise)

SunWise is an environmental and health education program that teaches children and their caregivers how to protect themselves from overexposure to the Sun through the use of classroom, school, and community components.



## Exhibitors

**Vernier Software & Technology #515**  
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Beaverton, OR 97005 3–12, College  
Phone: 888-837-6437  
E-mail: [info@vernier.com](mailto:info@vernier.com)  
Website: [www.vernier.com](http://www.vernier.com)

Vernier Software & Technology is a leading innovator of scientific data-collection technology. Focused on STEM, Vernier is dedicated to developing creative ways to teach and learn using hands-on science. Vernier creates easy-to-use and affordable science interfaces, sensors, and graphing/analysis software. Vernier's technology-based solutions enhance STEM education, increase learning, and build students' critical-thinking skills.

**Virginia Air & Space Center #233**  
600 Settlers Landing Rd. EA, EN, G, PH, T  
Hampton, VA 23669 3–12, College  
Phone: 412-491-3125  
E-mail: [akarelitz@vasc.org](mailto:akarelitz@vasc.org)  
Website: [www.vasc.org](http://www.vasc.org)

The Virginia Air & Space Center, NASA Langley's Visitor Center, educates and inspires explorers of all ages through interactive and hands-on exhibits. The Planeterra, one of the newest additions to the center, provides

visitors with an incredible visual simulation of the Northern Lights right in front of their eyes.

**Western Governors University #324**  
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Salt Lake City, UT 84107 EN, G, PH  
Phone: 866-225-5948 5–12  
E-mail: [jenny.pink@wgu.edu](mailto:jenny.pink@wgu.edu)  
Website: [www.wgu.edu](http://www.wgu.edu)

Western Governors University is a private non-profit university offering convenient, affordable, and flexible education—all online. The Teachers College at Western Governors University offers regionally, nationally, and NCATE-accredited competency-based bachelor's and master's degree programs leading to licensure or for already licensed teachers.

**WhiteBox Learning #534**  
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Louisville, KY 40245 PH, PD, T  
Phone: 502-396-7259  
E-mail: [graham@whiteboxlearning.com](mailto:graham@whiteboxlearning.com)  
Website: [www.whiteboxlearning.com](http://www.whiteboxlearning.com)

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Charlottesville, VA 22902 6–12, College  
Phone: 855-868-5490  
E-mail: [requestinfo@worldstrides.org](mailto:requestinfo@worldstrides.org)  
Website: [www.worldstridesdiscovernow.org](http://www.worldstridesdiscovernow.org)

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Friday, Oct. 17	4:00–5:15 PM	E10B, Conv. Center	Implementing an NGSS-based Middle School PBIS™ Curriculum with Fidelity (p. 89)

## LAB-AIDS®, Inc. (Booth #519)

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Thursday, Oct. 16	8:00–9:15 AM	E10D, Conv. Center	Investigating Gas Exchange (p. 46)
Thursday, Oct. 16	10:00–11:15 AM	E10D, Conv. Center	Chemical Formula and Amino Acids (p. 48)
Thursday, Oct. 16	12:30–1:45 PM	E10D, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 54)
Thursday, Oct. 16	2:15–3:30 PM	E10D, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 58)
Thursday, Oct. 16	4:00–5:15 PM	E10D, Conv. Center	Investigating Stem Cell Differentiation (p. 63)
Friday, Oct. 17	8:00–9:15 AM	E10D, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It's a Plant's Life! (p. 69)
Friday, Oct. 17	10:00–11:15 AM	E10D, Conv. Center	Waves, Energy, and Color (p. 74)
Friday, Oct. 17	12 Noon–1:15 PM	E10D, Conv. Center	DuPont Presents: The Science of Food Safety (p. 79)
Friday, Oct. 17	2:00–3:15 PM	E10D, Conv. Center	Investigating a Cliff Model (p. 84)
Friday, Oct. 17	4:00–5:15 PM	E10D, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 89)
Saturday, Oct. 18	8:00–9:15 AM	E10D, Conv. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 95)
Saturday, Oct. 18	10:00–11:15 AM	E10D, Conv. Center	Waves, Energy, and Color (p. 97)

## LearnEd Notebooks (Booth #332)

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Friday, Oct. 17	12 Noon–1:15 PM	E21C, Conv. Center	Streamline Your Preparation and Presentation with Student Notebooks (p. 79)
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## LEGO Education (Booth #429)

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Thursday, Oct. 16	10:00–11:15 AM	E21C, Conv. Center	MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started (p. 49)
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## MSOE Center for Biomolecular Modeling (Booth #444)

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Thursday, Oct. 16	2:15–3:45 PM	E21B, Conv. Center	Genes, Genomes, and the New World of Personalized Medicine (p. 59)
Thursday, Oct. 16	4:00–5:15 PM	E21B, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 64)
Friday, Oct. 17	10:00–11:15 AM	E21C, Conv. Center	Protein Modeling: A Science Olympiad Event and the NGSS (p. 75)

## National Geographic Learning (Booth #223)

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Thursday, Oct. 16	2:15–3:45 PM	E11B, Conv. Center	National Geographic Explorers and STEM—From the World to Your Classroom! (p. 59)
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## NewPath Learning (Booth #426)

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Friday, Oct. 17	2:00–3:15 PM	E10A, Conv. Center	Integrating Online Learning into the Science Classroom (p. 84)
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## PASCO scientific (Booth #422)

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Friday, Oct. 17	8:00–9:15 AM	E10C, Conv. Center	Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab! (p. 69)
Friday, Oct. 17	10:00–11:15 AM	E10C, Conv. Center	Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology (p. 74)
Friday, Oct. 17	12 Noon–1:15 PM	E10C, Conv. Center	Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software! (p. 79)

## Pearson (Booth #315)

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Friday, Oct. 17	8:00–9:15 AM	E21B, Conv. Center	Beyond Climate to Global Change—Welcome to the Anthropocene! (p. 70)
Friday, Oct. 17	10:00–11:15 AM	E21B, Conv. Center	Reflecting on Engineering Design (p. 75)
Friday, Oct. 17	12 Noon–1:15 PM	E21B, Conv. Center	Blast into NGSS by Designing a STEM Project (p. 79)
Friday, Oct. 17	2:00–3:15 PM	E21B, Conv. Center	The “E” in STEM: How Do I Incorporate Engineering Practices in a Science Classroom? (p. 85)
Friday, Oct. 17	4:00–5:15 PM	E21B, Conv. Center	Using Problem-Based Learning to Up Your NGSS Game (p. 89)

## Pitsco Education (Booth #425)

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Thursday, Oct. 16	4:00–5:15 PM	E21C, Conv. Center	Straw Rocket Launchers—Impulses, Optimal Launch Angles, Distances, and Hang Times (p. 64)
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## Simulation Curriculum (Booth #337)

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Thursday, Oct. 16	12:30–1:45 PM	E21C, Conv. Center	Stellar Evolution Made Easy (p. 54)
Thursday, Oct. 16	2:15–3:30 PM	E21C, Conv. Center	Plate Tectonics: Continents on the Move (p. 59)
Friday, Oct. 17	8:00–9:15 AM	E21C, Conv. Center	Hurricanes and Typhoons: Nature on the Rampage (p. 70)

## Vernier Software & Technology (Booth #515)

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Friday, Oct. 17	8:00–9:30 AM	E11B, Conv. Center	Chemistry and Biology with Vernier (p. 71)
Friday, Oct. 17	10:00–11:30 AM	E11B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 75)
Friday, Oct. 17	12 Noon–1:30 PM	E11B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 80)
Friday, Oct. 17	2:00–3:30 PM	E11B, Conv. Center	Physics and Physical Science with Vernier (p. 85)

## WhiteBox Learning (Booth #534)

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Thursday, Oct. 16	10:00–11:15 AM	E21B, Conv. Center	The “E” in STEM: 3-D STEM Engineering (p. 49)
Friday, Oct. 17	2:00–3:15 PM	E21C, Conv. Center	The “E” in STEM: 3-D STEM Engineering (p. 85)

## Earth and Space Science

### Thursday

8:00–8:30 AM	4–6	Salon G/H, Marriott	Exotic Bullies: Why Are Invasive Species so Successful and How Do They Affect Native Ecosystems? (p. 43)
8:00–9:00 AM	G	B17, Conv. Center	The Classroom “Without” Walls (p. 43)
8:00–9:00 AM	6–C	B13, Conv. Center	Protecting Our Watersheds to Sustain Ecosystems and Human Health: Examining the Concepts of Bioavailability, Bioaccumulation, and Biomagnification (p. 44)
8:00–9:00 AM	4–9	B15B, Conv. Center	Rain to Drain: Fighting the Flow of Pollution (p. 44)
8:00–9:00 AM	5–9	E24A, Conv. Center	NASA STEM Spanish Immersion: Head in the Clouds Edition (p. 44)
12:30–1:00 PM	11–C	B17, Conv. Center	Scenic Rivers Grassroots Efforts for Conservation, Water Quality, and Economic Vitality (p. 50)
12:30–1:30 PM	8–12	B13, Conv. Center	Bring the Great Lakes and Oceans Watersheds to Your Landlocked Classrooms! (p. 52)
12:30–1:30 PM	K–5	E24A, Conv. Center	SAGE III on the ISS: A Collaborative Effort—Science, Engineering, Math, and Art (p. 52)
12:30–1:45 PM	6–12	E21C, Conv. Center	Stellar Evolution Made Easy (p. 54)
2:00–3:00 PM	6–C	B15A, Conv. Center	Diving Deeper into Science Practice and Crosscutting Concepts with NOAA (p. 56)
2:00–3:00 PM	9–12	B15B, Conv. Center	What Is Envirothon? North America’s Largest Environmental Education Competition! (p. 56)
2:00–3:00 PM	7–12	B19, Conv. Center	Enhance Student Understanding with Experiential Learning (p. 56)
2:00–3:00 PM	9–12	B13, Conv. Center	Climate Education for a Changing Bay (p. 57)
2:15–3:30 PM	5–8	E10C, Conv. Center	Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate Using FOSS (p. 58)
2:15–3:30 PM	6–8	E10D, Conv. Center	Using Climate Proxies to Learn About Earth’s Climate History (p. 58)
2:15–3:30 PM	6–12	E21C, Conv. Center	Plate Tectonics: Continents on the Move (p. 59)
3:30–4:30 PM	G	Lecture Hall (B10), Conv. Ctr.	Featured Presentation: Water in a Changing World Offers Much to Teach About (p. 60)
3:30–4:30 PM	7–12	B17, Conv. Center	Student-driven Inquiry in Plate Tectonics (p. 60)
3:30–4:30 PM	G	E21A, Conv. Center	Make Broader Impacts: A Network for Connecting Students to Real Science (p. 61)
3:30–4:30 PM	9–C	B13, Conv. Center	Incorporating Climate Change into Your Biology (p. 61)
3:30–4:30 PM	5–12	E24A, Conv. Center	NASA’s SMAP Mission and the GLOBE Program (p. 61)
4:00–5:15 PM	5–8	E10C, Conv. Center	Evidence for Plate Movement with FOSS Earth History for Middle School (p. 63)
5:00–6:00 PM	9–12	B13, Conv. Center	Water, Water Everywhere—But What Will It Support? (p. 65)
5:00–6:00 PM	8–C	B15A, Conv. Center	Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events (p. 65)
5:00–6:00 PM	G	E24A, Conv. Center	Sky Art: Sharing in the Beauty of Nature While Learning the Science Behind It (p. 65)

### Friday

8:00–8:30 AM	6–12	B13, Conv. Center	Dive Underwater and Explore Your Nation’s Estuaries (p. 67)
8:00–9:00 AM	K–12	E24A, Conv. Center	Students’ Cloud Observations Online—From Observing to Understanding Through Classroom-ready Games! (p. 67)
8:00–9:00 AM	6–8	Salon I/J, Marriott	Stormwater Literacy Project (p. 68)
8:00–9:15 AM	6–12	E21B, Conv. Center	Beyond Climate to Global Change—Welcome to the Anthropocene! (p. 70)
8:00–9:15 AM	6–12	E21C, Conv. Center	Hurricanes and Typhoons: Nature on the Rampage (p. 70)
9:30–10:30 AM	3–5/C	B13, Conv. Center	Integrating Teacher and Student Learning in Water-shed Science Education (p. 72)
9:30–10:30 AM	5–12	B15A, Conv. Center	Working the NGSS into Your Curriculum Through Ocean Exploration (p. 73)

## Schedule at a Glance Earth and Space Science

9:30–10:30 AM	6–12	Ballroom C (B21C, Conv. Ctr.	Harnessing the Power of Earth System Science for Developing Science Practices and Crosscutting Concepts (p. 73)
9:30–10:30 AM	K–8	Salon E, Marriott	AMSE Session: Creating and Implementing Effective Watershed Lessons for All Students: Use of <i>Next Generation Science Standards</i> Appendix D and Case Studies (p. 74)
10:00–11:15 AM	9–12	E10B, Conv. Center	Earth and Space Science—More Pertinent Today, More Important to Our Future (p. 74)
11:00–11:30 AM	P–2	B13, Conv. Center	Connecting Young Children to Nature: Activities and Resources Appropriate for PreK–2 (p. 75)
11:00 AM–12 Noon	5–12	B17, Conv. Center	Engage Your Students with NOAA’s Ocean Acidification and Coral Reef Resources (p. 76)
11:00 AM–12 Noon	K–12	E24A, Conv. Center	Data Visualization Made Easy Through the MY NASA DATA Live Access Server (p. 77)
11:00 AM–12 Noon	6–12	Ballroom C (B21C), Conv. Ctr.	How Weird Can It Get? Developing Weather and Climate Literacy (p. 77)
2:00–3:00 PM	K–12	B17, Conv. Center	Captivate Your Students Using Data Visualizations and Learn How to Integrate Global Environmental Data into Your Classroom (p. 81)
2:00–3:00 PM	3–6	B13, Conv. Center	A Drop in My Drink—Diving into Water Activities Through Trade Books (p. 82)
2:00–3:00 PM	6–12	Ballroom C (B21C), Conv. Ctr.	Earth Science Rocks! Using Earth Science Activities to Engage Students as Scientists (p. 83)
2:00–3:15 PM	6–8	E10D, Conv. Center	Investigating a Cliff Model (p. 84)
3:30–4:30 PM	6–12	B17, Conv. Center	Using Real-Time NOAA Data to Support the NGSS (p. 86)
3:30–4:30 PM	K–5	E24A, Conv. Center	Elementary GLOBE Storybooks: Building Science Inquiry and Literacy Skills (p. 86)
3:30–4:30 PM	3–5	Governors (B20), Conv. Ctr.	NSTA Press® Session: Showcasing How Elementary Preservice Interns Teach Inside Out (p. 87)
3:30–4:30 PM	6–9	Salon G/H, Marriott	Helping Students Discover the Connection Between the Environment and Human Health (p. 87)
3:30–4:30 PM	7–12	B12, Conv. Center	The Case of the Hungry Heron: A PBL Unit on Ecosystems and Experimental Design (p. 87)
3:30–4:30 PM	6–12	Ballroom C (B21C), Conv. Ctr.	Using Data in the Earth and Space Science Classroom to Engage Students as Real Scientists (p. 88)
5:00–6:00 PM	K–12	B15B, Conv. Center	How NOAA’s Educational Resources and Funding Advance K–12 Watershed Education (p. 90)
5:00–6:00 PM	K–12	E24A, Conv. Center	MY NASA DATA: An Authentic STEM Experience (p. 90)
5:00–6:00 PM	G	Ballroom C (B221C, Conv. Ctr.	National Earth Science Teachers Association Rock & Mineral Raffle (p. 91)

### Saturday

8:00–9:00 AM	K–6	E24A, Conv. Center	Students’ Cloud Observations Online: A Project for Cross-curricular Learning (p. 93)
8:00–9:00 AM	9–12	B13, Conv. Center	Water Quality Monitoring and Service Learning at the Chesapeake Bay Governor’s School for Marine and Environmental Science (p. 94)
8:00–9:00 AM	5–C	E10A, Conv. Center	Using Real Earthquake Data in Middle School and High School Plate Tectonics and Natural Hazards Lessons (p. 94)
8:00–9:15 AM	9–12	E10D, Conv. Center	Using Climate Proxies to Learn About Earth’s Climate History (p. 95)
9:30–10:30 AM	6–C	E24A, Conv. Center	NASA’s High-Energy Vision—Chandra and the X-Ray Universe (p. 96)
9:30–10:30 AM	K–5	Salon E, Marriott	How Weather Becomes Climate, Using Graphs (p. 97)
11:00 AM–12 Noon	5–10	E24A, Conv. Center	NASA in Your Hands: Launching STEM to ELLs (p. 99)
11:00 AM–12 Noon	6–12	B15A, Conv. Center	Feeding the World with Solar Power (p. 99)
11:00 AM–12 Noon	5–C	B15B, Conv. Center	Discover Karst Groundwater Through Project Underground (p. 99)
11:00 AM–12 Noon	7–C	E10A, Conv. Center	Plan a Space Probe Mission! (p. 99)
12:30–1:30 PM	5–12	B13, Conv. Center	Bay to Bay: A Multidisciplinary Watershed Investigation for Teachers (p. 100)



## Schedule at a Glance Earth and Space Science

12:30–1:30 PM	3–C	E24A, Conv. Center	Backward Faded Scaffolding in an Informal Learning Environment—Misconceptions Managed! (p. 101)
2:00–3:00 PM	6–C	E24A, Conv. Center	Understanding Earth’s Energy Budget Using NASA Resources (p. 103)
2:00–3:00 PM	8–C	B15A, Conv. Center	NSTA Press® Session: <i>Earth Science Puzzles: Making Meaning from Data</i> (p. 103)

### Engineering, Technology, and the Application of Science

#### Thursday

8:00–9:00 AM	9–12	B12, Conv. Center	Engineer Your World: Integrating Engineering Design, Computational Thinking, and 21st-Century Skills (p. 43)
8:00–9:00 AM	G	B17, Conv. Center	The Classroom “Without” Walls (p. 43)
8:00–9:00 AM	6–C	B13, Conv. Center	Protecting Our Watersheds to Sustain Ecosystems and Human Health: Examining the Concepts of Bioavailability, Bioaccumulation, and Biomagnification (p. 44)
8:00–9:15 AM	5–12	E10A, Conv. Center	A STEM Approach to Teaching Electricity and Magnetism (p. 46)
8:00–9:15 AM	3–5	E10C, Conv. Center	Engineering Design in the FOSS Next Generation Program (p. 46)
10:00–11:15 AM	5–C	E21B, Conv. Center	The “E” in STEM: 3-D STEM Engineering (p. 49)
10:00–11:15 AM	6–9	E21C, Conv. Center	MINDSTORMS® EV3 Robotics in the Middle School Classroom—Getting Started (p. 49)
12:30–1:45 PM	9–12	E10D, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 54)
2:00–3:00 PM	6–C	B15A, Conv. Center	Diving Deeper into Science Practice and Crosscutting Concepts with NOAA (p. 56)
2:00–3:00 PM	7–12	B19, Conv. Center	Enhance Student Understanding with Experiential Learning (p. 56)
3:30–4:30 PM	G	E21A, Conv. Center	Make Broader Impacts: A Network for Connecting Students to Real Science (p. 61)
3:30–4:30 PM	9–C	B13, Conv. Center	Incorporating Climate Change into Your Biology (p. 61)
4:00–5:15 PM	6–9	B15C, Conv. Center	Modeling in Engineering Design—From Ideas to Reality (p. 63)
4:00–5:15 PM	5–12	E10A, Conv. Center	Building an Electric Motor the STEM Way (p. 63)
5:00–6:00 PM	8–C	B15A, Conv. Center	Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events (p. 65)
5:00–6:00 PM	G	B15B, Conv. Center	Seeing Math Patterns in Nature with Kids of All Ages (p. 65)
5:00–6:00 PM	6–12	B18, Conv. Center	Engineering: The Missing Piece of the Puzzle! (p. 65)

#### Friday

8:00–9:15 AM	6–12	E10D, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It’s a Plant’s Life! (p. 69)
10:00–11:15 AM	6–8	E10D, Conv. Center	Waves, Energy, and Color (p. 74)
10:00–11:15 AM	K–12	E21B, Conv. Center	Reflecting on Engineering Design (p. 75)
10:00–11:15 AM	9–12	E21C, Conv. Center	Protein Modeling: A Science Olympiad Event and the NGSS (p. 75)
11:00 AM–12 Noon	P–5	B15A, Conv. Center	Sea Turtles and STEM (p. 77)
11:00 AM–12 Noon	1–8	Salon C/D, Marriott	Roller Coaster Science (p. 78)
11:00 AM–12 Noon	K–5	Salon E, Marriott	Infusing an Elementary Classroom with S.T.E.A.M. Power (p. 78)
12 Noon–1:15 PM	6–12	E10D, Conv. Center	DuPont Presents: The Science of Food Safety (p. 79)
12 Noon–1:15 PM	K–12	E21B, Conv. Center	Blast into NGSS by Designing a STEM Project (p. 79)
2:00–3:00 PM	5–C	B15A, Conv. Center	Developing Spatial Visual Skills of Middle School Girls Through 3-D Printing in Informal Science Settings (p. 81)
2:00–3:00 PM	9–12	E24A, Conv. Center	The Engineering Grand Challenges as a Focus of Cross-Curricular Project Based Learning (p. 82)
2:00–3:00 PM	K–2	Salon E, Marriott	K–2 STEM—It’s Easier than You Think (p. 83)
2:00–3:15 PM	6–9	B15C, Conv. Center	“Hard” Doesn’t Mean “Bad”: Helping Students Understand That Facing Challenges Is a Good Thing (p. 84)

## Schedule at a Glance Engineering, Technology, and the Application of Science

2:00–3:15 PM	9–12	E10B, Conv. Center	Engineering the Future®: A Practical Approach to STEM for High School (p. 84)
2:00–3:15 PM	6–8	E10D, Conv. Center	Investigating a Cliff Model (p. 84)
2:00–3:15 PM	K–12	E21B, Conv. Center	The “E” in STEM: How Do I Incorporate Engineering Practices in a Science Classroom? (p. 85)
2:00–3:15 PM	5–C	E21C, Conv. Center	The “E” in STEM: 3-D STEM Engineering (p. 85)
3:30–4:30 PM	6–9	Salon G/H, Marriott	Helping Students Discover the Connection Between the Environment and Human Health (p. 87)
3:30–4:30 PM	3–8	Salon C/D, Marriott	Engineering: Build a Better Kaleidoscope! (p. 88)
4:00–5:15 PM	6–12	E10D, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 89)

### Saturday

8:00–9:15 AM	9–12	E10D, Conv. Center	Using Climate Proxies to Learn About Earth’s Climate History (p. 95)
9:30–10:30 AM	6–C	E24A, Conv. Center	NASA’s High-Energy Vision—Chandra and the X-Ray Universe (p. 96)
9:30–10:30 AM	9–12	Lecture Hall (B10), Conv. Ctr.	Teach Engineering Principles on the Cheap with Concrete (p. 96)
10:00–11:15 AM	6–8	E10D, Conv. Center	Waves, Energy, and Color (p. 97)
11:00 AM–12 Noon	5–10	E24A, Conv. Center	NASA in Your Hands: Launching STEM to ELLs (p. 99)
11:00 AM–12 Noon	6–12	B15A, Conv. Center	Feeding the World with Solar Power (p. 99)
11:00 AM–12 Noon	6–10	E10C, Conv. Center	Scientists for Tomorrow: A STEM Out-of-School-Time Program in Community Centers (p. 99)
2:00–3:00 PM	3–5	Salon E, Marriott	Grades 3–5 STEM—It’s Easier than You Think (p. 104)

### Informal Science Education

#### Thursday

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8:00–9:00 AM	6–C	B13, Conv. Center	Protecting Our Watersheds to Sustain Ecosystems and Human Health: Examining the Concepts of Bioavailability, Bioaccumulation, and Biomagnification (p. 44)
8:00–9:00 AM	3–7	B15A, Conv. Center	Through the Wormhole (p. 44)
8:00–9:00 AM	4–9	B15B, Conv. Center	Rain to Drain: Fighting the Flow of Pollution (p. 44)
8:00–9:00 AM	5–9	E24A, Conv. Center	NASA STEM Spanish Immersion: Head in the Clouds Edition (p. 44)
8:00–9:00 AM	K–5	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Picture-Perfect Science Lessons: Using Children’s Books to Guide Inquiry</i> (p. 45)
12:30–1:30 PM	6–12	B15B, Conv. Center	Let’s Go Outside—Getting Nature into the School Day (p. 51)
12:30–1:30 PM	P–5	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Next Time You See...</i> (p. 52)
12:30–1:30 PM	6–8	Salon C/D, Marriott	EXENTHUNCO—What Is That? (p. 52)
12:30–1:30 PM	2–8	Salon F, Marriott	ID Scat Using Edible Dough (p. 53)
1:00–1:30 PM	G	B17, Conv. Center	Chesapeake Bay Foundation’s Education Programs (p. 55)
2:00–3:00 PM	7–12	B19, Conv. Center	Enhance Student Understanding with Experiential Learning (p. 56)
2:00–3:00 PM	3–C	E21A, Conv. Center	The Marketing Agency for STEM (p. 56)
2:00–3:00 PM	9–12	B13, Conv. Center	Climate Education for a Changing Bay (p. 57)
3:30–4:30 PM	4–C	B15B, Conv. Center	Regional Celebrations of Environmental Education Efforts (p. 60)
3:30–4:30 PM	5–12	B19, Conv. Center	Organize a STEM Day at Your School! (p. 61)
3:30–4:30 PM	G	E21A, Conv. Center	Make Broader Impacts: A Network for Connecting Students to Real Science (p. 61)
3:30–4:30 PM	6–8	Salon C/D, Marriott	Food Chains: Using Field Surveys That Give Real Numbers (p. 62)
5:00–6:00 PM	G	E21A, Conv. Center	Texas-STEM Coalition: Partnerships for Success (p. 64)
5:00–6:00 PM	G	B15B, Conv. Center	Seeing Math Patterns in Nature with Kids of All Ages (p. 65)
5:00–6:00 PM	G	E24A, Conv. Center	Sky Art: Sharing in the Beauty of Nature While Learning the Science Behind It (p. 65)

## Schedule at a Glance Informal Science Education

### Friday

8:00–8:30 AM	6–12	B13, Conv. Center	Dive Underwater and Explore Your Nation’s Estuaries (p. 67)
8:00–9:00 AM	6–8	Salon I/J, Marriott	Stormwater Literacy Project (p. 68)
8:00–9:00 AM	4–8	B15B, Conv. Center	Creek Freaks: Outdoor Ed Meets Science, Technology, and Exploration! (p. 68)
8:00–9:00 AM	1–6/C	E21A, Conv. Center	Family STEM Explorations Created by Community Partnerships (p. 68)
8:00–9:00 AM	K–12	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>It’s Debatable: Using Socio-scientific Issues to Develop Scientific Literacy, K–12</i> (p. 68)
8:00–9:00 AM	K–8	Salon C/D, Marriott	Teaching STEM with Project Learning Tree (p. 69)
9:30–10:30 AM	G	Lecture Hall (B10), Conv. Ctr.	Building Bridges: Supporting Youth Trajectories in STEM (p. 71)
9:30–10:30 AM	3–5/C	B13, Conv. Center	Integrating Teacher and Student Learning in Water-shed Science Education (p. 72)
9:30–10:30 AM	5–12	B19, Conv. Center	Creating an Interpretive Trail (p. 72)
9:30–10:30 AM	9–C	B15B, Conv. Center	Atlantic Sturgeon in and Around the Bay (p. 73)
9:30–10:30 AM	K–8	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Bringing Outdoor Science In</i> (p. 73)
11:00–11:30 AM	P–2	B13, Conv. Center	Connecting Young Children to Nature: Activities and Resources Appropriate for PreK–2 (p. 75)
11:00–11:30 AM	G	B19, Conv. Center	Marine Science Education Through Fishing and Bahamas Community Center Development (p. 75)
11:00 AM–12 Noon	G	Lecture Hall (B10), Conv. Ctr.	Featured Presentation: Connecting Environmental Outcomes with Community Concerns (p. 76)
11:00 AM–12 Noon	3–6	Governors (B20), Conv. Ctr.	NSTA Press® Session: Teaching Science Through Integrating Children’s Literature and Outdoor Investigations (p. 78)
2:00–3:00 PM	5–C	B15A, Conv. Center	Developing Spatial Visual Skills of Middle School Girls Through 3-D Printing in Informal Science Settings (p. 81)
2:00–3:00 PM	G	E22A, Conv. Center	Working with Natural Teachers: Tips for Supporting K–12 Outdoor Learning (p. 82)
3:30–4:30 PM	1–12	B15A, Conv. Center	Cultivating Collaboration to Promote Environmental Literacy in D.C. (p. 86)
3:30–4:30 PM	6–9	Salon G/H, Marriott	Helping Students Discover the Connection Between the Environment and Human Health (p. 87)
3:30–4:30 PM	P–4	B13, Conv. Center	Explore With Me™—Bringing Science to Students and Their Families (p. 87)
3:30–4:30 PM	P–4	B15B, Conv. Center	Jump into the Garden (p. 87)
3:30–4:30 PM	9–c	E25A, Conv. Center	Use Your Local Community as an Environmental Science Laboratory: Planning Land Use with Students (PLUS) (p. 88)
5:00–6:00 PM	4–12	B13, Conv. Center	Yes, No, Maybe? The Importance of Environmental Decision-Making (p. 90)
5:00–6:00 PM	G	B15A, Conv. Center	Informally Learning (p. 90)
5:00–6:00 PM	K–12	B15B, Conv. Center	How NOAA’s Educational Resources and Funding Advance K–12 Watershed Education (p. 90)
5:00–6:00 PM	3–C	E21A, Conv. Center	NSTA Press® Session: Phenomenon-based Learning Using Gadgets and Gizmos (p. 91)
5:00–6:00 PM	P–3	Salon E, Marriott	Crosscutting STEM (and STEAM) into Picture Books for Elementary Students (p. 91)

### Saturday

8:00–8:30 AM	K–12	B11, Conv. Center	Edu-Tainment: STEM Content Dissemination Using Media and Video Instruction (p. 93)
8:00–9:00 AM	G	E21A, Conv. Center	The Engaged Scientist Project: Lessons from a Decade of Engaging Scientists in Informal Education (p. 93)
8:00–9:00 AM	9–12	B13, Conv. Center	Water Quality Monitoring and Service Learning at the Chesapeake Bay Governor’s School for Marine and Environmental Science (p. 94)
8:00–9:00 AM	K–6	B15B, Conv. Center	Out of the Box: 4-H in the Classroom (p. 94)
8:00–9:00 AM	K–12	E10C, Conv. Center	Exciting Young People About Science Through Insects! (p. 94)
8:00–9:00 AM	P–K	Salon E, Marriott	The George Washington Carver DISCO STEAM InVenTures™ (p. 94)

## Schedule at a Glance Informal Science Education

9:30–10:30 AM	G	E21A, Conv. Center	Arizona STEM Club Guide and Network (p. 96)
9:30–10:30 AM	P–8	Salon G/H, Marriott	Family Science Day Runs Full-STEAM Ahead (p. 96)
9:30–10:30 AM	3–11	B13, Conv. Center	Watershed and Wetlands Sustainability (p. 97)
9:30–10:30 AM	8–12	E10A, Conv. Center	Captivate Students' Interests Beyond the Classroom with Chemistry (p. 97)
9:30–10:30 AM	1–12	E10C, Conv. Center	Be a Butterfly Doctor Doing Citizen Science with Project <i>MonarchHealth</i> (p. 97)
11:00 AM–12 Noon	8–12	E11C, Conv. Center	Polymer Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewViar (p. 98)
11:00 AM–12 Noon	K–12	E21A, Conv. Center	Our Common Planet: A Collaborative Venture (p. 98)
11:00 AM–12 Noon	4–12	Governors (B20), Conv. Ctr.	NSTA Press® Session: Citizen Science: Diverse Projects That Bring Biology to Life (p. 99)
11:00 AM–12 Noon	6–10	E10C, Conv. Center	Scientists for Tomorrow: A STEM Out-of-School-Time Program in Community Centers (p. 99)
12:30–1:30 PM	6–12	B11, Conv. Center	Additive Manufacturing—From Bytes to Bits (p. 100)
12:30–1:30 PM	6–12	B15A, Conv. Center	Growing with Water (p. 100)
12:30–1:30 PM	6–12	B15B, Conv. Center	Planning Field Science Experiences: Lessons Learned from MWEEs (p. 101)
12:30–1:30 PM	K–12	E21A, Conv. Center	How Delaware Left No Child Inside (p. 101)
12:30–1:30 PM	3–C	E24A, Conv. Center	Backward Faded Scaffolding in an Informal Learning Environment—Misconceptions Managed! (p. 101)
12:30–1:30 PM	3–12	E10C, Conv. Center	Fish and Wildlife Conservation Education Tools (p. 102)
2:00–2:30 PM	G	E21A, Conv. Center	Childlike Wonder: Using Science Hobbies and Hobbyists to Facilitate a Lifetime Engagement with Science (p. 102)
2:00–3:00 PM	5	E15B, Conv. Center	Fairfax County Grade 5 Field Guide Development Project (p. 103)
2:00–3:00 PM	3–C	E10C, Conv. Center	Brain Food: Games and Activities to Teach Reasoning Skills for Science and More (p. 104)

## General Science Education

### Thursday

8:00–8:30 AM	6–9	Salon I/J, Marriott	Secrets of an ESL Teacher in the Science Classroom (p. 43)
8:00–9:00 AM	9–12	B11, Conv. Center	Using Popular Science Magazine Articles to Improve Students' Critical Thinking and Scientific Literacy (p. 43)
8:00–9:00 AM	P–6	B14, Conv. Center	Exploring the Science Encountered in the Young Child's World: Nurturing, Observing, Questioning, Investigating, Thinking, and Talking About Science (p. 43)
8:00–9:00 AM	6–12	B19, Conv. Center	Differentiated Instruction in Secondary Science Classrooms (p. 43)
8:00–9:00 AM	G	Ballroom A (B21A), Conv. Ctr.	First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference? (p. 43)
8:00–9:00 AM	G	E25A, Conv. Center	Developing Testable Questions (p. 44)
8:00–9:00 AM	K–6	Salon E, Marriott	Enchanted Engineering: Discover the STEM in Fairy Tales (p. 45)
8:00–9:15 AM	K–6	E10B, Conv. Center	Science, the Literacy Connection, and the CCSS ELA (p. 46)
8:00–9:15 AM	K–5	E11A, Conv. Center	Bring Visual Science into K–5 Classrooms—It's a Game Changer! (p. 46)
8:00–9:15 AM	6–8	E11B, Conv. Center	Making Failure Fun: Amplify Science Games (p. 46)
9:15–10:30 AM	G	Ballroom B/C, Conv. Center	General Session: Selling the Science Story (p. 47)
10:00–11:15 AM	5–8	B15C, Conv. Center	Flinn Scientific Presents Hands-On Integrated Science Activities for Middle School (p. 48)
10:00–11:15 AM	5–12	E10B, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 48)
10:00–11:15 AM	1–6	E10C, Conv. Center	Scientific Practices: What Does Argumentation Look Like in an Elementary Classroom? (p. 48)
10:00–11:15 AM	K–8	E11A, Conv. Center	Integrating <i>Common Core</i> Writing, Speaking, and Listening Strategies into Science Instruction (p. 48)
10:00–11:15 AM	K–5	E11B, Conv. Center	Learn How to Integrate the NGSS and CCSS ELA from The Lawrence Hall of Science (p. 49)

## Schedule at a Glance    General Science Education

11:10 AM–12:10 PM	G	NSTA Exhibits Entrance	Meet the Presidents and Board/Council (p. 50)
12:30–1:30 PM	G	Lecture Hall (B10), Conv. Ctr.	Featured Presentation: Selfies, Superheros, and Tardigrades: Everyday Life, Science Fiction, and Game Experiences and Their Role in Developing Interest in STEM Pathways (p. 50)
12:30–1:30 PM	G	B11, Conv. Center	Authors Wanted! Learn How to Submit an Article for Publication in an NSTA Journal (p. 51)
12:30–1:30 PM	G	B12, Conv. Center	Gray Matter: Learning and Teaching Science with the Brain in Mind (p. 51)
12:30–1:30 PM	G	B14, Conv. Center	Using NSTA Resources for Professional Development (p. 51)
12:30–1:30 PM	6–12	B19, Conv. Center	3-D Printers—Adding a New Dimension to Science Instruction (p. 51)
12:30–1:30 PM	8–12	B18, Conv. Center	Supporting Literacy Using Scientific Reading Material and Discussion (p. 52)
12:30–1:30 PM	K–12	Ballroom A (B21A), Conv. Ctr.	Exploring the Science and Engineering Practices (p. 52)
12:30–1:30 PM	G	E25A, Conv. Center	Planning and Designing Safe and Sustainable Science Facilities that Meet the NGSS (Science Facilities 101) (p. 52)
12:30–1:30 PM	P–5	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Next Time You See...</i> (p. 52)
12:30–1:30 PM	1–5	Salon E, Marriott	NGSS—Make Your Lessons 3-D (p. 53)
12:30–1:45 PM	K–6	E10B, Conv. Center	Teaching Argumentation for Our Next Generation (p. 53)
12:30–1:45 PM	1–6	E10C, Conv. Center	Crosscutting Concepts: What Do They Look Like in an Elementary Classroom? (p. 53)
12:30–1:45 PM	6–8	E11B, Conv. Center	Immerse Students into the World of Scientists and Engineers by Putting Sims at the Center of Learning (p. 54)
12:30–1:45 PM	P–5	E21B, Conv. Center	Blending the CCSS and NGSS in Your K–5 Science Classroom (p. 54)
1:00–1:30 PM	K–5	Salon G/H, Marriott	Integrating Hands-On STEM Activities with Math and Reading in the CCSS (p. 55)
2:00–2:30 PM	K–12	B12, Conv. Center	CSSS Session: Presidential Awards Program (p. 55)
2:00–3:00 PM	C	B11, Conv. Center	A Tool to Develop Preservice Teachers: NSTA Learning Center (p. 55)
2:00–3:00 PM	3–C	B14, Conv. Center	Engage Students Through Problem-Based Learning (p. 55)
2:00–3:00 PM	G	E25A, Conv. Center	Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102) (p. 57)
2:00–3:00 PM	2–6	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Teaching Science Through Trade Books</i> —Exemplars from the Book and Featured Columns (p. 57)
2:00–3:00 PM	P–12	Salon E, Marriott	NMLSTA Session: What Can a Roll of Painters Tape Teach? (p. 57)
2:15–3:30 PM	G	B15C, Conv. Center	Envelope Graphic Organizers—UnFOLDing the Possibilities (p. 58)
2:15–3:30 PM	P–6	E10B, Conv. Center	How Do They Use FOSS in Their School District? (p. 58)
2:15–3:30 PM	2–5	E11B, Conv. Center	National Geographic Explorers and STEM—From the World to Your Classroom! (p. 59)
3:00–4:30 PM	9–C	E23 A/B, Conv. Center	Effortlessly Integrate Inquiry with Glowing Bacteria (AP Big Idea 3) (p. 59)
3:30–4:30 PM	9–12	B12, Conv. Center	Write Your Way to Success: Grant Writing Strategies for You and Your Chemistry Students (p. 60)
3:30–4:30 PM	7–C	B14, Conv. Center	Engineering NGSS into Your High School Science Classroom (p. 60)
3:30–4:30 PM	P	Salon G/H, Marriott	Defining Science Learning and Teaching for Early Childhood (p. 61)
3:30–4:30 PM	9–12	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12</i> (p. 62)
3:30–4:30 PM	3–5	Salon E, Marriott	Evidence for a Wimpy Kid (p. 62)
3:30–4:30 PM	3–6	Salon F, Marriott	Talking About Science with Literature (p. 62)
4:00–5:15 PM	K–6	E10B, Conv. Center	STEM Projects, Science Fairs, and Other Student Projects (p. 63)
5:00–5:30 PM	6–C	B14, Conv. Center	Enhancing Teacher Effectiveness Through Modeling Instruction (p. 64)
5:00–6:00 PM	K–6	Salon G/H, Marriott	Using Technology as a Tool for Differentiated Instruction (DI) in the Science Classroom (p. 64)
5:00–6:00 PM	6–9	Salon I/J, Marriott	Discover the Amazing World of Engaging Discrepant Event Science Demonstrations (p. 64)
5:00–6:00 PM	6–C	E25A, Conv. Center	A PERFECT Interpretation—Grad Students Design Activities to Convey Cutting-Edge Science (p. 65)
5:00–6:00 PM	2–5	Salon E, Marriott	Your Student Are Scientists! Scaffolding Science Practices in Elementary Grades (p. 65)
5:00–6:00 PM	3–6	Salon F, Marriott	Growing Through STEM (p. 65)

# Schedule at a Glance General Science Education

## Friday

8:00–9:00 AM	6–12	B11, Conv. Center	Game On! (p. 67)
8:00–9:00 AM	6–10	B14, Conv. Center	What Science Teachers Ask Students to Do in Class (p. 67)
8:00–9:00 AM	K–12	Lecture Hall (B10), Conv. Ctr.	The NGSS@NSTA Hub (p. 67)
8:00–9:00 AM	K–12	B12, Conv. Center	Life Cycle of the Monarch Butterfly (p. 68)
8:00–9:15 AM	6–8	E10B, Conv. Center	Project-Based Inquiry Science™: Blending Practices, Core Ideas, and Crosscutting Concepts in Middle School Classrooms (p. 69)
9:30–10:30 AM	G	B14, Conv. Center	NSELA Session: Tools for Science Leaders, Part 1 (p. 72)
9:30–10:30 AM	6–8	Salon I/J, Marriott	Effective Middle School PLCs (p. 72)
9:30–10:30 AM	K–12	B12, Conv. Center	Life Cycle of the Monarch Butterfly (p. 73)
9:30–10:30 AM	1–5	Ballroom B (B21B), Conv. Ctr.	CESI Session: Integrating Science and Literacy: Proven Strategies Using Evidence-based Practices (p. 73)
9:30–10:30 AM	K–8	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Bringing Outdoor Science In</i> (p. 73)
10:00–11:30 AM	3–C	E11B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 75)
11:00 AM–12 Noon	G	B14, Conv. Center	NSELA Session: Tools for Science Leaders, Part 2 (p. 76)
11:00 AM–12 Noon	6–9	E21A, Conv. Center	Using the NGSS Practices in Middle School Classrooms (p. 76)
11:00 AM–12 Noon	K–12	E22A, Conv. Center	Encouraging Scientific Habits of Mind Through Literacy Instruction (p. 76)
11:00 AM–12 Noon	1–5	Salon G/H, Marriott	Inside-Out: Integrating Environmental Literacy into STEM at the Elementary Level (p. 77)
11:00 AM–12 Noon	P–8	Ballroom B (B21B), Conv. Ctr.	CESI Session: Elementary Science Share-a-Thon (p. 77)
11:00 AM–12 Noon	K–12	E25A, Conv. Center	AMSE Session: The Smarts Are There—Create Classroom Climates Saturated with High Expectations for All Students Using “Inclusive Teaching and Inquiry-based Learning” (p. 77)
12 Noon–1:15 PM	G	B15C, Conv. Center	Making Science Notebooks FOLD-tastic via Notebook Foldables® (p. 78)
12 Noon–1:15 PM	6–10	E21C, Conv. Center	Streamline Your Preparation and Presentation with Student Notebooks (p. 79)
12 Noon–1:30 PM	3–C	E11B, Conv. Center	Integrate iPad, Chromebook, and BYOD with Vernier Technology (p. 80)
12:30–1:30 PM	9–C	Governors (B20), Conv. Ctr.	NSTA Press® Session: Including Students with Disabilities in Advanced Science Classes (p. 80)
2:00–3:00 PM	G	Ballroom A (B21A), Conv. Ctr.	Featured Presentation: Using the Tools of the NGSS to Support Quality Science Instruction (p. 81)
2:00–3:00 PM	9–C	B14, Conv. Center	NARST Session: Building Evidence-based Reasoning Skills Among Nonscience Majors at a Community College (p. 81)
2:00–3:00 PM	6–10	B19, Conv. Center	How to Teach WITHOUT Teaching to the State Test! (p. 81)
2:00–3:00 PM	5–8	Salon G/H, Marriott	Tissue Paper Balloons—Building Middle School Connections (p. 82)
2:00–3:00 PM	6–12	Governors (B20), Conv. Ctr.	NSTA Press® Session: Breathtaking Science: Exploring the Hidden and Unexpected Worlds at the Nanoscale (p. 83)
2:00–3:15 PM	1–10	E10A, Conv. Center	Integrating Online Learning into the Science Classroom (p. 84)
2:00–3:15 PM	6–8	E11A, Conv. Center	Bring Visual Science into Grades 6–8 Classrooms—It’s a Game Changer! (p. 84)
3:00–4:00 PM	9–C	E23 A/B, Conv. Center	Communicating Science Through Lab Notebooking (p. 85)
3:30–4:30 PM	G	B11, Conv. Center	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 86)
3:30–4:30 PM	9–12	B14, Conv. Center	NARST Session: Research Apprenticeships for Diverse High School Students (p. 86)
3:30–4:30 PM	1–12	B15A, Conv. Center	Cultivating Collaboration to Promote Environmental Literacy in D.C. (p. 86)
3:30–4:30 PM	7–12	B19, Conv. Center	Simple Ways to Modify Existing Lessons to Deepen Student Thinking (p. 86)
3:30–4:30 PM	P–12	E21A, Conv. Center	Strategies for STEM Success (p. 86)
3:30–4:30 PM	G	E22A, Conv. Center	Life-threatening “Allergies” in Schools: A Call to Action (p. 86)
3:30–4:30 PM	5–8	Salon I/J, Marriott	Literacy Practices in Middle School Science (p. 87)
3:30–4:30 PM	K–4	Salon E, Marriott	STEM Activities for Early Childhood Classrooms (p. 88)
3:30–4:30 PM	3–8	Salon F, Marriott	Differentiating Science Practices (p. 88)
4:00–5:15 PM	6–8	E10A, Conv. Center	Implementing the Eight NGSS Practices with Research-based Curriculum (p. 89)



## Schedule at a Glance    General Science Education

4:00–5:15 PM	6–8	E10B, Conv. Center	Implementing an NGSS-based Middle School PBIS™ Curriculum with Fidelity (p. 89)
4:00–5:15 PM	K–8	E11A, Conv. Center	An Invitation: Moving Forward with the NRC <i>Framework</i> and NGSS (p. 89)
4:00–5:15 PM	6–12	E21B, Conv. Center	Using Problem-Based Learning to Up Your NGSS Game (p. 89)
5:00–5:30 PM	6–10/C	E22A, Conv. Center	Learning Science Outside of School: A Cross-cultural Study (p. 90)
5:00–6:00 PM	7–12	B12, Conv. Center	Examining Skewed Scientific Data: Scientific Literacy Activities for Students (p. 91)
5:00–6:00 PM	K–8/C	E25A, Conv. Center	Identifying Quality Inquiry-based STEM Lessons (p. 91)
5:00–6:00 PM	6–12	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Scientific Argumentation in Biology: 30 Classroom Activities</i> (p. 91)
5:00–6:00 PM	5–12	Salon C/D, Marriott	NMLSTA Session: Student-created Interactive Journals (p. 91)

### Saturday

8:00–9:00 AM	3–5	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Inquiring Scientists, Inquiring Readers: Using Literacy Strategies to Support Inquiry Investigations</i> (p. 93)
8:00–9:00 AM	6–12	Salon C/D, Marriott	iPad—Next Step to a Digital Classroom (p. 94)
9:00–9:50 AM	K–12	Grand Blrm. C, Conv. Ctr.	A Celebration of Literacy & Science: What Does Literacy Mean? How Do Science and Literacy Connect? (p. 95)
9:30–10:30 AM	6–12	B11, Conv. Center	Do You Need a New Science Lab? (p. 95)
9:30–10:30 AM	G	B15A, Conv. Center	Climate Smart and Energy Wise: The Literacy Imperative of the 21st Century (p. 95)
9:30–10:30 AM	4–12	E10B, Conv. Center	Implementing Global Collaborative Projects in the Science Classroom (p. 96)
9:30–10:30 AM	6–12	E11C, Conv. Center	The Secret Life of Toys and Water Bottles (p. 96)
9:30–10:30 AM	4–C	Governors (B20), Conv. Ctr.	NSTA Press® Session: Special Needs Students in Science (p. 96)
10:00–11:30 AM	G	Grand Blrm. C, Conv. Ctr.	A Celebration of Literacy & Science: AUTHORS! INSPIRATION! (p. 98)
11:00 AM–12 Noon	G	B11, Conv. Center	Before and After Retirement: Practicalities and Possibilities (p. 98)
11:00 AM–12 Noon	6–C	E10B, Conv. Center	Hollywood BAD Science (p. 98)
11:00 AM–12 Noon	9–12	Lecture Hall (B10), Conv. Ctr.	Connecting Students to Scientists and Teachers to Teachers via Twitter—Seriously, This Is for Real! (p. 99)
11:00 AM–12 Noon	P–7	Salon C/D, Marriott	Plant the STEM...A Program That Kids Dig! (p. 100)
11:00 AM–12 Noon	1–8	Salon E, Marriott	Art in Science Class? YES! (p. 100)
11:45 AM–1:15 PM	G	Grand Blrm. C, Conv. Center	A Celebration of Literacy & Science: Meet and Greet Outstanding Authors (p. 100)
12:30–1:30 PM	G	Governors (B20), Conv. Ctr.	NSTA Press® Session: <i>Models and Approaches to STEM Professional Development</i> (p. 101)
12:30–1:30 PM	9–12	Lecture Hall (B10), Conv. Ctr.	Fun Forensic Apps: Inexpensive, Interesting Ways to Integrate Science, Technology, and Math (p. 101)
12:30–1:30 PM	K–8	Salon G/H, Marriott	To Kit or Not to Kit? Analyzing, Implementing, and Evaluating Science Materials and Resources (p. 102)
1:15–2:15 PM	G	Grand Blrm. C, Conv. Ctr.	A Celebration of Literacy & Science: EUREKA! I Found Gold in the Library (p. 102)
2:00–3:00 PM	6–C	E10B, Conv. Center	Garage Physics (p. 103)
2:00–3:00 PM	3–8	Salon G/H, Marriott	Science Content + Literacy = <i>Common Core</i> Success (p. 103)
2:00–3:00 PM	7–12	E10A, Conv. Center	Merging the “Bookends” of STEM: Science and Math (p. 103)
2:00–3:00 PM	3–5	Salon F, Marriott	Problem-Based Learning: Adding Rigor and Relevance to STEM Instruction (p. 104)

# Schedule at a Glance Life Science

## Life Science

### Thursday

8:00–9:00 AM	G	B17, Conv. Center	The Classroom “Without” Walls (p. 43)
8:00–9:00 AM	6–C	B13, Conv. Center	Protecting Our Watersheds to Sustain Ecosystems and Human Health: Examining the Concepts of Bioavailability, Bioaccumulation, and Biomagnification (p. 44)
8:00–9:15 AM	6–8	E10D, Conv. Center	Investigating Gas Exchange (p. 46)
8:00–9:15 AM	8–C	E11C, Conv. Center	Using the Polymerase Chain Reaction to Identify Genetically Modified Foods (p. 46)
10:00–11:15 AM	5–12	E10A, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 48)
10:00–11:15 AM	8–C	E11C, Conv. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 49)
12:30–1:45 PM	K–12	E11A, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 54)
12:30–1:45 PM	6–C	E11C, Conv. Center	Biotechnology Basics (p. 54)
1:00–2:30 PM	9–C	E23 A/B, Conv. Center	Identify Patient Zero of a Zombie Apocalypse (p. 55)
2:00–3:00 PM	6–C	B15A, Conv. Center	Diving Deeper into Science Practice and Crosscutting Concepts with NOAA (p. 56)
2:00–3:00 PM	9–12	B15B, Conv. Center	What Is Envirothon? North America’s Largest Environmental Education Competition! (p. 56)
2:00–3:00 PM	7–12	B19, Conv. Center	Enhance Student Understanding with Experiential Learning (p. 56)
2:15–3:30 PM	G	B15C, Conv. Center	Exploring Genetics and Heredity with Crazy Traits (p. 58)
2:15–3:30 PM	8–C	E11C, Conv. Center	Case of the Missing Records (p. 59)
2:15–3:30 PM	9–C	E21B, Conv. Center	Genes, Genomes, and the New World of Personalized Medicine (p. 59)
3:30–4:30 PM	G	E21A, Conv. Center	Make Broader Impacts: A Network for Connecting Students to Real Science (p. 61)
3:30–4:30 PM	9–C	B13, Conv. Center	Incorporating Climate Change into Your Biology (p. 61)
4:00–5:15 PM	9–12	E10D, Conv. Center	Investigating Stem Cell Differentiation (p. 63)
4:00–5:15 PM	6–12	E11A, Conv. Center	AUTOPSY: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs (p. 63)
4:00–5:15 PM	8–C	E11C, Conv. Center	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 64)
4:00–5:15 PM	8–C	E21B, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 64)
5:00–6:00 PM	G	B15B, Conv. Center	Seeing Math Patterns in Nature with Kids of All Ages (p. 65)

### Friday

8:00–9:15 AM	9–C	E10A, Conv. Center	Lizards and Finches and Wallace, Oh My! (p. 69)
8:00–9:15 AM	9–12	E10C, Conv. Center	Achievable Inquiry in Biology—See How PASCO Technology Can Transform Data Collection in Your Lab! (p. 69)
8:00–9:15 AM	6–12	E10D, Conv. Center	DuPont Presents: Photosynthesis, Respiration, and Starches—It’s a Plant’s Life! (p. 69)
8:00–9:15 AM	6–12	E11A, Conv. Center	Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (p. 70)
8:00–9:15 AM	6–C	E11C, Conv. Center	Biotechnology Basics (p. 70)
8:00–9:30 AM	7–C	E11B, Conv. Center	Chemistry and Biology with Vernier (p. 71)
8:30–10:00 AM	9–C	E23 A/B, Conv. Center	What Fish Is That? Have Fun with PCR, Fish Flash Cards, and <i>Jeopardy!</i> to Perform DNA-based Identification (p. 71)
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10:00–11:15 AM	K–12	E11A, Conv. Center	Hands-On Science with Classroom Critters (p. 75)
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11:00–11:30 AM	P–2	B13, Conv. Center	Connecting Young Children to Nature: Activities and Resources Appropriate for PreK–2 (p. 75)
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3:30–4:30 PM	7–12	B12, Conv. Center	The Case of the Hungry Heron: A PBL Unit on Ecosystems and Experimental Design (p. 87)
3:30–4:30 PM	7–12	B18, Conv. Center	The Mutualism of Biology and Math (p. 87)
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5:00–6:00 PM	7–12	B18, Conv. Center	Insects, Inquiry, and Interest (p. 91)

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10:00–11:15 AM	9–C	E21C, Conv. Center	Telling Molecular Stories with David Goodsell’s Cellular Landscapes (p. 97)
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11:00 AM–12 Noon	6–12	B15A, Conv. Center	Feeding the World with Solar Power (p. 99)
11:00 AM–12 Noon	1–3	Salon F, Marriott	Genetics Is Elementary—Teaching the Principles of Genetics to Early Elementary Students (p. 100)
12:30–1:30 PM	5–12	B13, Conv. Center	Bay to Bay: A Multidisciplinary Watershed Investigation for Teachers (p. 100)
12:30–1:30 PM	3–5	Salon F, Marriott	Foraging, Food, and Flow: Energy and Matter in Food Chains and Food Webs (p. 102)

### Physical Science

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8:00–9:00 AM	5–9	E24A, Conv. Center	NASA STEM Spanish Immersion: Head in the Clouds Edition (p. 44)
10:00–11:15 AM	9–12	E10D, Conv. Center	Chemical Formula and Amino Acids (p. 48)
12:30–1:45 PM	9–12	B15C, Conv. Center	Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 53)
12:30–1:45 PM	5–12	E10A, Conv. Center	Fun with Atom Building Games and the Periodic Table (p. 53)
12:30–1:45 PM	9–12	E10D, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 54)
2:00–3:00 PM	7–12	B19, Conv. Center	Enhance Student Understanding with Experiential Learning (p. 56)
2:00–3:00 PM	9–12	B18, Conv. Center	Using the <i>Next Generation Science Standards</i> in Chemistry Classes (p. 57)
2:00–3:00 PM	9–12	E24A, Conv. Center	What Is Your Cosmic Connection to the Elements? (p. 57)
2:00–3:00 PM	6–8	Salon C/D, Marriott	Action Science: Relevant Teaching and Active Learning for Grades 6–8 in Physical Science (p. 57)
2:15–3:30 PM	6–12	E11A, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 59)
3:30–4:30 PM	G	E21A, Conv. Center	Make Broader Impacts: A Network for Connecting Students to Real Science (p. 61)

## Schedule at a Glance Physical Science

3:30–4:30 PM	9–12	B18, Conv. Center	Using Modeling Activities in the High School Chemistry Class (p. 61)
4:00–5:15 PM	8–C	E21B, Conv. Center	The Many Jobs of Proteins: Modeling Proteins and Enzymes (p. 64)
4:00–5:15 PM	6–11	E21C, Conv. Center	Straw Rocket Launchers—Impulses, Optimal Launch Angles, Distances, and Hang Times (p. 64)
5:00–6:00 PM	8–C	B15A, Conv. Center	Ice Core Records—From Volcanoes to Solar Proton Events to Supernova Events (p. 65)

### Friday

8:00–9:00 AM	6–8	Salon F, Marriott	Middle School Chemistry—Big Ideas About the Very Small (p. 69)
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8:00–9:30 AM	7–C	E11B, Conv. Center	Chemistry and Biology with Vernier (p. 71)
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9:30–10:30 AM	6–12	B18, Conv. Center	Using Broom Ball to Teach Newton's First Law of Motion (p. 73)
9:30–10:30 AM	6–8	Salon F, Marriott	The Periodic Table and Bonding (p. 74)
10:00–11:15 AM	4–10	B15C, Conv. Center	Cool! Can We Do That Again!?! (p. 74)
10:00–11:15 AM	9–12	E10C, Conv. Center	Incorporate Science and Engineering Practices into Your Chemistry Lab Using PASCO Technology (p. 74)
10:00–11:15 AM	6–8	E10D, Conv. Center	Waves, Energy, and Color (p. 74)
10:00–11:15 AM	K–12	E21B, Conv. Center	Reflecting on Engineering Design (p. 75)
11:00–11:30 AM	P–2	B13, Conv. Center	Connecting Young Children to Nature: Activities and Resources Appropriate for PreK–2 (p. 75)
11:00 AM–12 Noon	6–C	B18, Conv. Center	2,400 Years of Electricity from Amber to Batteries (p. 77)
12 Noon–1:15 PM	9–12	E10B, Conv. Center	Active Chemistry and Active Physics: Project-Based Inquiry Science™ That Engages Students (p. 78)
12 Noon–1:15 PM	9–12	E10C, Conv. Center	Enhance Your Physics Classroom Demonstrations with PASCO Equipment, Sensors, and New Capstone Software! (p. 79)
12 Noon–1:15 PM	9–12	E11A, Conv. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 79)
2:00–3:00 PM	9–12	E21A, Conv. Center	Spark Students' Interest in Chemistry with Resources from the American Chemical Society (p. 82)
2:00–3:00 PM	9–12	Ballroom B (B21B), Conv. Ctr.	Climate Change Classroom Activities (I): Light, CO <sub>2</sub> , and Global Warming (p. 83)
2:00–3:00 PM	P–4	Salon C/D, Marriott	Let's Get Physical: Water, Wind, and Weather (p. 83)
2:00–3:00 PM	3–8	Salon F, Marriott	Inquiry in Action: Investigating Matter Through Inquiry (p. 83)
2:00–3:30 PM	7–C	E11B, Conv. Center	Physics and Physical Science with Vernier (p. 85)
3:30–4:30 PM	7–12	B12, Conv. Center	The Case of the Hungry Heron: A PBL Unit on Ecosystems and Experimental Design (p. 87)
3:30–4:30 PM	9–12	Ballroom B (B21B), Conv. Ctr.	Climate Change Classroom Activities (II): CO <sub>2</sub> Chemistry and Ocean Acidification (p. 88)
4:00–5:15 PM	6–12	E10D, Conv. Center	DuPont Presents: Power Up and Design Your Own Battery (p. 89)
5:00–6:00 PM	3–C	E21A, Conv. Center	NSTA Press® Session: Phenomenon-based Learning Using Gadgets and Gizmos (p. 91)

### Saturday

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8:00–9:15 AM	5–C	E21C, Conv. Center	Dive In with Magnetic Water Molecules (p. 95)
9:30–10:30 AM	6–C	E24A, Conv. Center	NASA's High-Energy Vision—Chandra and the X-Ray Universe (p. 96)
9:30–10:30 AM	8–12	E10A, Conv. Center	Captivate Students' Interests Beyond the Classroom with Chemistry (p. 97)
10:00–11:15 AM	6–8	E10D, Conv. Center	Waves, Energy, and Color (p. 97)
11:00 AM–12 Noon	8–12	E11C, Conv. Center	Polymer Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewViar (p. 98)

## Schedule at a Glance Physical Science

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11:00 AM–12 Noon	6–10	E10C, Conv. Center	Scientists for Tomorrow: A STEM Out-of-School-Time Program in Community Centers (p. 99)
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