

WEDNESDAY THURSDAY /// APRIL 2 & 3

NATIONAL CONFERENCE  
*on* SCIENCE EDUCATION

BOSTON

APRIL 3-6, 2014

**VOL. 1**

GENERAL  
INFORMATION

**NSTA** National  
Science  
Teachers  
Association

A NEW SHORT FILM PREMIERE FROM HHMI

# GREAT TRANSITIONS

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THURSDAY, APRIL 3, 6PM-7:30PM

Grand Ballroom A/B, Westin Boston Waterfront Hotel

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for a chance to win a Chromebook!

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# NSTA 62nd National Conference on Science Education

Boston, Massachusetts • April 3–6, 2014

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### Cover photo credit:

Photo of the equestrian George Washington statue in the Boston Public Garden courtesy of Sean Pavone/iStock.

### Mission Statement

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

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.



—Greater Boston Convention and Visitors Bureau

### 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)



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

## Sponsors and Contributors to the Boston Conference

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

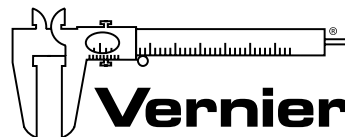
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 National Middle Level Science Teachers Association  
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We at NSTA wish to express our heartfelt thanks to the members of the following organizations for the many hours of time they volunteered in planning this conference:

Massachusetts Association of Science Teachers (MAST)  
 Massachusetts Science Education Leadership Association (MSELA)

## President's Welcome

### Building and Sustaining Teacher Leadership in Science, Standards, and Literacy



Welcome to the 2014 NSTA Boston National Conference on Science Education in the historic city of Boston, Massachusetts. From Boston Common to the Freedom Trail, you can immerse yourself in the ultimate destination for American Revolution enthusiasts. World-class museums, including the John F. Kennedy Presidential Library and Museum, provide the backdrop for you to engage in professional development to strengthen your understanding of science, standards, and literacy.

With the release of the *Next Generation Science Standards*, *NRC Framework*, and *Common Core State Standards*, in English language arts and Mathematics, the Boston Conference Committee has organized a comprehensive program incorporating these areas around the theme: "Leading a Science Revolution."

The major conference strands include Science and Literacy: A Symbiotic Relationship; Teaching Elementary Science with Confidence!; Leading from the Classroom; and Engineering and Science: Technological Partners.

These strands will allow you to leave the conference with a deeper understanding of the *NGSS*, the principles behind their development, and how they may be implemented. The strands will focus on important

issues in STEM education and address the connection between science, literacy, and the *CCSS*—and how to capitalize on that connection. Supporting students' abilities to read, write, and discuss in the context of science is critical to student achievement in both science and literacy. In addition, included in the hundreds of offerings will be sessions on science, teaching, engineering, and leadership.

And if that isn't enough, the conference offers a variety of special programs, outstanding speakers, dynamic teacher and exhibitor sessions, and many ticketed events. You will be able to explore the exhibit hall and examine a variety of instructional materials. And best of all, you will be able to network with your colleagues. And for those college basketball fans, there will be the first-ever NSTA NCAA Final Four Watch Party on Saturday night!

I look forward to meeting you in Boston. I guarantee that you will leave the conference inspired to create new opportunities for your students and colleagues. And when the conference is over, you will be prepared to lead a science revolution of your own to inspire your schools and districts to create the best STEM education possible for all children!

Bill Badders

2013–2014 NSTA President

# NCAA FINAL FOUR WATCH PARTY!

## Basketball Physics

**Saturday, April 5**  
**7:30 PM–12 Midnight**  
**Atlantic Ballroom, Renaissance**  
(By ticket only: M-9; \$20 \*includes snacks and one beverage ticket, distributed at the door)

Join your colleagues on Saturday night as NSTA President Bill Badders invites you to attend the NSTA NCAA Final Four Watch Party—if you enjoy basketball, the science of the game, or just want to have an evening of fun with colleagues. Our guest speaker, John J. Fontanella, professor emeritus of Physics at the U.S. Naval Academy, will share tips for improving your game and understanding more about the science and physics of basketball!

Sponsored in part by Vernier Software & Technology.

$v^2 = v_0^2 + 2a(x - x_0)$   
 $F \Delta t = m \Delta v$   
 $I = \sum mr^2$   
 $v = \frac{\Delta s}{\Delta t}$   
 $P = \tau \omega \cos \theta$

**NSTA** National Science Teachers Association

# NSTA CONFERENCES ON SCIENCE EDUCATION



## SAVE THE DATES

# 2014

**RICHMOND, VA**

**OCTOBER 16-18**

**ORLANDO, FL**

**NOVEMBER 6-8**

**LONG BEACH, CA**

(IN COLLABORATION WITH CSTA)

**DECEMBER 4-6**

### Professional Development Strands

- Watershed Science: Learning Inside and Out
- Partnerships and Collaborations: Learning Inside and Out
- Integrating Science with Other Disciplines: Learning Inside and Out

- Elementary Science — Early and Often
- Environmental Explorations: Indoors and Outdoors
- STEM Connections: Preparing the Workforce of Tomorrow

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



For more information or to register, visit

[www.nsta.org/conferences](http://www.nsta.org/conferences) or call 1.800.722.6782

**NSTA** National  
Science  
Teachers  
Association



# Welcome to Boston



Joyce D. Croce



Marilyn Richardson



Pam Pelletier

Welcome to Boston, the birthplace of public education, for the 2014 NSTA National Conference on Science Education. The city is ready—the Big Dig is over and Boston’s Innovation District is its newest frontier!

The program committee has worked hard over the past two years to bring you an exciting program that will challenge your teaching knowledge and strategies. We were pleased to receive a record-breaking number of proposals for the conference from which we selected a diverse, engaging program that will appeal to teachers at all grade levels and disciplines. For those of you who wish to focus on a particular topic in more depth, we have selected four strands: Science and Literacy: A Symbiotic Relationship; Teaching Elementary Science with Confidence!; Leading from the Classroom; and Engineering and Science: Technological Partners. In addition to numerous hands-on workshops, share-a-thons, presentations, field trips, and invited speakers, the Museum of Science is providing free admittance to conference attendees.

We are delighted to have Dr. Mayim Bialik as our keynote speaker! You may know Mayim as Amy Farrah Fowler in the hit comedy *The Big Bang Theory*, but she has always been passionate about education and made it a top priority in her life. Dr. Bialik received her BS in neuroscience and Hebrew and Jewish studies and later earned a PhD in neuroscience from UCLA.

We look forward to meeting you as you explore ideas and practices that enhance teaching and learning driven by the *Next Generation Science Standards* and championed by educators who are “Leading a Science Revolution.”

2014 Boston Conference Committee Leaders  
Joyce D. Croce, Marilyn Richardson, and Pam Pelletier

## Conference Chairperson

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## Boston Conference Committee

### Program Committee

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Fifth-Grade Educator  
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##### **David K. Pierce**

Lead Science Teacher  
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##### **Shawna L. Young**

Executive Director  
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#### Strand Leader: Leading from the Classroom

##### **Joyce Gleason**

Educational Consultant  
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#### Strand Leader: Science and Literacy: A Symbiotic Relationship

##### **Patricia Ruane**

NSTA Director, District I  
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#### Strand Leader: Teaching Elementary Science with Confidence!

##### **Joann Blum**

Educational Consultant  
Rutland, MA

#### Strand Leader: Engineering and Science: Technological Partners

##### **Yvonne Spicer**

Vice President for Advocacy and  
Education Partnerships  
National Center for Technological  
Literacy  
Museum of Science, Boston  
Boston, MA

## Local Arrangements Committee

#### Field Trips Manager

##### **Howard Dimmick**

Retired Educator  
Fort Collins, CO

#### Guides Manager

##### **Kathleen Bateman**

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#### Manager of Services for People with Special Needs

##### **Nora Nagle**

Accessibility Coordinator  
Museum of Science, Boston  
Boston, MA

#### Volunteers Manager

##### **Patricia Adams**

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Groveland, MA

# 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.

## Recycled Paper and Sustainable Print Services

Conference previews and final conference programs are generally 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 waste baskets. 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.

## Final Conference Programs by E-Mail

Conference registrants are now given the option of receiving 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.

## Green Initiatives at the Boston Convention & Exhibition Center (BCEC)

The Boston Convention & Exhibition Center is committed to enhancing sustainable practices and reducing its carbon impact on the environment while being the best steward it can be with its resources. Current green initiatives include:

- **Waste Reduction.** At the BCEC, event planners and exhibitors are encouraged to recycle through the MCCA's Conventions C.A.R.E. (Community Assistance by Responsible Events) program. Through Conventions C.A.R.E., clean, usable, nonperishable donations are placed in bright blue bins at the end of an exhibition. The MCCA and its partners then assign and arrange the transport of these items to local nonprofits.
- **Energy Conservation.** The BCEC minimizes power consumption through sensor-controlled, high-efficiency lighting that cuts energy use in nonoccupied spaces.
- **Water Conservation.** Low-flow water devices have been installed in all BCEC restrooms.
- **Green Purchasing.** More than 80% of the BCEC cleaning products are environmentally responsible.

## "Go Green" at the Boston Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the BCEC.
- 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.
- Use double-sided printing and/or recycled paper for session handouts and other conference materials.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- Evaluate sessions attended online.



## Meeting Location and Times

The conference headquarters hotels are the Renaissance Boston Waterfront, Seaport Hotel, and The Westin Boston Waterfront. Conference registration, the exhibits, and the NSTA Science Store will be located at the Boston Convention & Exhibition Center (BCEC). Most sessions will be held at the BCEC and the headquarters hotels, and most short courses will be held at the Boston Marriott Copley Place.

The conference will begin on Thursday, April 3, at 8:00 AM and end on Sunday, April 6, at 12 Noon.

## 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 (e.g., short courses, field trips, networking events, etc.).

Don’t want to wait in line to register on-site? Please look for the “Self-Serve”

signs in the NSTA Registration Area near Badge Pickup/Reprint. Here you’ll find computer stations where you can register on your own.

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

Wed., April 2	5:00–8:00 PM
Thu., April 3	7:00 AM–5:00 PM*
Fri., April 4	7:00 AM–5:00 PM*
Sat., April 5	7:00 AM–5:00 PM
Sun., April 6	7:30 AM–12 Noon

*\* Please note that the Science Store will be open until 5:30 PM on Thursday and Friday.*

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 Boston Conference Committee has scheduled a variety of ticketed events (e.g., professional development institutes, symposia, short courses, field trips, and networking events). Each of these events

requires a separate fee and ticket. You may purchase tickets, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 48) for details. Note that some events may have required advance registration.

## Airlines/Amtrak

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

## Transportation to/from Airport

The Logan International Airport (BOS) is located in the East Boston neighborhood. Visit [www.massport.com/logan-airport](http://www.massport.com/logan-airport) for a comprehensive list of ground transportation options.

The MBTA Silver Line is free from Logan Airport inbound to South Station (including a free transfer to the Red Line). All other bus and subway fares are \$2.50/ride if you pay on board. If you purchase a Charlie Card in advance, they are \$2 a ride. Visit [www.mbta.com](http://www.mbta.com) to find out more.

In addition to the Silver Line’s stop at the World Trade Center, the MBTA has added a special stop for NSTA attendees who need to get to Logan International Airport. The Silver Line will stop directly at the BCEC on Saturday, April 5, 3:30 PM to 6:30 PM; and Sunday, April 6, 9:30 AM to 12:30 PM.

Taxis are available at Logan terminals 24 hours a day. All taxis going downtown charge a metered rate, and all fares are based on the occupancy of one to four passengers per taxi. All fares leaving Logan Airport are charged a \$2.25 airport fee, and travel through the harbor tunnels will cost an additional \$5.25 toll fee. It is recommended that you ask the taxi driver for a receipt showing the driver’s name, the taxi company, the amount paid, and the medallion number. Go to [bit.ly/KFFHEK](http://bit.ly/KFFHEK) to estimate the taxi fare to your hotel.

## Parking

Visit [bit.ly/1jzIRHw](http://bit.ly/1jzIRHw) for parking options near the BCEC.

# Registration, Travel, and Hotels

## Getting Around Town

The MBTA (Massachusetts Bay Transportation Authority)—usually referred to as the “T”—runs daily service on buses and trains throughout Boston and surrounding towns. Visit [www.mbta.com](http://www.mbta.com) to find out more. All bus and subway fares are \$2.50/ride if you pay on board. If you purchase a Charlie Card in advance, they are \$2 a ride.

## Discounted Rental Cars

The toll-free number to contact the NS-STA-designated car rental company is:

Enterprise 800-593-0505 16AH230

Or go to [www.enterprise.com](http://www.enterprise.com) and use “16AH230” in the “Optional: Coupon, Customer, or Corporate Number” box. Click on “search” and enter PIN “NST.”

## Conference Hotels

See pages 12–13 for a list of hotels and a map of the downtown area. A Housing Bureau representative will be available at the NSTA Program Pickup Kiosk during registration hours to assist with housing questions. You can also reach a Housing Bureau representative by phone at 877-352-6710 or by e-mail at [mike@orchideventolutions.com](mailto:mike@orchideventolutions.com).



—Photo of Museum of Science courtesy of Michael Malyszko/Museum of Science

**The following venue has extended a special offer for Boston conference attendees.**

### **The Museum of Science, Boston**



**Museum of Science®**  
[mos.org](http://mos.org)

Be Our Guest—FREE! The Museum of Science, Boston welcomes NSTA National Conference attendees to visit one of Boston’s top cultural attractions. Present your conference badge and enjoy our live shows and exhibits, including the just opened Hall of Human Life. Stop by the Educator Resource Center for a warm welcome and learn about our award-winning elementary engineering curriculum. Offer valid Thursday, April 3, through Sunday, April 6. NSTA conference badge necessary for entrance (a \$23 value). Take the green line to the Science Park station; for hours, directions, and more, visit [www.mos.org](http://www.mos.org).

The museum is located at 1 Science Park and our website is the best place to get directions as there are several good options.



# National Science Teachers Association

## Shuttle Service to the Boston Convention & Exhibition Center (BCEC)

Shuttle service is provided between the Boston Convention & Exhibition Center (BCEC) and the official NSTA hotels listed below. Please refer to the sign in your hotel lobby for additional information and changes. For questions regarding the shuttle or to make an advance reservation for a wheelchair lift-equipped vehicle, please call the shuttle supervisor with Kushner & Associates at 310-274-8819, ext. 219.



### Hotels and Boarding Locations

#### All routes board on the Northeast Level I at the BCEC

The Westin Boston Waterfront, Renaissance Waterfront\*, and Seaport Hotel are within walking distance of the BCEC and are not part of the shuttle service (\*with the exception of Renaissance for Friday/Saturday special events.)

#### ROUTE 1

Hilton Downtown/Faneuil Hall  
Omni Parker House

#### Boarding Location

Curbside at Broad St.  
NE Corner of Tremont and Beacon

#### ROUTE 2

Boston Park Plaza  
Courtyard by Marriott Tremont  
DoubleTree Hotel–Boston Downtown

#### Boarding Location

Curbside at Columbus Ave.  
Curbside at Tremont St.  
At Courtyard by Marriott Tremont

#### ROUTE 3

Hilton Boston Back Bay  
Sheraton Boston

#### Boarding Location

At Sheraton Boston  
Curbside at Dalton St.

#### ROUTE 4

Boston Marriott Copley Place  
Fairmont Copley Plaza  
Westin Copley Place

#### Boarding Location

Curbside at Huntington Ave.  
At Marriott Copley Place  
At Marriott Copley Place

#### ROUTE 5

DoubleTree Club Hotel–Boston Bayside

#### Boarding Location

Curbside in front

## Hours of Shuttle Operation

**Peak Service:** Shuttles depart every 10–15 minutes

**Off-peak Service:** Shuttles depart every 20–30 minutes

### Wednesday, April 2

Professional Development Institute (PDI) Shuttle between Hotels and the BCEC  
PDIs 1–8 (ticket required)

Off-peak: 7:30–11:30 AM

#### No Shuttle Service

Conference Shuttle between the BCEC and the Hotels

11:30 AM–4:30 PM

Off-peak: 4:30–9:30 PM \*

### Thursday, April 3

Conference Shuttle between Hotels and the BCEC

Peak: 6:30–10:30 AM

#### No Shuttle Service

Conference Shuttle between the BCEC and Hotels

10:30 AM–4:00 PM

Peak: 4:00–9:00 PM \*

### Friday, April 4

Conference Shuttle between Hotels and the BCEC

Peak: 6:30–10:30 AM

#### No Shuttle Service

Conference Shuttle between the BCEC and Hotels (with a stop at the Renaissance Waterfront)  
NSTA Teacher Awards Gala M-5 (ticket required)—Shuttle between the Hotels and the BCEC  
President's Mixer (open to all) (with a stop at the Renaissance Waterfront)

10:30 AM–3:30 PM

Peak: 3:30–8:30 PM

Peak: 8:30–10:00 PM \*

Conference Shuttle between Hotels and the Renaissance Waterfront

Off-peak: 10:00 PM–12:30 AM\*\*

### Saturday, April 5

Conference Shuttle between Hotels and the BCEC

Peak: 6:30–10:30 AM

#### No Shuttle Service

Conference Shuttle between the BCEC and Hotels (with a stop at the Renaissance Waterfront) NCAA Final Four Watch Party M-9 (ticket required)

10:30 AM–4:00 PM

Peak: 4:00–8:00 PM \*

Conference Shuttle between Hotels and the Renaissance Waterfront

Off-peak: 8:00 PM–12:30 AM\*\*

### Sunday, April 6

Conference Shuttle between Hotels and the BCEC

Off-peak: 7:30 AM–12:30 PM \*

\* This is the time the last shuttle from BCEC departs for the hotels. Last shuttle from hotels to BCEC departs one hour prior.

\*\* This is the time the last shuttle from Renaissance departs for the hotels. Last shuttle from hotels to Renaissance departs one hour prior.

# Registration, Travel, and Hotels

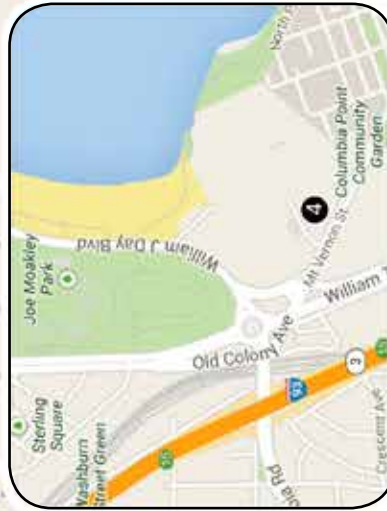
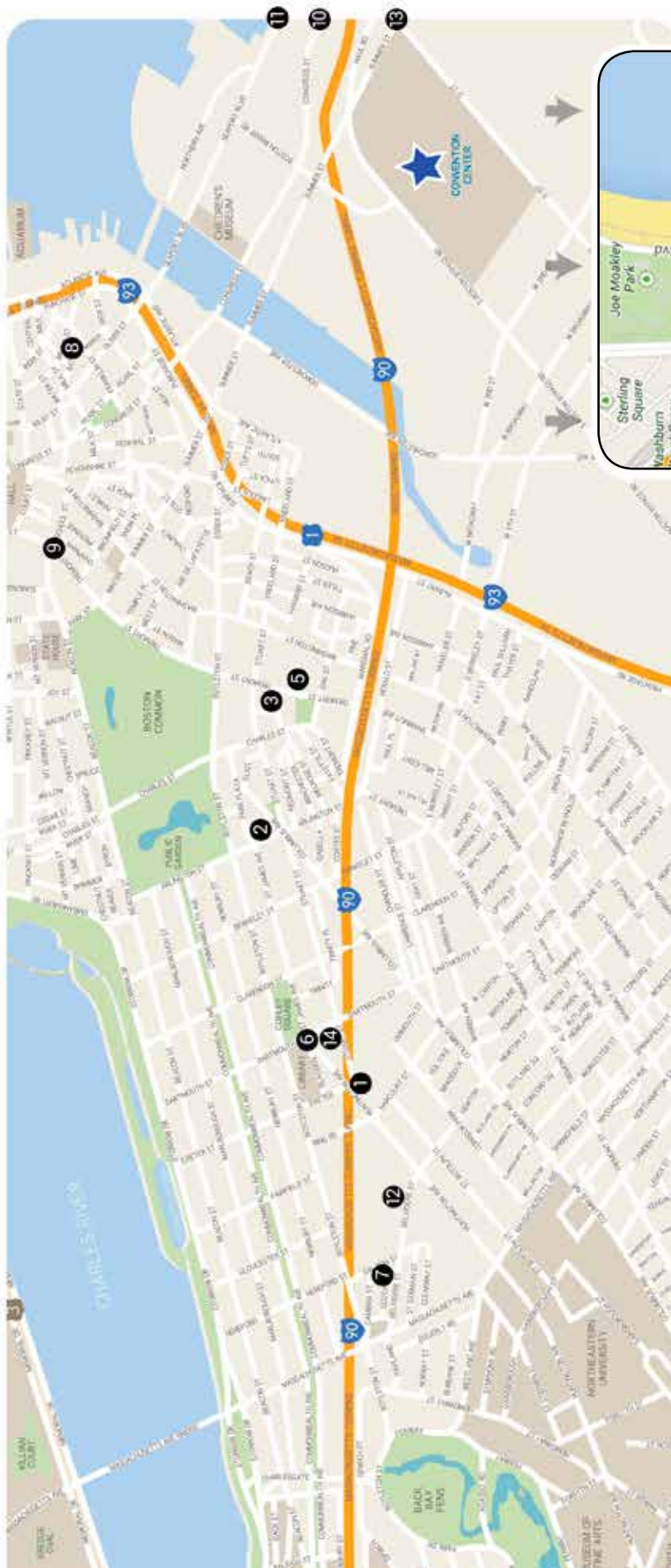
Courtesy of David Fox/Greater Boston Convention and Visitors Bureau



## NSTA Conference Hotels

Numbers correspond to map on next page.

1. Boston Marriott Copley Place  
110 Huntington Ave.  
617-236-5800
2. Boston Park Plaza Hotel & Towers  
64 Arlington St.  
617-426-2000
3. Courtyard by Marriott Boston Tremont  
275 Tremont St.  
617-426-1400
4. DoubleTree Club Hotel—Boston Bayside  
240 Mount Vernon St.  
617-822-3600
5. Doubletree Hotel—Boston Downtown  
821 Washington St.  
617-956-7900
6. Fairmont Boston Copley Plaza  
138 St. James Ave.  
617-267-5300
7. Hilton Boston Back Bay  
40 Dalton St.  
617-236-1100
8. Hilton Boston Downtown/Faneuil Hall  
89 Broad St.  
617-556-0006
9. Omni Parker House Hotel  
60 School St.  
617-227-8600
10. Renaissance Boston Waterfront **Headquarters Hotel**  
606 Congress St.  
617-338-4111
11. Seaport Hotel **Headquarters Hotel**  
1 Seaport Lane  
617-385-4000
12. Sheraton Boston  
39 Dalton St.  
617-236-2000
13. The Westin Boston Waterfront **Headquarters Hotel**  
425 Summer St.  
617-532-4600
14. The Westin Copley Place, Boston  
10 Huntington Ave.  
617-262-9600



## Hotels for the NSTA National Conference in Boston

- |    |   |     |   |
|----|---|-----|---|
| 1. | <b>Boston Marriott Copley Place</b> (2.1 miles)<br>110 Huntington Ave.          | 9.  | <b>Omni Parker House Hotel</b> (1.4 miles)<br>60 School St.                     |
| 2. | <b>Boston Park Plaza Hotel &amp; Towers</b> (1.6 miles)<br>64 Arlington St.     | 10. | <b>Renaissance Boston Waterfront<br/>Headquarters Hotel</b><br>606 Congress St. |
| 3. | <b>Courtyard by Marriott Boston Tremont</b> (1.5 miles)<br>275 Tremont St.      | 11. | <b>Seaport Hotel</b> (2 blocks)<br><b>Headquarters Hotel</b><br>1 Seaport Lane  |
| 4. | <b>DoubleTree Club Hotel–Boston Bayside</b> (2.9 miles)<br>240 Mount Vernon St. | 12. | <b>Sheraton Boston</b> (2.4 miles)<br>39 Dalton St.                             |
| 5. | <b>DoubleTree Hotel–Boston Downtown</b> (1.4 miles)<br>821 Washington St.       | 13. | <b>The Westin Boston Waterfront<br/>Headquarters Hotel</b><br>425 Summer St.    |
| 6. | <b>Fairmont Boston Copley Plaza</b> (1.9 miles)<br>138 St. James Ave.           | 14. | <b>The Westin Copley Place, Boston</b> (1.9 miles)<br>10 Huntington Ave.        |
| 7. | <b>Hilton Boston Back Bay</b> (2.3 miles)<br>40 Dalton St.                      |     |   |
| 8. | <b>Hilton Boston Downtown/Faneuil Hall</b> (1.2 miles)<br>89 Broad St.          |     |   |



### NSTA Exhibits

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

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. A map display of the Exhibit Hall will be on-site in Attendee Registration and in the Exhibit Hall, and maps will be accessible via our Conference app (see page 16). See Volume 4 for a complete list of exhibitors and contact information.

**Ribbon Cutting.** An opening ceremony is scheduled on Thursday at 11:00 AM in the North Lobby of the BCEC.

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

Thu., April 3	11:00 AM–5:00 PM
Fri., April 4	9:00 AM–5:00 PM
Sat., April 5	9:00 AM–5:00 PM

Did you know that NSTA offers Exclusive Exhibits Hall hours—Thursday, 11:00 AM–12:30 PM? During this time, there are no sessions or workshops 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 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 Volume 4 for a complete list of exhibitor workshops. An index of exhibitor workshops scheduled on Thursday begins on page 174.

### NSTA Expo

Stop by the NSTA Expo with its newly created presentation area—NSTAx—and learn about NSTA's benefits, services, programs, and partners...all created for you! Share with others, expand your knowledge, and earn rewards for you and your students. See Volume 4 for details.

### NSTA Science Store

The NSTA Science Store showcases the best new books of 2014 and a wide range of award-winning professional development titles. Pick up exclusive "I Love Science" T-shirts, mugs, and gifts for friends and colleagues.

Stop by and check out our latest books—*Uncovering Student Ideas in Physical Science, Volume 2*; *39 New Electricity and Magnetism Formative Assessment Probes*; and *It's Debatable!: Using Socioscientific Issues to Develop Scientific Literacy and Citizenship, K–12*—and take a peek at our brand-new line of children's books. We'll also be having special events throughout the conference and opportunities for you to meet our amazing authors. Don't forget—all conference attendees enjoy a 20% member discount on NSTA Press® titles along with free shipping for online orders placed during the conference!

Come by and enjoy complimentary internet access at our e-mail stations. Make sure to shop with us on Wednesday night and receive a Welcome Pack with all purchases over \$25. Spend more than \$100 and receive a FREE collectible conference mug while supplies last.

### MAST Booth

The Massachusetts Association of Science Teachers (MAST) booth is located at Attendee Registration in Exhibit Hall A at the BCEC. Stop by for information about Boston and the state of Massachusetts and the benefits of becoming a member of MAST. Membership forms and information on association activities will be available.

### MSELA Booth

The Massachusetts Science Education Leadership Association booth is located at Attendee Registration in Exhibit Hall A at the BCEC. Stop by for information about science education in Massachusetts and the benefits of becoming a MSELA member.

### Wi-Fi in the BCEC

Free wireless internet is available throughout the BCEC, including the exhibition halls, meeting rooms, and public spaces. No additional equipment is required beyond the wireless access equipment installed in the device. It is important to note that this is an unmanaged service. There is no code to access.



### 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.

### Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at [www.surveymonkey.com/s/5CX9FTF](http://www.surveymonkey.com/s/5CX9FTF).

### First Aid Services

The First Aid Room is located on Level 1 of the BCEC, just off the east side of the North Lobby. Look for the red cross. In

case of emergency, call the Public Safety Command Center on an in-house phone at extension 2222 or at 617-954-2222.

### Lost and Found

All lost-and-found items at the BCEC will be turned in at the Exhibitor Registration counter. Lost-and-found items at other facilities will be turned in at the facilities' security offices.

### International Lounge

The Revere Room at The Westin Boston Waterfront has been reserved as an international lounge. All international guests are welcome to use this lounge

as a place to meet or just simply relax while here at the NSTA conference. The lounge will be open Thursday, Friday, and Saturday, 9:00 AM–5:00 PM.

### NSTA Coordinating Center for People with Special Needs

NSTA makes an effort to provide convenience and accessibility for all persons attending conferences. A Center for Services for People with Special Needs, staffed by local committee volunteers, is located in the NSTA Registration Area. If you need assistance, visit this table during registration hours. NSTA cannot guarantee services for requests not made in advance of the conference.

### 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.

### Thursday “Meet and Greet”

Be sure to stop by Thursday from 11:05 AM to 11:30 AM at the entrance to Exhibit Hall A of the BCEC for a special session. Come “meet and greet” with your elected NSTA officers. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you.

### Advice for First-Time Conference Attendees

- *Wear comfortable shoes. You'll be doing a lot of walking!*
- *If you like to collect posters, bring a cardboard tube.*
- *Leave plenty of empty space in your suitcase...in fact, bring an extra large one. You will collect pounds and pounds of literature and stuff.*
- *If you read through the schedule for the day, plan on one or two backups. Sometimes a presenter does not show (for me, it averaged one per conference...not bad) or a room is full or the topic was not really what I needed. Having another one to go to allows you to walk out of a session with a sense of purpose. And when you read the schedule, look around. Ask the people next to you, “Who’s a great presenter?”*
- *Give yourself plenty of time to visit the exhibits, but unless you want to stand in a crowd, don’t go just as it opens. There will be plenty of handouts to go around. You won’t miss anything by going a bit later.*
- *Bring cash or credit cards. You’ll end up buying things from some of the vendors.*
- *If you like to network, bring business cards and collect those of presenters and sales reps you want to stay in contact with.*
- *Avoid large lines. Eat lunch at an “odd” hour.*
- *Spoil yourself. Plan at least one great dinner. If you have an extra day before or after, tour the city. But don’t take conference time to do that!*
- *Keep all receipts. Remember—this is tax deductible.*
- *Keep the pages from the daily schedules for those workshops you attended. If you have to give a report when you get back to school, you will have all the information. But you might find you have a question, and the presenters’ e-mail addresses are listed.*
- *Before you leave, go online to find your state science teachers association, and then contact them to see if they plan to host a hospitality party. It is a nice way to end the day, meet people in your state, get a free munchie or two, and to network.*

*(Submitted by William Peltz)*

### Graduate Credit Opportunity

Boston conference attendees can earn one graduate-level credit hour in professional development through Framingham State University at NSTA’s Boston National Conference. Participants must attend conference sessions totaling at least 12 documented hours for one credit hour, submit a written report, and pay a fee of \$129. To learn more about the assignment requirements and registration, visit [www.framingham.edu/nsta2014](http://www.framingham.edu/nsta2014). Note: Credit is by pass/fail only.

## Conference Resources

### NSTA TV

The National Science Teachers Association (NSTA) is partnering with the international film and broadcasting company, WebsEdge, to bring NSTA TV to this year's National Conference on Science Education in Boston.

NSTA TV is an on-site conference television channel featuring a new episode daily, screened around the BCEC, as well as on a dedicated television channel in selected guest hotel rooms and online.

The TV segments will profile prominent science educators and scientists, highlight the hard work of teachers and organizations committed to elevating the quality of science education in the U.S., and provide an opportunity to learn about new teaching strategies and techniques, and innovative programs and initiatives that are helping to transform science education and learning.

### 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 BCEC hotels, and Exhibit Hall; Social Media plug-ins; a note-taking tool; and "Click!," a unique scavenger hunt photo game. Scan the QR code or visit [www.nsta.org/conferenceapp](http://www.nsta.org/conferenceapp) to download the app. Note: Make sure to create a CrowdCompass account when logging in to be able to export any notes taken with the app.

### 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 Services, the designated AV company on-site, will be located in the following rooms:

BCEC	Room 155 ( <i>Exhibit Level</i> )
Westin	Elm 1 and Elm 2
Seaport	Flagship B
Renaissance	Aegean

### Business Services

The FedEx Office Print & Ship Center<sup>SM</sup> provides business services at Concourse Level 1 at the BCEC. For more information, call 617-954-2203 or e-mail [usa1323@fedex.com](mailto:usa1323@fedex.com). Hours are:

Wednesday–Friday	8:00 AM–6:00 PM
Saturday	8:00 AM–7:00 PM
Sunday	8:00 AM–4:00 PM

# CONFERENCE APP



## Connect. Share. Engage.

Download our conference app for the NSTA Boston National 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
- Win prizes and have a blast playing "Click!," a unique scavenger hunt photo game
- 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: **ward's science+**

**NSTA** National Science Teachers Association

Located at the Boston Marriott Copley Place, FedEx® Office offers a full-service business center. For more information, call 617-421-1890 or e-mail [usa5611@fedex.com](mailto:usa5611@fedex.com).

Hours are:

Wednesday–Friday	7:30 AM–6:30 PM
Saturday	8:30 AM–4:00 PM
Sunday	10:00 AM–4:00 PM

FedEx® Office at the Sheraton Boston offers a full-service business center. For more information, call 617-587-5444 or e-mail [usa5036@fedex.com](mailto:usa5036@fedex.com). Hours are:

Wednesday–Friday	7:00 AM–7:00 PM
Saturday	8:00 AM–5:00 PM
Sunday	9:00 AM–4:00 PM



—Photo of Zakim Bridge courtesy of David Fox/Greater Boston Convention and Visitors Bureau

### 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 completing session evaluations online April 2–17, 2014, while the session is fresh in your mind! Visit [www.nsta.org/evaluations](http://www.nsta.org/evaluations) to complete a short online session evaluation for each session you attend. **And this year, we’re giving away a NEW Kindle Fire HDX 7" to two lucky attendees who complete a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

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

To evaluate a session:

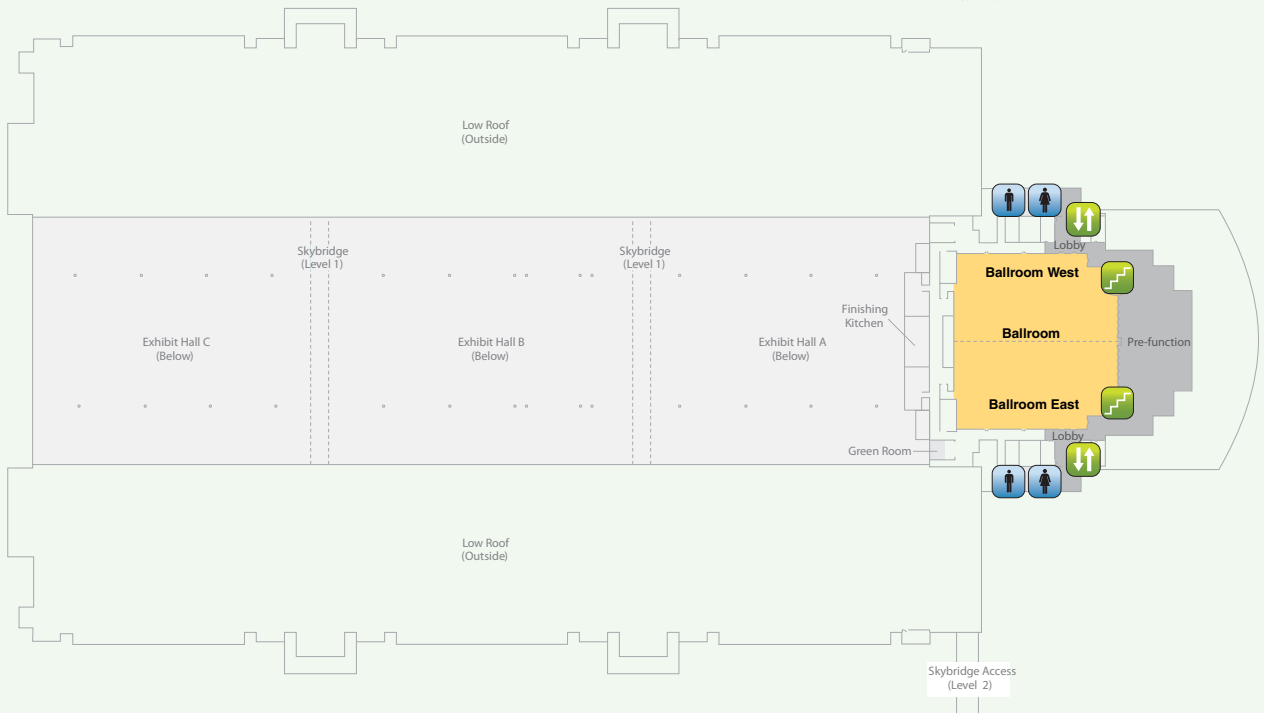
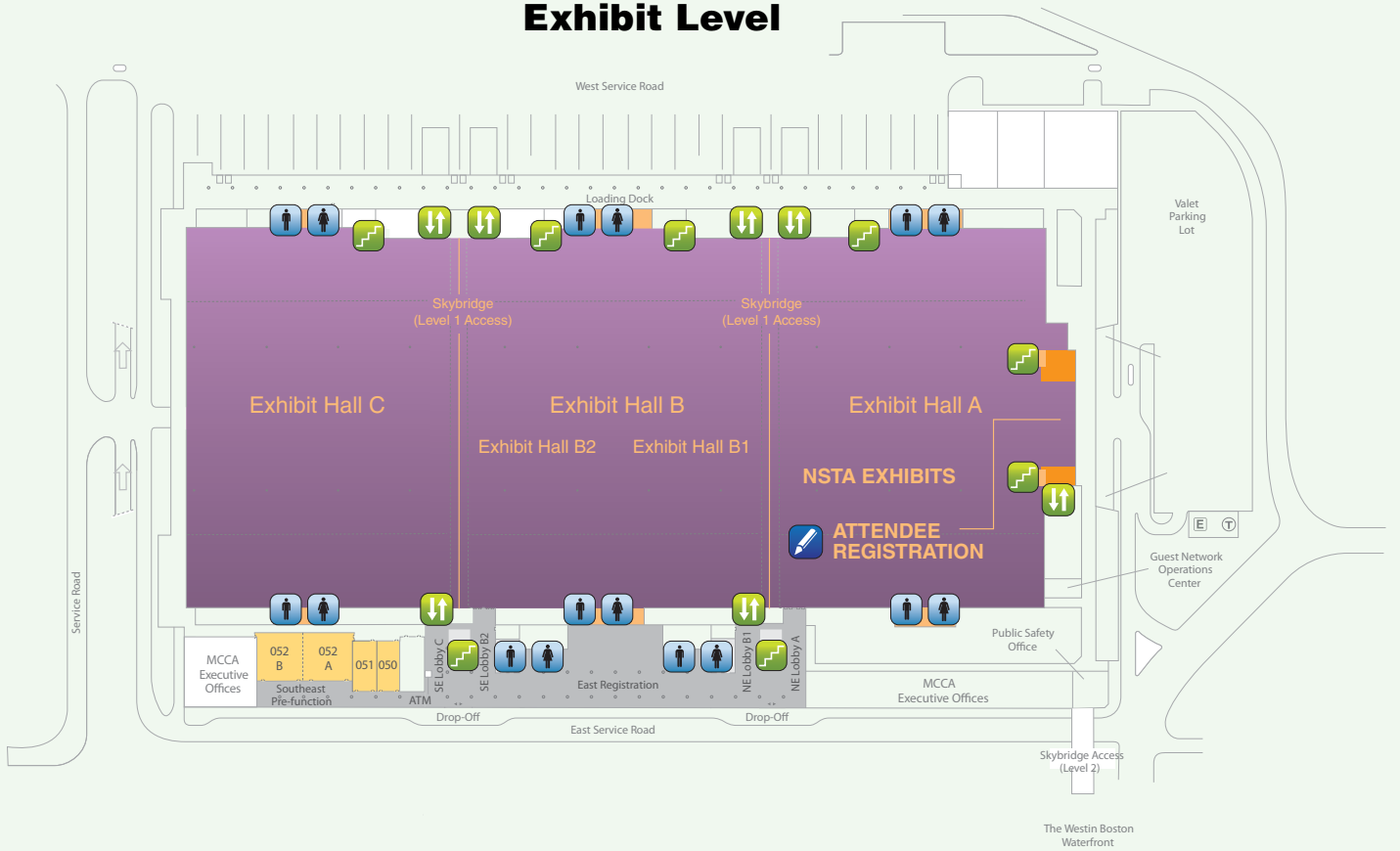
- Enter your badge number (if you don’t remember your badge number, click “help me find my badge number”).
- Type the beginning of the session title in the “Lookup Session” field, scroll down to find the correct session, and click “Submit Session.” The session information will appear and you can begin to evaluate the session.
- When finished evaluating the session, click “Submit Evaluation.”
- Repeat this process for each session attended.

A Professional Development Documentation Form is included following page 64 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 April 23, 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., field trips, short courses, meetings, Exhibit Hall visits, etc.). 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.

# Boston Convention & Exhibition Center

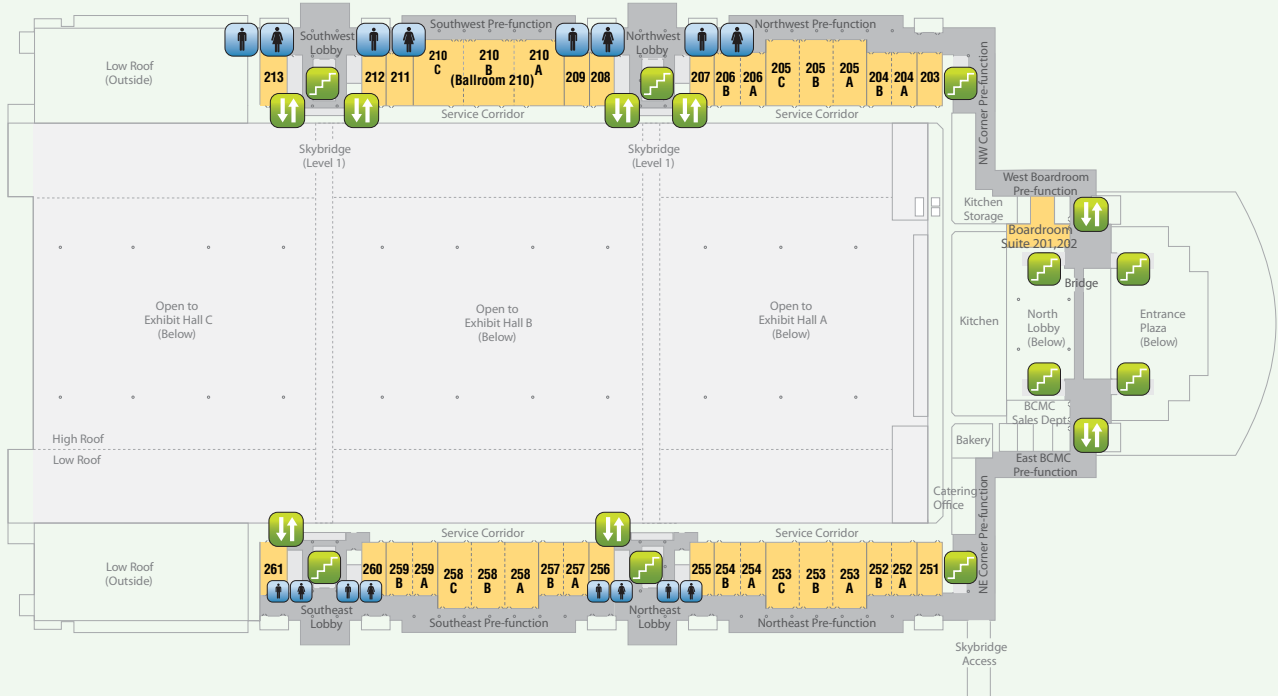
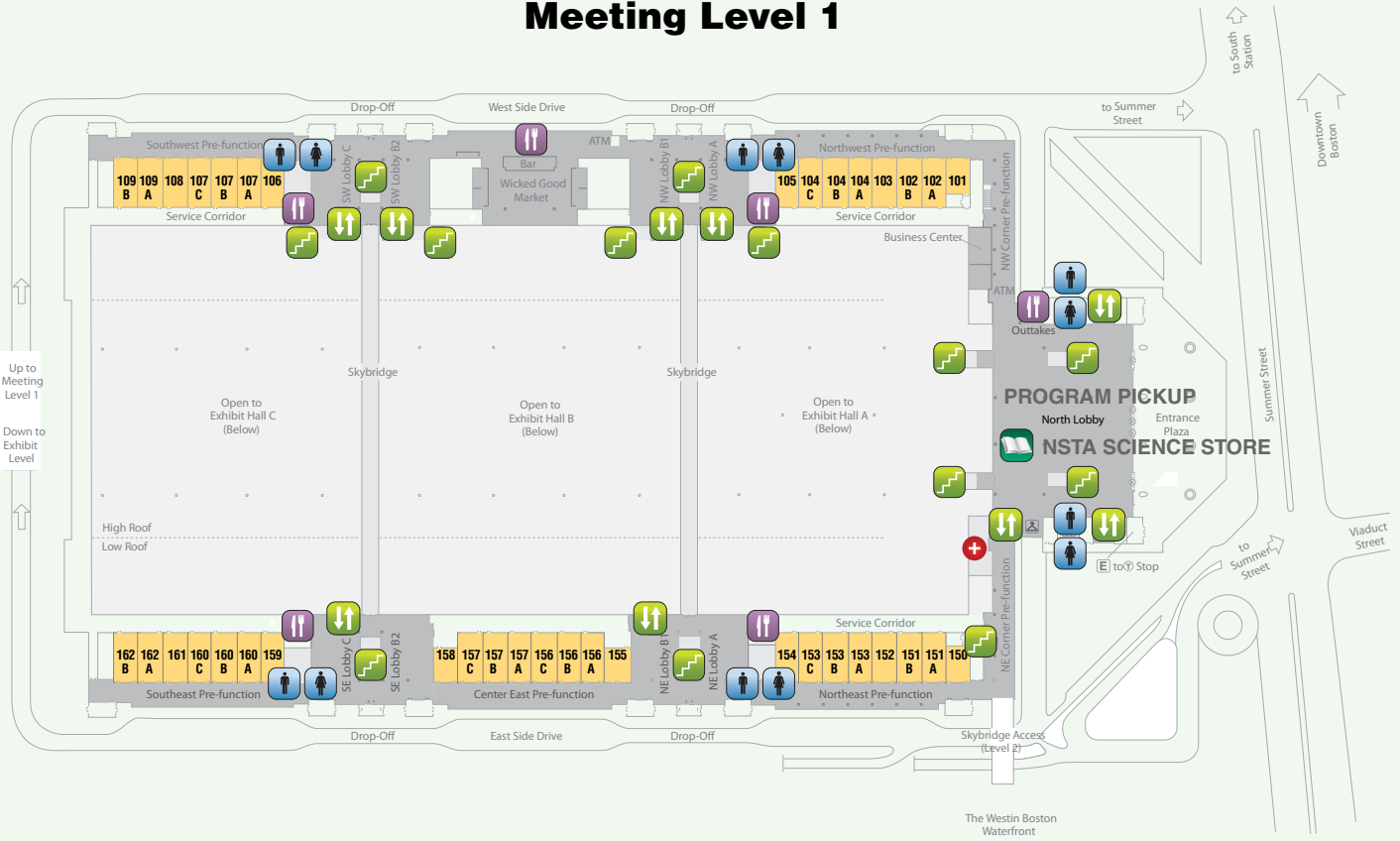
## Exhibit Level



## Ballroom Level

# Boston Convention & Exhibition Center

## Meeting Level 1



## Meeting Level 2

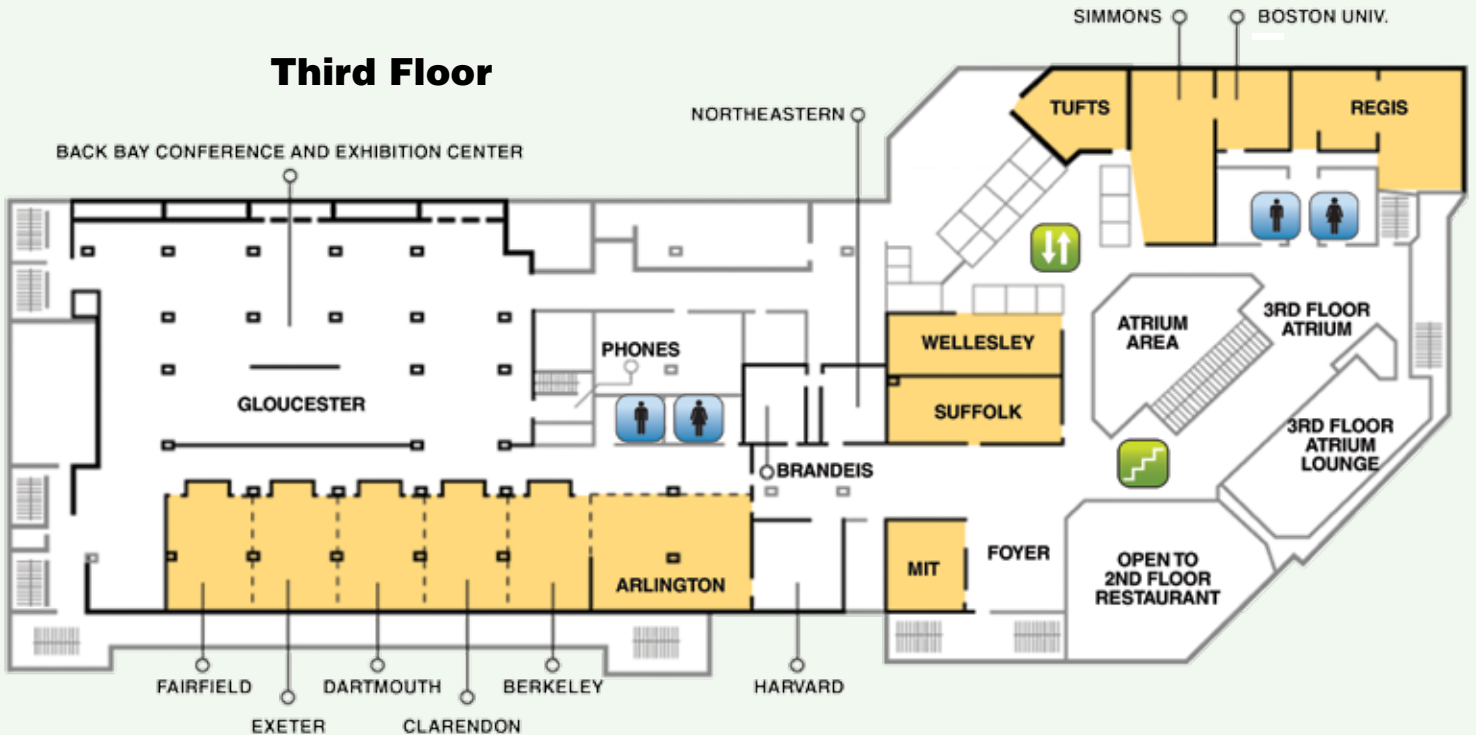
The Westin Boston Waterfront

# Boston Marriott Copley Place

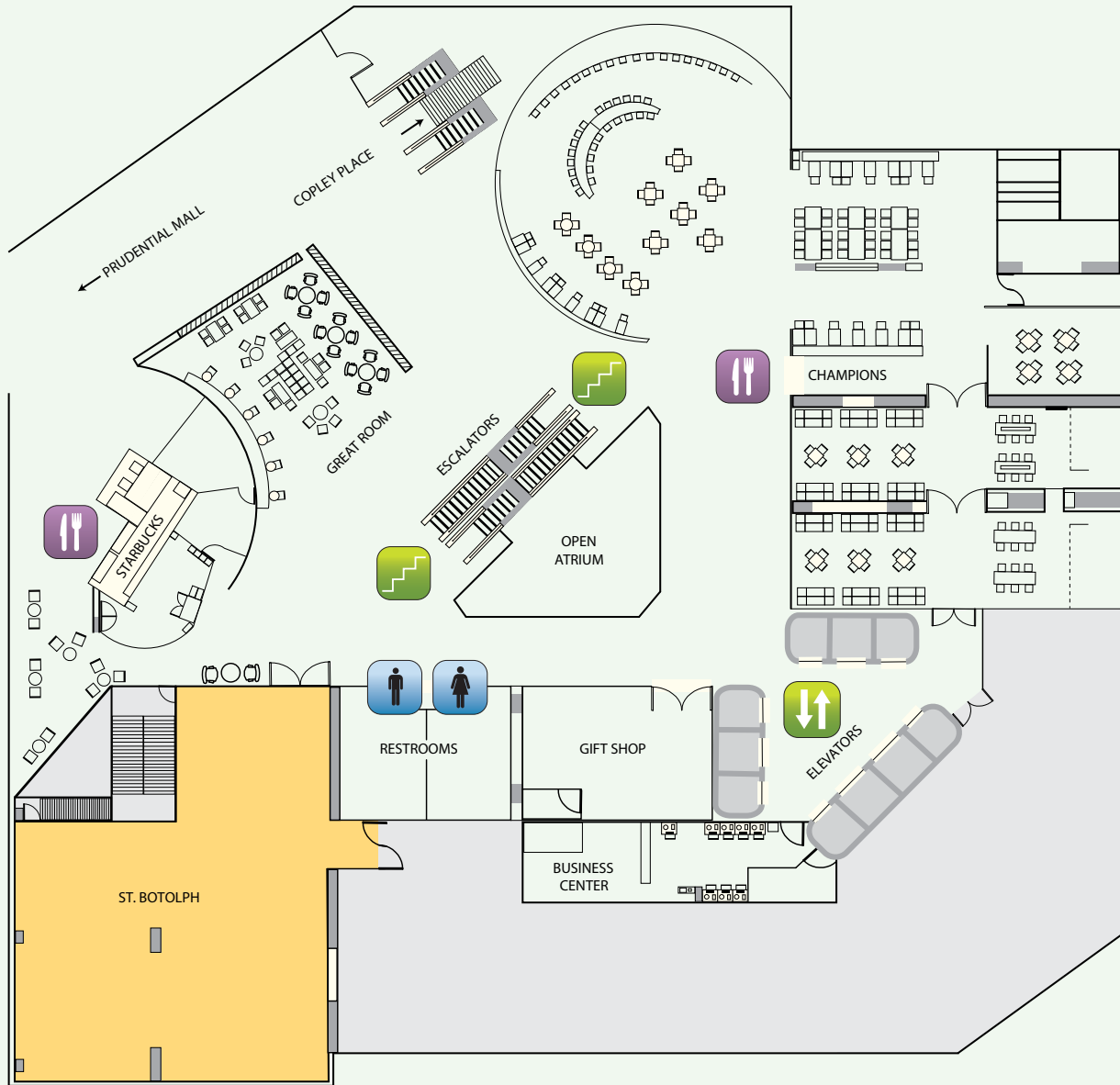
## First Floor



## Third Floor



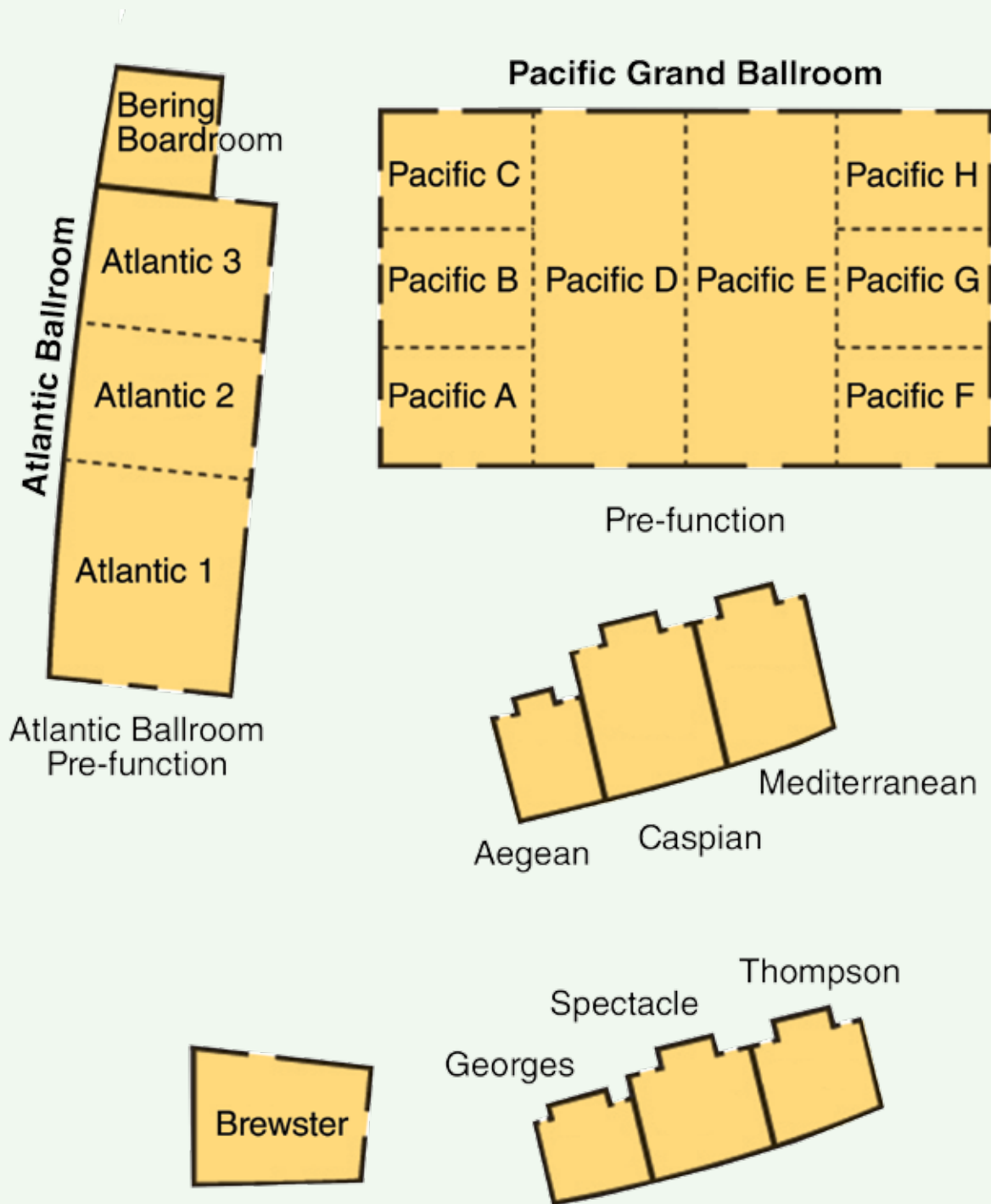
# Boston Marriott Copley Place



**Second Floor**

# Renaissance Boston Waterfront Hotel

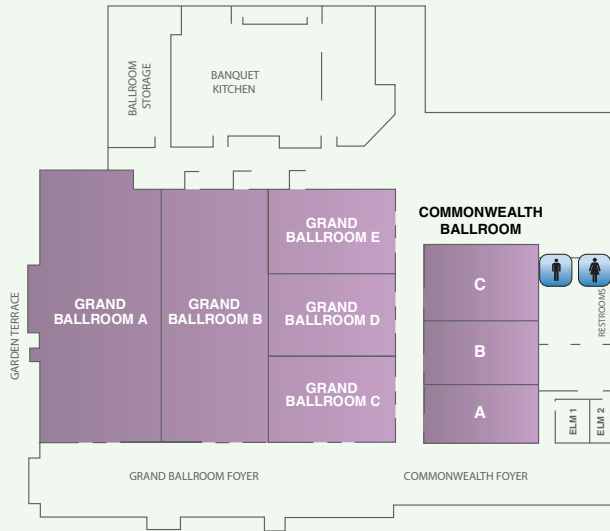
## Third Floor



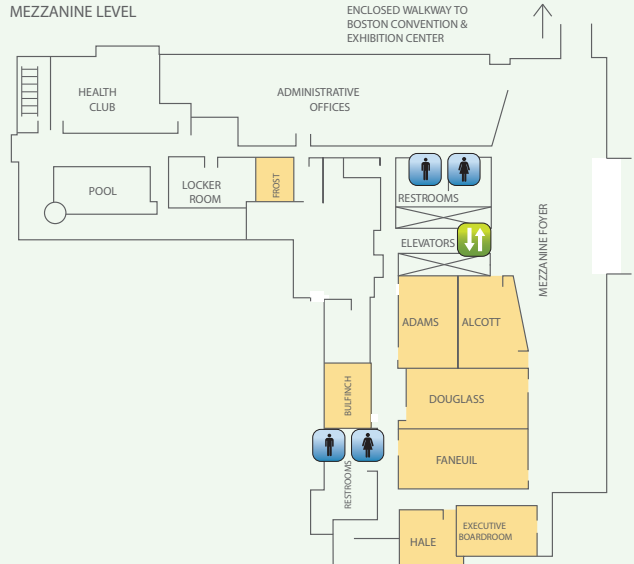


# The Westin Boston Waterfront

CONCOURSE LEVEL

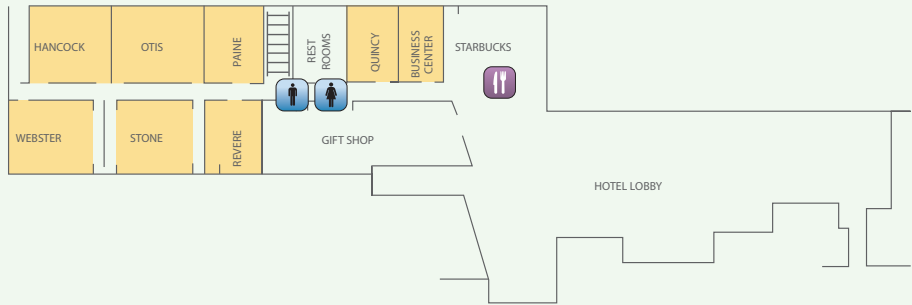


MEZZANINE LEVEL



LOBBY LEVEL

**THE WESTIN**  
BOSTON  
WATERFRONT



CONFERENCE LEVEL



# Seaport Boston Hotel

## Plaza Level



## Mezzanine Level



**#1.**  
20% savings on  
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# 10

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For more information or to become a member,  
[www.nsta.org/membership](http://www.nsta.org/membership) or call 1.800.722.6782

**NSTA** National  
Science  
Teachers  
Association

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Jack Parker, Electronic Prepress Technician

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### *NSTA Mission Statement*

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

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Brian Shmaefsky, Chairperson, and

SCST Affiliate Representative

Robert Ferguson, AMSE Affiliate Representative

Margaret Glass, ASTC Affiliate Representative

John Tillotson, ASTE Affiliate Representative

Julie Thomas, CESI Affiliate Representative

Juan-Carlos Aguilar, CSSS Affiliate Representative

Deborah Hanuscin, NARST Affiliate Representative

Rajeev Swami, NMLSTA Affiliate Representative

Darlene Ryan, NSELA 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

### 2014 STEM Forum & Expo

New Orleans, Louisiana  
May 14–17

### Area Conferences on Science Education

#### 2014 Area Conferences


Richmond, Virginia—October 16–18  
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



—courtesy of Richmond Metropolitan Convention and Visitors Bureau



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APRIL 15, 2014**

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# 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?

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**NSTA** National  
Science  
Teachers  
Association

National Science Teachers Association

**Legacy Award**

This NSTA award posthumously recognizes long-standing members of NSTA for significant lifelong service to NSTA and contributions to science education.



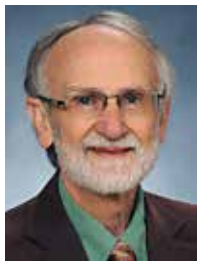
Sylvia K. Shugrue  
1976–1977 NSTA President  
Washington, D.C.

National Science Teachers Association

**Robert H. Carleton Award**

*for National Leadership in the Field of Science Education*

Sponsored by Dow Chemical Co.



Jack Rhoton  
Professor and Executive  
Director of CEMSE  
East Tennessee State University  
Center of Excellence in  
Mathematics and Science  
Education  
Johnson City, Tenn.

**Presidential Citation**



Gerry Wheeler  
Executive Director Emeritus  
NSTA  
Bozeman, Mont.

**Angela Award**



Kavya Kopparapu  
Science Student  
Rachel Carson Middle  
School  
Herndon, Va.

National Science Teachers Association

**Distinguished Teaching Award**

*Sponsored in part by TruGreen*



Lisa Damian-Marvin  
Science Teacher  
Camden Hills Regional  
High School  
Rockport, Maine



Tricia Shelton  
Science Teacher  
Boone County High School  
Florence, Ky.

National Science Teachers Association

**Distinguished Informal Science Education Award**

*Sponsored in part by TruGreen*



Virginia Bourdeau  
Science Specialist  
Oregon State University  
Extension 4-H  
Salem, Ore.



David Smith  
Chief Scientist  
DaVinci Science Center  
Allentown, Pa.

National Science Teachers Association

**Distinguished Service to Science Award**

*Sponsored in part by TruGreen*



Linda Froschauer  
Editor, *Science &  
Children*  
Westport, Conn.



Mary Gromko  
Retired Science Educator  
Colorado Springs, Colo.



Eugenie Scott  
Executive Director  
National Center for  
Science Education  
Oakland, Calif.



**Shell Science Teaching Award**

*Sponsored by Shell Oil Co.*

*Awardee*



Kristen Poindexter  
Science Teacher  
Spring Mill Elementary  
School  
Indianapolis, Ind.

*Finalist*



Shawndra Fordham  
Science Teacher  
Rock Canyon High  
School  
Highlands Ranch,  
Colo.

*Finalist*



Jose Rivas  
Science Teacher  
Lennox Mathematics,  
Science, and Technology  
Academy  
Lennox, Calif.

**Robert E. Yager Foundation Excellence in Teaching Award**

*Yager Scholar*

*NSTA District XVIII  
(Canada)*



Glenn Wagner  
Science Teacher  
Centre Wellington  
District High School  
Fergus, Ont.  
Canada

*NSTA District I  
(CT, MA, RI)*



Chris Willems  
Science Teacher  
Metropolitan Business  
Academy  
New Haven, Conn.

*NSTA District VI  
(NC, SC, TN)*



Lori Khan  
Science Teacher  
Middle College High School  
at Durham Technical  
Community College  
Durham, N.C.

*NSTA District XII  
(IL, IA, WI)*



Tara Bell  
Science Teacher  
Booker T. Washington  
STEM Academy  
Champaign, Ill.

*NSTA District XIII  
(NM, OK, TX)*



Ina Perales  
Science Teacher  
Earl Warren High  
School  
San Antonio, Tex.

**Wendell G. Mohling Outstanding  
Aerospace Educator Award**

*Sponsored by Northrop Grumman Foundation*



Trystan Popish  
Informal Aerospace Science  
Educator  
Aviation Learning Center  
Seattle, Wash.

**Sylvia Shugrue Award  
for Elementary School Teachers**



Lisa Ernst  
Science Teacher  
Alice Fong Yu Alternative  
K-8 School  
San Francisco, Calif.

**Ron Mardigian Memorial  
Biotechnology Explorer Award**

*Sponsored by Bio-Rad Laboratories*



Eric Kessler  
Science Teacher  
Center for Advanced  
Professional Studies (CAPS)  
Overland Park, Kans.

**Faraday Science Communicator Award**



Paula Gangopadhyay  
Chief Learning Officer  
The Henry Ford Center  
Dearborn, Mich.

# Conference Program • NSTA Award Winners

---

## PASCO STEM Educator Awards

*Sponsored by PASCO scientific*



### Elementary Level

Terence McMahon  
Science Teacher  
Meadow Park  
Elementary School  
West Palm Beach, Fla.



### Middle Level

Kenneth Huff  
Science Teacher  
Mill Middle School  
Williamsville, N.Y.



Benjamin McCombs  
Science Teacher  
Van Buren Middle School  
Kettering, Ohio



### High School

Jeffery Grant  
Science Teacher  
North High School  
Downers Grove, Ill.



Daniel Sweet  
Science Teacher  
John Jay Science &  
Engineering Academy  
San Antonio, Tex.

---

## Vernier Technology Awards

*Sponsored by Vernier Software & Technology*

### Elementary Level



Bill Burton  
Science Teacher  
The Lamplighter School  
Dallas, Tex.

### Middle Level



David Auerbach  
Science Teacher  
Cardigan Mountain  
School  
Canaan, N.H.



Christine Gleason  
Science Teacher  
Greenhills School  
Ann Arbor, Mich.

### High School Level



Brian Bollone  
Science Teacher  
Northview High School  
Grand Rapids, Mich.



Gary Garber  
Science Teacher  
Boston University  
Academy  
Boston, Mass.



Ashley Webb  
Science Teacher  
DeSoto Central High  
School  
Southaven, Miss.

### College Level



Paul Adams  
Science Professor  
Fort Hays State University  
Hays, Kans.

**DuPont Challenge Science Essay Teacher Awardees**

*Junior Division*

*Grand-Prize Winner*



Elaine Gillum  
Science Teacher  
Marshall Middle School  
San Diego, Calif.

*First Runner-Up*



Angela Weeks  
Science Teacher  
Beckendorff Junior High  
School  
Katy, Tex.

*Finalist*



Chris Hiller  
Biology Teacher  
Decatur Central High  
School  
Indianapolis, Ind.

*Finalist*



Jonathan Bowns  
Director of Science  
Clovis North Educational  
Center  
Fresno, Calif.

*Senior Division*

*Grand-Prize Winner*



Nga P. Ngo  
Biology Teacher  
Troy High School  
Fullerton, Calif.

*First Runner-Up*



Jennifer Gordinier  
Upper School Science  
Teacher/Science  
Research Coordinator  
Pine Crest School  
Fort Lauderdale, Fla.

*Finalist*



Kavita Gupta  
Instructor AP Chemistry  
Science Dept. Chair  
Monta Vista High School  
Cupertino, Calif.

**The Maitland P. Simmons Memorial  
Award for New Teachers**

- |                  |                             |
|------------------|-----------------------------|
| Ethan Ake        | Elisabeth Knierim           |
| Elisa Beriau     | Robin Lea                   |
| Angela Berk      | Janice Lewis                |
| Kathryn Borton   | Christine Marsh             |
| Lisa Carpenter   | Lori Nelson                 |
| Vonda Dahl       | Demelza Phillips-Abdulwahed |
| Lauren Dandridge | Laura Rossier               |
| Allycia Drummond | Kiley Soule                 |
| Hallie Edgerly   | Jacey Vaughan               |
| Nicole Fuhrman   | Diane Vrobel                |
| Bridget Heneghan | Katie White                 |
| Sara Ibis        | Suzanne Zietlow             |
| Marisa Kapinos   |                             |

**DuPont Pioneer Excellence in  
Agricultural Science Education Award**



Angie Midthun-Hensen  
Science Teacher  
Verona Area High School  
Verona, Mich.

**SeaWorld/Busch Gardens Outstanding  
Environmental Educator of the Year**



Lucas T. Metropulos  
Founder and President  
Fishing for Families in Need  
Boca Raton, Fla.

2014 Shell Science Lab Challenge

*District 5*

*Grand-Prize Winner*



Candace Roy  
IB/AP Biology Teacher  
Vanguard High School  
Ocala, Fla.

The Shell Science Lab Challenge, sponsored by Shell Oil Company and administered by NSTA, encourages teachers (grades 6–12) in the U.S. and Canada, who have found innovative ways to deliver quality lab experiences with limited school and laboratory resources, to share their approaches for a chance to win prizes, including a grand prize school science lab makeover.

To learn how to win a Shell Science Lab Makeover at your school, see page 87 for the “Do You Need a New Science Lab?” session.

*District 4*

*National Finalist*



Bonnie Taylor  
Science Dept. Chair/  
Chemistry Teacher  
Northeast High School  
Philadelphia, Pa.

*District 4*

*Co-Applicant*



Sherry Hanlin  
Biology Teacher  
Northeast High School  
Philadelphia, Pa.

*District 4*

*Co-Applicant*



Maria Barnett  
AP Biology Teacher  
Northeast High School  
Philadelphia, Pa.

*District 4*

*Co-Applicant*



Andrew Arvin  
AP Physics Teacher/  
School Technical Leader  
Northeast High School  
Philadelphia, Pa.

*District 4*

*Co-Applicant*



Jeff Deussing  
Biology and AP  
Environmental Science  
Teacher  
Northeast High School  
Philadelphia, Pa.

*District 7*

*National Finalist*



Dennis Pevey  
Grade 7 Science Teacher  
eStem Public Charter  
School  
Little Rock, Ark.

*District 13*

*National Finalist*



Carla Tonrey  
Grade 7 Science  
Teacher, Head of  
Science Dept.  
Taos Middle School  
Taos, N.Mex.

*District 13*

*Co-Applicant*



Laura Tenorio  
District Science Fair  
Director and Lab  
Manager/Science  
Instructor  
Taos Middle School  
Taos, N.Mex.

*District 14*

*National Finalist*



Benjamin Magtutu  
Physics and Chemistry  
Teacher  
Delta High School  
Delta, Colo.

# Biotechnology Explorer™



New Fish DNA Barcoding Kit

## Visit Us at Booth #315

### Free hands-on workshops!

Having a hard time infusing student-driven inquiry and STEM into your labs?

Join us for rich discussion and **hands-on learning** around **student-centered learning experiences** in the biology classroom. We have the tools and support to help you make it happen.

Join us for fun new workshops!

For more information on workshop descriptions and schedules, visit us at [explorer.bio-rad.com/workshops](http://explorer.bio-rad.com/workshops).

## NSTA Boston Workshop Schedule

Join us in rooms 157 A and B for our workshops.

### Thursday April 3

8:00–9:30 AM

10:00–11:30 AM

9:00–11:30 AM

1:00–3:30 PM

1:30–3:00 PM

3:30–5:00 PM

### Friday April 4

8:30–10:00 AM

9:00–11:30 AM

1:00–2:30 PM

1:00–2:00 PM

3:00–4:30 PM

3:00–4:00 PM

### Saturday April 5

9:00–10:30 AM

*Identify Patient Zero of a Zombie Apocalypse*

*How to Use Pop-Culture Science in Your Science Classes*

*Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4)*

*Generate a DNA Barcode and Identify Species (AP Big Ideas 1, 2, 3, 4)*

*Engineer the Tools for Inquiry of Candy Food Dyes*

*Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, 4)*

*Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, 4)*

*DNA Detectives — Who Killed Jose? (AP Big Ideas 3, 4)*

*Shifting Practices to Infuse Science and Engineering Practices with the NGSS*

*Solve a Forensic Mystery Story Using Engineering and Science*

*Communicating Science through Lab Notebooking*

*Ecology to Enzymes to Industry (AP Big Ideas 1, 2, 4)*

*Show Me the Money! Finding Funds for Biotech, a Grant Writing Workshop*



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—Courtesy of David Fox/Greater Boston Convention and Visitors Bureau



See page 10 for a special offer for NSTA conference attendees to visit the Museum of Science, Boston.

## Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend either one of two Thursday sessions that are specifically intended for first-time conference attendees. These sessions will help you make the most of your first-time conference experience.

See pages 92 and 155 for details.

## Ribbon-Cutting Ceremony

An opening ceremony is scheduled on Thursday at 11:00 AM in the North Lobby.

9:00 AM–4:00 PM	<b>Wednesday, April 2</b> (Volume 1) NSTA Professional Development Institutes and Work Sessions (check in between 8:00 and 9:00 AM). . . . . 48–50, 82
8:00–9:00 AM	<b>Thursday, April 3</b> (Volume 1) First-Timers’ Meeting (Is This Your First NSTA Conference?) . . .92
8:00 AM–1:00 PM	Global Conversations in Science Education Conference (M-1) . .104
9:15–10:30 AM	General Session: Mayim Bialik . . . . . 106
11:00–11:05 AM	Exhibits Opening/Ribbon-Cutting Ceremony . . . . . 116
11:05–11:30 AM	Meet the Presidents and Board/Council . . . . . 117
11:05 AM–5:00 PM	Exhibits . . . . . 117
12 Noon–1:00 PM	Special Session: STEM Behind Hollywood—Adventure, . . . . . 117 Drama, and Mystery in Your Classroom Speakers: Mayim Bialik and Steven Schlozman <i>sponsored by Texas Instruments</i>
12:30–1:30 PM	Mary C. McCurdy Lecture: David A. Aguilar . . . . . 122
2:00–3:00 PM	Featured Presentation: Stephen L. Pruitt and Rodger W. Bybee . . .134
2:00–3:00 PM	Special Session: Gregg Treinish . . . . . 135 <i>sponsored by National Geographic Learning</i>
3:30–4:30 PM	First-Timers’ Meeting (Conference Tips for First-Timers) . . . . .155
3:30–4:30 PM	Featured Presentation: Yvonne M. Spicer . . . . . 150 <i>sponsored by Shell</i>
3:30–5:30 PM	The Planetary Society Lecture: Bill Nye . . . . . 159
5:00–6:00 PM	Special Session: Paul A. O’Gorman . . . . . 163
6:00 PM–12 Mid	Special Evening Session: A Festival of Engineering, . . . . . 172–173 Technology, and Science Treats as Related to STEM, the NRC <i>Framework</i> , and the NGSS, Part 1
6:30–8:00 PM	<i>Young Voices for the Planet</i> Film Festival . . . . . 171
	<b>Friday, April 4</b> (Volume 2)
	<b>See Conference Highlights, Volume 2, for page numbers.</b>
7:30–9:00 AM	High School Breakfast (M-2): Rory Wilson
7:30–9:00 AM	Science in the Community Breakfast (M-3): Steve “Jake” Jacobs
7:30 AM–4:00 PM	Informal Science Day
8:00–9:00 AM	Featured Presentation: Arthur Eisenkraft <i>sponsored by Shell</i>
8:00–10:00 AM	Elementary Extravaganza
8:00 AM–2:00 PM	Meet Me in the Middle Day
9:00 AM–12 Noon	NSTA Exemplary Science Programs (ESP)
9:00 AM–5:00 PM	Exhibits
10:30–11:30 AM	Featured Presentation: Steve Rich
12 Noon–2:00 PM	ASTE/NSELA Luncheon (M-4): Raj Chetty
12:30–1:30 PM	SCST Marjorie Gardner Lecture: Mike Klymkowsky
1:30–2:30 PM	NSTA Chapter and District Ice Cream Social in Honor of Wendell Mohling, <i>sponsored by GEICO</i>
2:00–3:00 PM	Featured Presentation: Joseph Acaba
2:00–3:00 PM	AGU Lecture: Suchi Gopal
3:30–4:30 PM	Robert H. Carleton Lecture: John E. Penick
6:15–8:45 PM	NSTA Teacher Awards Gala (M-5)
6:00 PM–12 Mid	Special Evening Session: A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC <i>Framework</i> , and the NGSS, Part 2
9:00 PM–12 Mid	President’s Mixer with DJ and cash bar

**General Session**

Thursday, April 3, 9:15–10:30 AM



**Mayim Bialik**  
Actress, STEM  
Advocate, Teacher,  
and Texas Instruments  
Brand Ambassador

**The Power of One  
Teacher**

Mayim Bialik stars on the science-focused comedy *The Big Bang Theory* as Sheldon’s neurobiologist girlfriend, and she is also a neuroscientist in real life. Today, Mayim is helping change the perception of scientists while reaching out to teachers to be that source of inspiration that leads a student to a lifelong love of science and learning.

(See page 106 for details.)

8:30 AM–4:30 PM	Teacher Researcher Day
9:00 AM–5:00 PM	Exhibits
9:30–10:30 AM	Featured Presentation: James Balog
9:30 AM–5:00 PM	NGSS@NSTA Forum
11:00 AM–12 Noon	Paul F-Brandwein Lecture: David T. Sobel
12 Noon–1:30 PM	NSTA/SCST College Luncheon (M-6): Michael Jackson
12 Noon–2:00 PM	CESI/NSTA Elementary Science Luncheon (M-7): Susan Wirth
12 Noon–2:00 PM	Aerospace Educators Luncheon (M-8): Joseph Acaba <i>sponsored by Northrup Grumman</i>
2:00–3:00 PM	NSTA/ASE Honors Exchange Lecture: Pete Robinson
3:30–4:30 PM	Featured Presentation: Wendy Saul
6:00 PM–12 Mid	Special Evening Session: A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC <i>Framework</i> , and the NGSS, Part 3
7:30 PM–12 Mid	NCAA Final Four Watch Party! (M-9): John Fontanella <i>sponsored in part by Vernier Software &amp; Technology</i>

**Saturday, April 5** (Volume 3)

**See Conference Highlights, Volume 3, for page numbers.**

**Sunday, April 6** (Volume 3)

**See Conference Highlights, Volume 3, for page numbers.**

7:00–8:00 AM	NSTA Life Members’ Buffet Breakfast: Celebrate Your Lifetime Dedication (M-10)
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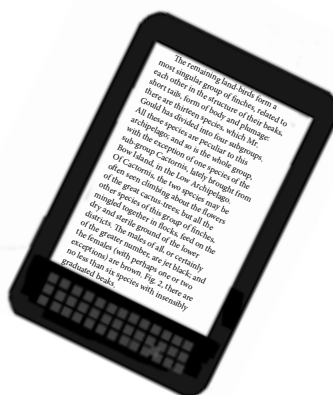
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Your feedback helps us in creating the best conference experience for you and other attendees.

- WE’RE GIVING AWAY 2 NEW KINDLE FIRES HDX 7", 16 GB**



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



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

See the following pages for a list of sessions and events for each strand.



### **Science and Literacy: A Symbiotic Relationship**

Attention to literacy is often seen as taking time away from science. In fact, built right into the *Common Core State Standards, ELA*, literacy can and should be used to enhance the effective teaching of science. Well-designed and integrated science and literacy instruction creates a symbiosis that supports classroom practice and student achievement. The investigation of science concepts within the elementary classroom enhances the development of reading, writing, and communication skills. At the upper grades, strengthened literacy skills continue to empower all students to access the science content and communicate their understanding. This strand will address how literacy and science are in service to each other across the learning continuum.



### **Teaching Elementary Science with Confidence!**

With limited time, resources, and opportunities to learn science, it is no wonder elementary teachers find teaching science within the school day to be challenging. There is a constant struggle to find the time for engaging students in active science experiences. We also know that simply doing a science activity does not produce a deep understanding of concepts. This strand provides opportunities for elementary teachers to enhance their content knowledge, locate resources, incorporate science and engineering practices from the *Next Generation Science Standards*, and explore classroom management strategies when teaching science.



### **Leading from the Classroom**

Throughout their careers, teachers grow professionally and often see opportunities to improve science education. But does that mean leaving the classroom? Why can't a teacher be both a classroom teacher and leader? Effective science teachers often think that the only way to increase their impact on science education is to leave the classroom. In fact, there are myriad leadership roles that can be fulfilled as a teacher leader. This strand addresses the skills and opportunities for developing leadership capacity while continuing to serve as effective classroom teachers.



### **Engineering and Science: Technological Partners**

Are you integrating science and engineering practices into your instruction? Are you looking for the latest cool tools to enrich your classroom? With the *NRC Framework* and the *Next Generation Science Standards* defining science and engineering as intertwined, teachers are expected to integrate both within the science curriculum. This strand explores the thoughtful, effective, and meaningful integration of technologies to increase STEM learning and understanding.



**Science and Literacy: A Symbiotic Relationship**

**Thursday, April 3**

**12:30–1:30 PM**

Get to the Point: Techniques for Downhill Writing

**2:00–3:00 PM**

Closing the Achievement Gap with Constructed Response

**2:00–6:00 PM**

Short Course: Pathways to STEM: Putting Roots in Literature to Enhance Science Instruction  
(By Ticket: SC-6)

**3:30–4:30 PM**

The 4Cs and Science: Incorporating 21st-Century Learning and Innovation Skills into K–12 Curricula

**Friday, April 4**

**8:00–9:00 AM**

Liberating Literacy Strategies for Today's Science Classroom

**9:00 AM–12 Noon**

Short Course: To Read or Not to Read: That Is No Longer the Question  
(By Ticket: SC-10)

**12:30–1:30 PM**

Collaborative Editing of Student Work Online in Science and English Language Arts

**2:00–3:00 PM**

Bringing Primary Scientific Literature to the Classroom Through the *Journal of Emerging Investigators*

**3:30–4:30 PM**

Telling a Story with Data and Visuals: Critiquing and Creating Infographics in the Classroom

**Saturday, April 5**

**8:00–9:00 AM**

Teaching Science Through Literacy to English Language Learners and Early Childhood Kindergarten Learners

**8:00–11:00 AM**

Short Course: The Role of Oral and Written Language in Inquiry-based Science Learning  
(By Ticket: SC-19)

**9:30–10:30 AM**

Active Reading of Nonfiction Text  
Science Glossaries as Teaching Tools

**2:00–3:00 PM**

Tricks of the Trade 4.0: Literacy Strategies to Enhance Your Science Instruction

**3:30–4:30 PM**

Featured Presentation: Reading and Writing Science: What Should Be My Line?  
(Speaker: Wendy Saul)

**Sunday, April 6**

**8:00–9:00 AM**

Discourse—Worth Discussing!

**9:30–10:30 AM**

Expand the Popular Mary Pope Osborne's Magic Tree House Adventures by Building in Hands-On Science Activities as They Are Read

**Teaching Elementary Science with Confidence!**

**Thursday, April 3**

**8:00–9:00 AM**

Doing Problem-based Science Challenges and Managing Your Classroom—How to Do Both Successfully!

**8:00–9:30 AM**

Short Course: The Dirt on Earth System Science: Exploring SOIL with Making Sense of SCIENCE™  
(By Ticket: SC-1)

**12:30–1:30 PM**

Helping Young Learners Explore Their Universe with PBS LearningMedia

**1:00–6:00 PM**

Short Course: Using GLOBE in the Elementary Classroom  
(By Ticket: SC-3)

**2:00–3:00 PM**

How Can I Change It and What Will Happen? Identifying Variables with Wind-ups

**3:30–4:30 PM**

Compost: The “Rot” Thing for Our Earth

**Friday, April 4**

**8:00–9:00 AM**

Using Electric Circuit Puzzles for Design and Assessment

**8:00–11:15 AM**

Short Course: Our Changing Earth: New England's Geologic Past  
(By Ticket: SC-8)

**8:00 AM–12 Noon**

Short Course: We're All in This Together: Cooperative Learning in the Science Classroom  
(By Ticket: SC-9)

**9:30–10:30 AM**

Doing Science the Scientific Way: It's Not as Hard as It Sounds

**10:30–11:30 AM**

Featured Presentation: Chrysalis: Transforming Your Teaching  
(Speaker: Steve Rich)

## Teaching Elementary Science with Confidence!, cont.

### Friday, April 4, cont.

#### 11:00 AM–12 Noon

Engineering Made Easy: NGSS Practices for Elementary Students

#### 3:30–4:30 PM

Differentiating Science for Elementary Students

#### 5:00–6:00 PM

Butterfly Gardening Using Native Plants

### Saturday, April 5

#### 8:00–9:00 AM

Wow, We Are Scientists!

#### 12:30–1:30 PM

How Can I Help? Empowering Students with Citizen Science

#### 2:00–3:00 PM

Unhuggable Critters

#### 3:30–4:30 PM

Connecting STEM and American History Through Water Wheels

#### 5:00–6:00 PM

Wiggly Worms: Active Learning for the Early Grades

### Sunday, April 6

#### 8:00–9:00 AM

“Nature”-ally Good Science Teaching in Early Childhood Education

#### 9:30–10:30 AM

Teaching Ocean Science to Elementary Students Using National Marine Sanctuaries

#### 11:00–11:30 AM

Stars and Crafts

---

## Leading from the Classroom

### Thursday, April 3

#### 8:00–9:00 AM

Preparing for the Future: Developing Science Teacher Leaders

#### 12:30–1:30 PM

Opening Up Your Door: Fostering Teacher-led Communities of Inquiry and Collaboration

#### 3:30–4:30 PM

Becoming Teacher Leaders Through Curriculum Development: Collaborating to Design and Implement the Science Youth Action Research Curriculum

#### 5:00–6:00 PM

Teachers and STEM Education Policy

### Friday, April 4

#### 8:00–9:00 AM

Featured Presentation: The NRC *Framework* and the NGSS: An Opportunity for Teacher Growth and Leadership (Speaker: Arthur Eisenkraft)

Building Teacher Capacity: The Role of Science Leader-Teachers

#### 9:00 AM–3:00 PM

Short Course: Building Capacity for Collaborative School Communities for Science Learning (By Ticket: SC-12)

#### 9:30–10:30 AM

Science Education Fellowship Program: Supporting District Cohorts of Science Teacher Leaders

### 11:00 AM–12 Noon

How to Effectively Implement a Curricular Review as a Teacher Leader

Teachers Developing as Leaders: A Panel Discussion

### 12:30–1:30 PM

Analyzing Student Work for Language Structures That Support Conceptual Understanding

### 2:00–3:00 PM

Teacher Leaders in the RESTEP to STEM

### 3:00–6:00 PM

Short Course: Integrating Outdoor Teaching and Learning into the Boston Public Schools Science Curriculum (By Ticket: SC-15)

### 5:00–6:00 PM

Developing Teachers into Master Educators and Leaders: National Board Certification

### Saturday, April 5

#### 8:00–9:00 AM

Who Me? Yes, YOU! How to Become a Teacher Leader

#### 8:00–11:00 AM

Short Course: Leading the Way; Classroom Teachers in Action (By Ticket: SC-20)

### 11:00 AM–12 Noon

Making the Case for Elementary Science Specialists

### 12:30–1:30 PM

Professional Development: Capturing the Trends, Practices, and Research to Strengthen Teaching and Learning

### 2:00–3:00 PM

Partners in Learning and Leading: Teacher Residencies in a Science Museum

### 3:30–4:30 PM

To Lead from the Classroom, Get Out of the Classroom!

### 5:00–5:30 PM

Streamline to Mastery: A Model for STEM Professional Development

### Sunday, April 6

#### 8:00–9:00 AM

SILT (Science Instructional Leadership Teams): A Model of Student Work Analysis to Improve Teacher Practice

#### 9:30–10:00 AM

Levels of Leadership for Teachers in Educator-based Organizations: An Example from the Pennsylvania Earth Science Teachers Association

#### 11:00–11:30 AM

Collaborative Capacity Building for Next Generation Science Teacher-Leaders

Engineering and Science: Technological Partners

**Thursday, April 3**

**8:00–9:00 AM**

sTem: Merging Technology with Engineering

**8:30 AM–12:15 PM**

Short Course: Banana Remote Controllers?  
Tinkering with Purpose  
(By Ticket: SC-2)

**12:30–1:30 PM**

Science 2.0: Putting Web 2.0 into the Science Classroom

**2:00–3:00 PM**

iPads in Science

**3:30–4:30 PM**

Featured Presentation: Engineering and Science: Strengthening the Partnership  
(Speaker: Yvonne M. Spicer)

The World of Google in Science

**5:00–6:00 PM**

Using Evernote, Wikis, and Blogs to Create a Science Diary

**Friday, April 4**

**8:00–9:00 AM**

Digitizing the Learning Experience and Taking IT Mobile

**9:00 AM–12 Noon**

Short Course: Sustainability and Engineering  
(By Ticket: SC-11)

**9:30–10:30 AM**

Going Beyond Data Collection—Sharing in a Science Classroom

How-To Workshop on Organizing a STEM Design Challenge Day

**11:00 AM–12 Noon**

Google Me This: How to Make Collaboration Work in a Wiki World

**12:30–1:30 PM**

Engage Students by Writing Your Own Science Book

**2:00–3:00 PM**

Engineering Practices in Early Childhood: Designing Mechanisms with Mech-a-Blocks

**3:30–4:30 PM**

Bridging Engineering and Science

**5:00–5:30 PM**

Supporting Students in Optimizing Engineering Design Solutions with Modeling and Mathematics

**Saturday, April 5**

**7:30 AM–5:15 PM**

Short Course: How Do We Explore?  
Teaching the *Next Generation Science Standards* Through NOAA Ocean Exploration  
(By Ticket: SC-17)

**8:00–9:00 AM**

Advancing Science Learning: Teaching Elementary Life Science Through Engineering Problems

**8:00 AM–12 Noon**

Short Course: Building Structures with Young Children to Support STEM Learning  
(By Ticket: SC-21)

**9:30–10:30 AM**

Bioengineering Challenges and Middle School Life Science

**11:00 AM–12 Noon**

The Science of Solubility: Using Reverse Engineering to Brew a Perfect Cup of Coffee  
3-2-1 Blastoff!

**12:30–1:30 PM**

Slingshot Physics: An Authentic Application of Work, Energy, Friction, and Newton's First Law of Motion

**2:00–3:00 PM**

Burps and Chirps: Using Bioacoustics to Encourage Inquiry-based Learning in STEM

**Sunday, April 6**

**9:30–10:30 AM**

3-2-1 Blast Off! Launching Rockets to Merge Science and Engineering Practices

## Global Conversations in Science Education Conference



### Building and Sustaining Leadership to Support New Reforms and Development of Literacy

Thursday, April 3, 8:00 AM–1:00 PM  
Grand Ballroom A/B, Westin Waterfront

*By Preregistration Only (M-1)*

NSTA has planned a half day dedicated to science education from an international perspective. The conference commences with a plenary talk by Jari Lavonen, professor of Physics and Chemistry Education and department head of Teacher Education, University of Helsinki, Finland. This plenary session will be followed by interactive panels, a poster session, and an afternoon plenary talk by Joseph Krajcik, director of CREATE for STEM Institute and professor of Science Education, Michigan State University. During this event, there will be numerous opportunities for international visitors to network with science educators from various cultures. *For an agenda on Global Conversations Conference events, see page 104.*

8:00–8:30 AM	Continental Breakfast
8:30–9:00 AM	Welcome and Introductions <i>(Grand A/B)</i>
9:00–10:00 AM	Plenary Session <i>Leadership, Professional Teachers, and Reforms in a Finnish Science Education Context</i> Speaker: Jari Lavonen, Professor of Physics and Chemistry Education and Department Head of Teacher Education, University of Helsinki, Finland
10:00–10:10 AM	Break
10:10–10:55 AM	Interactive Panel #1: Science and Literacy
10:55–11:15 AM	Poster Session
11:15 AM–12 Noon	Interactive Panel #2: Engineering and Science Partnerships
12 Noon–1:00 PM	Plenary Session <i>Working Together to Promote Science Education Throughout the Globe</i> Speaker: Joseph Krajcik, Director of CREATE for STEM Institute and Professor of Science Education, Michigan State University, East Lansing
1:00 PM	Closing Remarks

## Meet Me in the Middle Day

*Sponsored by the National Middle Level Science Teachers Association (NMLSTA)*

*Friday, April 4, 8:00 AM–2:00 PM*

*Grand Ballroom A/B, Westin Waterfront*

Calling all middle school science teachers! Meet Me in the Middle Day is designed just for you. The day will include a Bring Your Own Breakfast networking session featuring middle school leaders, sessions geared toward middle school, and a share-a-thon with a room full of activities that you can take back to your classroom. Join us and re-energize your teaching. You may even be the lucky winner of an iPad mini or other door prizes.

An agenda follows. *Meet Me in the Middle Day events are described throughout Volume 2.*

8:00–9:15 AM	Bring Your Own Breakfast (BYOB) for Middle School Educators
9:30–10:30 AM	Concurrent Sessions
11:00 AM–12 Noon	Concurrent Sessions
12:30–2:00 PM	Lunch and Learn Share-a-Thon



*Photo of Jason Chin courtesy of Carol Scrimgeour. See Vol. 2 for Meet Me in the Middle Session: Science in 32 Pages: The Brilliant and Graceful Work of Jason Chin.*

# STEM STARTS HERE!

## NGSS@NSTA FORUM SATURDAY, APRIL 5

BOSTON CONVENTION & EXHIBITION CENTER, ROOM 210 A & B

Take a deep dive into the *Next Generation Science Standards* with writers, state science supervisors, assessment experts, and more.

**9:30 a.m.** Planning an NGSS Curriculum

**11:00 a.m.** Translating the NGSS for Classroom Instruction

**12:30 p.m.** Finding and Evaluating Resources for NGSS: The EQUIP Rubric and the NGSS@NSTA Hub

**2:00 p.m.** Literacy and Science: NGSS and Common Core ELA

**3:30 p.m.** Panel Discussion: The Future of Assessment With NGSS

SPECIAL ONE-DAY EVENT **FREE** TO ALL CONFERENCE ATTENDEES. PARTICIPATE IN ONE OR MORE PRESENTATION.

FOR MORE DETAILS, VISIT  
[www.nsta.org/ngss](http://www.nsta.org/ngss)



NGSS@  
NSTA

*Science Education Reform*



*More Emphasis... Less Emphasis*

**NSTA Exemplary Science Program (ESP)**

**ESP: Unique Features of Programs That Meet “More Emphasis” Features in the NSES**

Friday, April 4, 9:00 AM–12 Noon

Grand Ballroom D, Westin Waterfront

NSTA’s Exemplary Science Programs (ESP) series identifies people and places where the reforms recommended have emerged. The exemplary include: 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; 7) Exemplary

Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching.

The series was conceived by Robert E. Yager (1982–1983 NSTA President), who continues ESP searches and ways of recognizing classroom successes while also encouraging more to try!

*ESP symposia are described in the daily program (Volume 2).*

Coordinators: **Robert E. Yager**, 1982–1983 NSTA President, and University of Iowa, Iowa City  
**Susan Koba**, Retired Educator, Omaha, Neb.

*Community of Excellence in Mathematics and Science*

Susan Koba, Retired Educator, Omaha, Neb.

*Adapting the JASON Project*

Warren Phillips, Retired Educator, Halifax, Mass.

*Bringing School Science to College*

Sondra Akins, William Paterson University, Wayne, N.J.

*The Road to Becoming an Exemplary College Science Teacher*

Katherine Follette, The University of Arizona, Tucson

*Teaching Science with Pictures*

Karl Spencer, The Visual Realization Program, Houston, Tex.

*Developing Students’ Authentic Inquiry Skills*

Judith A. Scheppler, Illinois Mathematics and Science Academy®, Aurora

*Why STEM? Why Now?*

Brenda Wojnowski, WAI Education Solutions, Dallas, Tex.

*Stop Talking, Start Listening*

Peter Veronesi, The College of Brockport, N.Y.



## Informal Science Day

Friday, April 4, 7:30 AM–4:00 PM  
Ballroom West, BCEC

Packed with exciting informal science presentations and activities, Informal Science Day is intended to build awareness of the abundance of existing high-quality informal science education methods, resources, and opportunities available to enhance science teaching and learning. It is designed to offer a “town square” at which both informal and formal science educators can meet and interact to share best practices in informal science, learn about exciting collaborations happening among informal and formal science organizations, network with colleagues, and dialogue around ideas and innovations. Informal organizations represented include museums and science centers, media, after-school programs, university outreach, and others that provide and/or support out-of-school science education.

An agenda follows. *Informal Science Day events are described throughout Volume 2.*

- |                  |  |
|------------------|--|
| 7:30–9:00 AM     | Science in the Community Breakfast<br><i>Sponsored in part by DuPont</i><br>(Tickets Required: M-3)<br><i>Wizard Tales: Mostly True Stories from Discovery Channel, MythBusters, and Mr. Wizard’s World</i><br>Steven “Jake” Jacobs, Faraday Studios, Wichita, Kans. |
| 9:30–10:30 AM    | Breakout Sessions  |
| 11:00 AM–12 Noon | Breakout Sessions  |
| 12:30–1:30 PM    | Breakout Sessions  |
| 2:00–4:00 PM     | Informal Science Day Share-a-Thon  |

## Teacher Researcher Day

Saturday, April 5, 8:30 AM–4:30 PM  
Plaza Ballroom, Seaport

Teacher researchers are curious about their students’ learning and ask questions to try to better understand what is happening in their classrooms. They collect data such as videotapes of instruction, copies of student work, and their own written reflections. Then they try to make sense out of what they see in the data and use this knowledge to improve their teaching. Teacher Researcher Day is for both new and experienced teacher researchers. The full day of activities includes a poster session and presentations on topical issues. These sessions provide opportunities to meet teacher researchers and learn about their studies in a wide variety of contexts.

An agenda follows. *Teacher Researcher Day events are described throughout Volume 3.*

- |                  |  |
|------------------|--|
| 8:30–9:30 AM     | Poster Session for Teachers and Teacher Educators Inquiring into Science Learning and Teaching |
| 9:30–11:00 AM    | Presentation: <i>Finding Meaning Through Teacher Inquiry</i>                                   |
| 11:00 AM–12 Noon | Concurrent Sessions  |
| 12 Noon–12:30 PM | Science Inquiry Group Network  |
| 12:30–1:30 PM    | Concurrent Sessions  |
| 2:00–3:00 PM     | Concurrent Sessions  |
| 3:30–4:30 PM     | Concurrent Sessions  |

## NSTA Press Sessions

NSTA Press® books offer new classroom ideas and standards-based strategies. Join NSTA Press authors for these sessions linked to the topics of their books.

### Thursday, April 3

#### 8:00–9:00 AM

Teaching for Conceptual Understanding with the NGSS

Doing Good Science in Middle School

*Next Time You See...*

#### 12:30–1:30 PM

*Exemplary Science: Best Practices in Professional Development*

#### 2:00–3:00 PM

Safer STEM Activities

*Everyday Engineering*

Uncovering Students' Ideas in Astronomy and the NGSS

#### 3:30–4:30 PM

Uncovering Students' (and Teachers') Ideas About Stars and the Universe

Science for All: Adapting Labs for Students with Learning Disabilities

#### 3:30–5:00 PM

Tools to Deepen Students' Understanding of Hard-to-Teach Biology Concepts

#### 5:00–6:00 PM

Whole Class Inquiry—How to Improve Participation

Using iPads for Lab Notebooks with Earth Science Success!

### Friday, April 4 (Volume 2)

#### 8:00–9:00 AM

Reaching the Next Stephen Hawking: Tips for Including Students with Disabilities in Advanced Science Classes

Earth Science Puzzles—Making Meaning from Data

#### 9:30–10:30 AM

Teacher Liability—Walking on the Safer Side!

#### 11:00 AM–12 Noon

Inside-Out—Enhancing Field-based Learning in Environmental Science for the Upper Elementary Classroom

Get the FACTs for Supporting Evidence-based Talk and Argument

#### 12:30–1:00 PM

Beyond the Numbers: Making Sense of Statistics

#### 12:30–1:30 PM

Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry

#### 2:00–3:00 PM

*Science & Children*—A Year of Inquiry

Special Needs Students in Science

#### 3:30–4:30 PM

The Authors' Picks! Teaching Science Through Trade Books

Newly Designed Whole Class Inquiry Projects and Assessment in Biology, Chemistry, and Physics

#### 5:00–6:00 PM

Argumentation in the Science Classroom

Five E(z) Elementary Steps to Next Generation Science Teaching

### Saturday, April 5 (Volume 3)

#### 8:00–9:00 AM

*Everyday Science Mysteries*—The Details

#### 9:30–10:30 AM

Uncovering K–5 Students' Ideas with Science Talk

#### 11:00 AM–12 Noon

Rise and Shine: A Practical Guide for the Beginning Science Teacher

#### 12:30–1:30 PM

Brain-powered Science Teaching and Learning with Discrepant Events

#### 2:00–3:00 PM

Outdoor Science and Bringing It Indoors

#### 3:30–4:30 PM

Once Upon a Science Book

Pendulums and Porch Swings—Using Probes and Mystery Stories to Link Science and Engineering

#### 5:00–6:00 PM

Be a Scientist! Bring Biology to Life Through Citizen Science

### Sunday, April 6 (Volume 3)

#### 8:00–9:00 AM

Using Science Mysteries to Promote Literacy

#### 9:30–10:30 AM

*Common Core State Standards, ELA + the NGSS = Even More Brain-powered Science*

*The New Science Teacher's Handbook*

#### 11:00 AM–12 Noon

*Common Core State Standards, Mathematics + the NGSS = More Brain-powered Science*  
Gourmet Lab





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## NSTA Professional Development Institutes

Wednesday, April 2

9:00 AM–4:00 PM

***PDI***s and work sessions were available by preregistration only.

The vision of K–12 science education painted by the NRC *Framework* that has been used to develop the *Next Generation Science Standards* has two goals—educating all students in science and engineering and providing the foundational knowledge for those who will become the scientists, engineers, technologists, and technicians of the future. To create a classroom culture that supports this vision, NSTA presents eight Professional Development Institutes (PDIs) and one-day work sessions, which are focused, content-based programs that explore key topics in pursuit and support of this vision in significant depth. The three work sessions are one-day sessions at a reduced fee because they do not include pathway sessions. Check in between 8:00 and 9:00 AM.



### **NGSS Practices of Science: Student Reasoning at the Core of Science Instruction (PDI-1)**

Provider: Biological Science Curriculum Study (BSCS)

**Paul J. Numedahl**, BSCS, Colorado Springs, Colo.

Level: Grades K–8

Location: 203, BCEC

Immerse yourself in a day of scientific inquiry using the *Next Generation Science Standards* Practices of Science. Make connections between your understanding of scientific inquiry and the practices of science as described in the NGSS and then experience activities that allow you to engage in the practices of science while reasoning about science content as a learner.

### **BSCS Pathway Sessions**

All sessions are located in 203. See daily program for details.

#### **Thursday, April 3**

8:00–9:00 AM

A Vision of Inquiry Using the NGSS Practices of Science and Engineering

12:30–2:30 PM

Developing and Using Models in the Classroom (NGSS Practice 2)

3:00–6:00 PM

Analyzing and Interpreting Data in the Classroom (NGSS Practice 4)

#### **Friday, April 4**

8:00–9:00 AM

Exploring the NGSS Practices of Science and Engineering

9:30 AM–12:30 PM

Explanation and Argumentation in the Classroom (NGSS Practices 6 and 7)

2:00–4:00 PM

Obtaining, Evaluating, and Communicating Information in the Classroom (NGSS Practice 8)

### **Increasing Language Skills and Access to Rigorous Science Education: Examining the Opportunities That the Next Generation Science Standards Provide to English Language Learners (PDI-2)**

Provider: Office of English Language Acquisition, U.S. Dept. of Education

**Okhee Lee**, University of Miami, Coral Gables, Fla.

Level: Grades K–12

Location: 204 A/B, BCEC

Join the U.S. Department of Education's Office of English Language Acquisition to learn about current research to inform the classroom practices teachers can use to support language skills development and science learning for English Language Learners (ELLs), while simultaneously implementing discourse-rich practices called for by the NGSS.

### **OELA Pathway Sessions**

All sessions are located in 204 A/B. See daily program for details.

#### **Thursday, April 3**

8:00–9:30 AM

Discourse Strategies to Assist English Language Learners to Engage in Physical Science

10:00–11:30 AM

Using Three Promising Practices to Increase Language Development and Science Learning

12:30–2:00 PM

Designing Science Lessons That Meet the NGSS and Increase EL Students' Language Skills and Science Knowledge

2:30–4:00 PM

Using Parent-Student-Teacher Relationships to Enhance ELLs' Science and Language Learning

## **Building STEM Capacity with NGSS: Addressing Engineering and Technology in the Next Generation Science Standards (PDI-3)**

Provider: Orange County Public Schools, Florida; Portland State University; and *Next Generation Science Standards* Writing Team Members

**Mariel Milano**, Orange County Public Schools, Orlando, Fla.  
Level: Grades K–12  
Location: 206 A/B, BCEC

Using NGSS standards, come learn how to integrate the core ideas of engineering into science content while developing science and engineering practices. The primary focus will be on helping educators, schools, districts, and states understand the student outcomes for engineering in elementary, middle school, and high school across all disciplines of science.

### **NGSS Pathway Sessions**

All sessions are located in 206 A/B. See daily program for details.

#### **Thursday, April 3**

8:00–10:00 AM

*STEM Lesson Essentials* and the NGSS

12:30–2:30 PM

Developing Evaluation Tools for STEM Progress at the School and District Levels

3:00–5:00 PM

Developing Performance Assessments  
Linking the NGSS and the CCSS

#### **Friday, April 4**

8:00–9:30 AM

Developing a STEM Philanthropic Plan

10:00 AM–12 Noon

Exploring How the NGSS and CCSS *Mathematics* Work Together

1:00–3:00 PM

Making Connections Between Engineering, Technology, Science, and Society in Your Local Community

3:30–5:30 PM

Using Engineering Practices to Develop Science Concepts

## **Integrating Science Practices with CCSS ELA Strategies Using Teaching Cases and Online Data Tools (PDI-4)**

Provider: American Museum of Natural History, New York City

**Jim Short**, American Museum of Natural History, New York, N.Y.

Level: Grades 5–12

Location: 208, BCEC

Explore the kinds of teaching resources needed to support the learning goals described in the *Next Generation Science Standards*. By exploring the use of innovative teaching case materials developed by the American Museum of Natural History, participants will learn about ways to integrate the teaching of science practices with CCSS ELA standards.

### **AMNH Pathway Sessions**

Most sessions are located in 208. See daily program for details.

#### **Thursday, April 3**

8:00–10:00 AM

Constructing Explanations Based on Evidence  
About the Evolution of Antibiotic-resistant Bacteria

12:30–2:30 PM

Analyzing and Interpreting Data to Determine Earthquake Risk

3:30–5:00 PM

Using a Web-based Graphing Tool to Analyze and Interpret Ecology Data and the Long-Term Impact of the Zebra Mussel Invasion on the Hudson River Ecosystem

#### **Friday, April 4**

8:00–10:00 AM

Analyzing and Interpreting Data Using Visualizations and Scientific Data Sets

11:00 AM–12:30 PM

Using a Web-based Graphing Tool to Analyze and Interpret Weather Data, Climate Change, and Patterns in Weather and Climate

2:00–3:30 PM

Connecting Earth Science Content and CCSS English Language Arts Reading Standards Using Museum Resources

4:00–5:30 PM

Using CCSS English Language Arts Writing Standards and Museum Resources to Construct Science Explanations

## **Deepening Thinking and Reasoning Through Discussion and Writing in K–5 Inquiry-based Science (PDI-5)**

Provider: Wheelock College

**Jeff Winokur**, Wheelock College, Boston, Mass.

Level: Grades K–5

Location: 209, BCEC

Now faced with the challenge of implementing the CCSS, elementary educators will soon be asked to incorporate the NGSS into their curriculum as well. This PDI focuses on how language, specifically speaking and writing, is essential for students to use to deepen their understanding of science concepts and their ability to engage in science practices.

### **Wheelock Pathway Sessions**

All sessions are located in 209. See daily program for details.

#### **Thursday, April 3**

8:00–9:00 AM

The Insightful Use of Science Notebooks

12:30–2:30 PM

No Hands! Facilitating Meaningful Science Discussions with Elementary Students

#### **Friday, April 4**

8:00–9:00 AM

Connecting Science and Literacy in the Middle School Classroom

9:30–10:30 AM

Supporting Science Talk in PreK Classrooms

11:00 AM–12 Noon

Weaving Science and Literacy into the Elementary Classroom to Meet the NGSS and CCSS

2:00–5:00 PM

Science and Writing: A Research-based Approach that Enhances Learning in Both Domains

### One-Day Work Session: Designing Effective Science Lessons Aligned to the Next Generation Science Standards (PDI-6)

Provider: McREL

**Anne Tweed**, 2004–2005 NSTA President, and McREL, Denver, Colo.

Level: General

Location: 211, BCEC

*Designing Effective Science Instruction* (Tweed, 2009) recommends strategies founded upon a research base showing improved student achievement and understanding. Engage in exploring these strategies to develop an understanding of how designing effective lessons promotes instruction that develops student understanding and promotes a positive learning environment.

### One-Day Work Session: Developing Formative and Summative Assessments of NGSS Performance Expectations (PDI-7)

Provider: University of Colorado, Boulder, and SRI International

**Angela Haydel DeBarger**, SRI International, Menlo Park, Calif.

Level: Grades K–8

Location: 254B, BCEC

*Designing Effective Science Instruction* (Tweed, 2009) recommends strategies founded upon a research base showing improved student achievement and understanding. Engage in exploring these strategies to develop an understanding of how designing effective lessons promotes instruction that develops student understanding and promotes a positive learning environment.

### One-Day Work Session: NGSS 101: An Introduction to the Next Generation Science Standards (PDI-8)

Provider: CREATE for STEM Institute (Institute for Collaborative Research for Education, Assessment and Teaching Environments for STEM), Michigan State University

**Joseph Krajcik**, Michigan State University, East Lansing

Level: Grades K–12

Location: 212, BCEC

The *Next Generation Science Standards* present a great opportunity to improve science education, but this new approach to science teaching and learning is new to many educators. Join several NGSS writers, a science education researcher, and elementary and secondary classroom teachers for an introduction to the standards. Learn how you can begin to change how teaching and learning takes place in your classroom as you move toward implementation of NGSS.



*NSTA symposia are high-quality professional development opportunities that include a face-to-face learning symposium at the conference and a discussion forum within NSTA Communities that allow for extended interaction between participants and presenters. Designed to enhance teachers' knowledge of both science content and best teaching practices, symposia are standards based and presented by scientists, engineers, and educational specialists from NSTA partners such as NSF. Admission to NSTA symposia is by ticket only and requires conference registration.*

*Tickets, if still available, can be purchased at the Ticket Sales Counter in the NSTA Registration Area.*



### **Flight of the Monarch Butterflies (SYM-1)**

**Ann Hobbie** ([ann.s.hobbie@gmail.com](mailto:ann.s.hobbie@gmail.com)) and **De Cansler** ([decansler@gmail.com](mailto:decansler@gmail.com)), University of Minnesota Dept. of Fisheries, Wildlife, and Conservation Biology, St. Paul

Level: Grades K–12

Date/Time: Friday, April 4, 12:15–6:30 PM

Location: Off-site (Museum of Science)

Registration Fee: \$54

Presented by the Maryland Science Center in conjunction with Monarchs in the Classroom at the University of Minnesota and made possible by a grant from the National Science Foundation, this half-day symposium is a high-quality learning experience designed to enhance teachers' knowledge of both science content and best teaching practices. Join us to view the latest IMAX film *Flight of the Butterflies* and engage in classroom activities focused on the monarchs' amazing migration across North America, as well as their habitats and life cycle. Hear from experts in the field of monarch study about how you and your students can become involved in citizen science projects to help the monarchs. Educational materials will be provided for classroom use. Lunch will be served after a 1:00 PM showing of the film. Each participant will receive a \$75 stipend for attendance. For more details, visit [bit.ly/1dyZ74p](http://bit.ly/1dyZ74p).

*Note:* Please meet your symposium leader 15 minutes prior to departure time in the Northwest Lobby of the BCEC on the Exhibit Level.



—Courtesy of Jim O'Leary/Maryland Science Center

This blended professional development opportunity is preceded by two NSTA sessions, which explore the four stages of the monarch butterfly with live specimens of each stage—egg, larva, pupa, and adult monarchs.

*Related sessions open to all conference attendees. See Volume 2 for details.*

#### **Monarch Sessions**

*Webster, Westin Boston Waterfront*

Fri., April 4, 8:00–9:00 AM

Life Cycle of the Monarch Butterfly

Fri., April 4, 9:30–10:30 AM

Life Cycle of the Monarch Butterfly

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



**The Dirt on Earth System Science: Exploring SOIL with Making Sense of SCIENCE™ (SC-1)**

**Nick Balster** (*njbalster@wisc.edu*), University of Wisconsin–Madison

**Kirsten Daehler** (*kdaehle@wested.org*), WestEd, Redwood City, Calif.

Level: Grades K–12

Date/Time: Thursday, April 3, 8:00–9:30 AM

Location: Boylston, Marriott Copley Place

Registration Fee: \$27

Join us as we dig into the fascinating world of soil using a novel curriculum that couples content knowledge with active learning to teach Earth system science. We will be using a professional development curriculum, Making Sense of SCIENCE™. Explore the amazing skin of Earth from its mineral components to the classification system that describes its distribution and associations in our backyards to landscapes around the world. Attention will be paid to common misconceptions as well as the pedagogy behind the curriculum, including classroom management strategies. Together, we will engage in hands-on learning using authentic tasks that can be tailored to suit any classroom.



**Banana Remote Controllers? Tinkering with Purpose (SC-2)**

**Stephanie Chang** (*stephanie@makeria.org*), Maker Education Initiative, Sebastopol, CA

**Danielle Martin** (*dmmartin@mos.org*), Museum of Science, Boston, Mass.

Level: Middle Level–High School/Informal Education

Date/Time: Thursday, April 3, 8:30 AM–12:15 PM

Location: Off-site, Museum of Science

Registration Fee: \$62

Turn everyday objects into computer controllers! Learn how to use Scratch and MaKey MaKey to engage youth with the engineer-it-yourself culture and new technologies. Scratch, a free and simple programming language, allows everyone to create a program in minutes. Participants will combine their Scratch creation with the MaKey MaKey to do some imaginative game play involving everyday objects such as bananas! The possibilities are endless and



One of the many exhibits to see at the Museum of Science, Boston. Banana Remote Controllers? Tinkering with Purpose (SC-2)

allow children to enter the realm of computer programming from varying ability levels and areas of interest. All participants will receive free admission to the Museum of Science, Boston for the day!

*Note:* Please meet your short course leader 15 minutes prior to departure time in the Northwest Lobby of the BCEC on the Exhibit Level for this off-site short course at the Museum of Science.



**Using GLOBE in the Elementary Classroom (SC-3)**

**Gary Randolph** (*randolph@globe.gov*), **Julie Malmberg** (*malmberg@globe.gov*), and **Kristin Wegner** (*kwegner@globe.gov*), The GLOBE Program, Boulder, Colo.

Level: Elementary

Date/Time: Thursday, April 3, 1:00–6:00 PM

Location: Wellesley, Marriott Copley Place

Registration Fee: \$28

GLOBE stands for Global Learning and Observations to Benefit the Environment. This short course will teach you how to engage and support your students in real research on the local environment that is standards based and allows for authentic assessment. You will learn how GLOBE resources can help students observe and ask questions, form testable hypotheses, design and conduct scientifically sound observational investigations, submit online reports for peer review, and submit a paper for online publication. Additionally, you will learn how the GLOBE website can be used to support collaborations with scientists and with other schools worldwide. Receive resources for immediate implementation in the classroom. For more information, go to [www.globe.gov](http://www.globe.gov).

**The Perfect Storm: Exploring Energy Transformations in Large-Scale Storms (SC-4)**

**April Chancellor** ([april.chancellor@msichicago.org](mailto:april.chancellor@msichicago.org)), Museum of Science and Industry, Chicago, Ill.

Level: Grades 4–8

Date/Time: Thursday, April 3, 1:30–5:00 PM

Location: Simmons, Marriott Copley Place

Registration Fee: \$57

Most students have experienced thunderstorms. Tornado chasing, storm watching, and hurricane tracking are hot topics. The science behind these storms is equally fascinating and is a perfect demonstration of energy transfers and transformations within and among Earth's systems. Explore the birth, development, and dissipation of large-scale storms through a series of hands-on activities, and learn how energy transformations are the building blocks of these powerful storms. Participants will also compare and contrast tornadoes and hurricanes and investigate how climate change may be affecting these storms. We will also highlight technology used to track and study storms and associated phenomena. Discover how to use tools such as Google Earth to help students visualize and track storms just like scientists do. Bring pen/pencil and notebook. For more information, visit [bit.ly/1jnEltQ](http://bit.ly/1jnEltQ).

**Ocean Plastic Pollution: Issues and Solutions (SC-5)**

**Mary Whaley** ([mwhaley@mbayaq.org](mailto:mwhaley@mbayaq.org)), Monterey Bay Aquarium, Monterey, Calif.

Level: Middle Level

Date/Time: Thursday, April 3, 2:00–5:00 PM

Location: Tremont, Marriott Copley Place

Registration Fee: \$37

Monterey Bay Aquarium educators will share a suite of inquiry- and standards-based hands-on activities exploring issues and solutions surrounding plastic pollution and marine debris. Topics explored will include the chemical composition of plastic, physical properties of plastic (density/buoyancy, strength, and flexibility), and transportation of plastic by ocean currents. Marine animal impacts will also be examined, specifically entanglement and ingestion. Participants will analyze various uses of plastics to determine wise and unwise choices. The emphasis of this short course will not only be on the impacts of prolific plastic use but also on exploring solutions to plastic pollution, alternatives to single-use plastics, and empowering students to tackle environmental problems without experiencing eco-fatigue. Many of the activity materials are commonly accessible and often recycled/reused or very inexpensive. Door prizes.



**Pathways to STEM: Putting Roots in Literature to Enhance Science Instruction (SC-6)**

**Susannah Richards** ([richardss@easternct.edu](mailto:richardss@easternct.edu)), and **Janelle B. Day** ([dayj@easternct.edu](mailto:dayj@easternct.edu)), Eastern Connecticut State University, Willimantic

**Jennifer M. Brown** ([jbrown@bankstreet.edu](mailto:jbrown@bankstreet.edu)), Bank Street College Center for Children's Literature, New York, N.Y.

**Carolyn A. DeCristofano** ([carolyn@bhstemed.us](mailto:carolyn@bhstemed.us)), Blue Heron STEM Education, Plympton, Mass.

**Melissa Stewart** ([melissa@melissa-stewart.com](mailto:melissa@melissa-stewart.com)), Children's Book Author, Acton, Mass.

**Bob "Science Bob" Pflugfelder**, Author/Science Entertainer, [www.sciencebob.com](http://www.sciencebob.com), Watertown, Mass.

Level: Preschool–Middle Level

Date/Time: Thursday, April 3, 2:00–6:00 PM

Location: St. Botolph, Marriott Copley Place

Registration Fee: \$85

This short course highlights strategies to integrate high-quality science trade books to address the NGSS. It includes an overview of Cook Prize for the best science, technology, engineering, and math (STEM) picture book published for children ages 8 to 10. Science author Melissa Stewart (*A Place for Turtles* and *Under the Snow*) and STEM author Carolyn DeCristofano (*A Black Hole Is NOT a Hole*) will share the processes they use to research, write, and organize science information. Participants will receive several outstanding science trade books, an extensive book list, web resources, and suggestions for making scientific teachable moments that are interdisciplinary and appropriate for preschool, elementary, and middle school classrooms. Bring your laptop/tablet.

**Engaging Children Ages 3 to 5 in Science (SC-7)**

**Jeff Winokur** ([jwinokur@wheelock.edu](mailto:jwinokur@wheelock.edu)), and **Karen Worth** ([kworth@wheelock.edu](mailto:kworth@wheelock.edu)), Wheelock College, Boston, Mass.

Level: Preschool–Kindergarten

Date/Time: Thursday, April 3, 3:00–6:00 PM

Location: Boylston, Marriott Copley Place

Registration Fee: \$51

Children ages 3 to 5 want to make sense of their environment. They ask questions, explore, and make theories. Based on a four-year project funded by the National Science Foundation, this short course will address how to provide rich and challenging early childhood science experiences that go beyond the isolated activities—to engage children in in-depth exploration of science concepts. Participants will view classroom video vignettes and analyze student work samples and other classroom artifacts that emphasize the potential of science experiences to support children's science learning.



### Our Changing Earth: New England's Geologic Past (SC-8)

**Jennifer Cross Peterson** ([jenniferpeterson@hmsc.harvard.edu](mailto:jenniferpeterson@hmsc.harvard.edu)) and **Arielle Ascrizzi** ([arielle\\_ascrizzi@harvard.edu](mailto:arielle_ascrizzi@harvard.edu)), Harvard Museum of Natural History, Cambridge, Mass.

**David Heiser** ([david.heiser@yale.edu](mailto:david.heiser@yale.edu)) and **Jim Sirch** ([james.sirch@yale.edu](mailto:james.sirch@yale.edu)), Yale Peabody Museum of Natural History, New Haven, Conn.

Level: Elementary–Middle Level

Date/Time: Friday, April 4, 8:00–11:15 AM

Location: Tremont, Marriott Copley Place

Registration Fee: \$45

In this short course, participants will enhance their ability to interpret the geologic stories that rocks, fossils, and landforms tell through hands-on examination of rocks and fossils, followed by an investigation of virtual field sites. While the primary goal is to build participant knowledge, we will also review classroom strategies for helping students approach geology. Activities will include using sketching as a means of data collection, analyzing fossils by comparing them to living organisms, testing properties of rocks and minerals, and using everyday materials to model Earth processes, such as mountain building, weathering, and erosion. Participants will continue to develop their geologic perspectives as they address the overarching question, “Why does this place look the way it does?” in a Virtual Field Investigation (VFI). Bring laptop/tablet. For more information, go to [www.peabody.yale.edu/ctrocks](http://www.peabody.yale.edu/ctrocks).



### We're All in This Together: Cooperative Learning in the Science Classroom (SC-9)

**Mia Dubosarsky** ([mdubosarsky@wpi.edu](mailto:mdubosarsky@wpi.edu)), The STEM Education Center at Worcester Polytechnic Institute, Worcester, Mass.

Level: Grades K–8

Date/Time: Friday, April 4, 8:00 AM–12 Noon

Location: Boylston, Marriott Copley Place

Registration Fee: \$41

Attention will be paid to the nuts and bolts of cooperative learning. Participants will discuss the five key components of cooperative learning: positive interdependence, individual accountability, promotive interaction, social skills, and group processing. They will practice the establishment of base groups, how to foster accountability through role assignment, and how to assess a cooperative group in a way that respects the individual student while recognizing the group work. Participants will conduct a variety of science and engineering activities in groups, while practicing methods such as jigsaw puzzles, group observations, and group report. Differentiated learning will be discussed as well as comparisons between homogenous vs. heterogeneous groups.



### To Read or Not to Read: That Is No Longer the Question (SC-10)

**Traci Wierman** and **Rebecca Abbott** ([rebabbott@berkeley.edu](mailto:rebabbott@berkeley.edu)), The Lawrence Hall of Science, University of California, Berkeley, Calif.

Level: Upper Elementary–Middle Level

Date/Time: Friday, April 4, 9:00 AM–12 Noon

Location: Simmons, Marriott Copley Place

Registration Fee: \$33

This short course explores what, when, and how to approach text in the context of inquiry-based science. Using multiple examples, participants will engage in a multimodal approach to integrating literacy and science in a way that blurs the distinction between both. We will consider the roles that text can play in science learning and connect this to strategic ways in which literacy skills can be taught in the service of science understanding. By using an active reading approach, teachers will treat reading as an act of inquiry in much the same way they will explore and learn from deep hands-on inquiry science learning. This integrated approach to disciplinary literacy not only mirrors authentic practices of scientists, but it will help participants walk away with instructional practices that teach students the science and engineering practices and crosscutting concepts of the NGSS and informational literacy skills as called for in the *Common Core State Standards, ELA*. For more information, visit [www.scienceandliteracy.org](http://www.scienceandliteracy.org).

Photo courtesy of Robert Sparks/NOAO



Students set up their telescopes before a Galileoscope star party. *Teaching Astronomy with Small Telescopes (SC-22)*



**Sustainability and Engineering (SC-11)**



**Sarah Soule** and **Kathryn Danielson** (*kdanielson@calacademy.org*), California Academy of Sciences, San Francisco

Level: Middle Level

Date/Time: Friday, April 4, 9:00 AM–12 Noon

Location: Suffolk, Marriott Copley Place

Registration Fee: \$35

What is the difference between science and engineering? How can an engineering mind-set be applied to problems in the field of sustainability? How does engineering fit into the *Next Generation Science Standards*? This short course will explore these questions through hands-on challenges and reflective discussion.

**★ Building Capacity for Collaborative School Communities for Science Learning (SC-12)**

**Susan Mundry** (*smundry@wested.org*), WestEd, Woburn, Mass.

**Katherine Stiles** (*kstiles@wested.org*), WestEd, Morgantown, Ind.

Level: General

Date/Time: Friday, April 4, 9:00 AM–3:00 PM

Location: St. Botolph, Marriott Copley Place

Registration Fee: \$36

Short course participants will engage in an interactive simulation board game designed to build understanding of effective professional development for science teachers. Inherent in the design of the simulation is active engagement with a scenario that describes a school/district context and data that guide participants to make choices and help them learn about the activities and processes needed to provide ongoing, quality teacher development for science teachers. Participants work in small teams to apply what they currently know and believe to select activities that address specific needs in the fictional school/district. At the end of the simulation, participants “debrief” their experience with the simulation and discuss and reflect on the research and literature that are the foundation of the simulation. Box lunch included.

**Engineering Extravaganza! (SC-13)**

**Cathi Cox-Boniol** (*ccox@lincolnschools.org*), Lincoln Parish Schools, Ruston, La.

**Missy Wooley**, New Tech @ Ruston, La.

Level: General

Date/Time: Friday, April 4, 9:00 AM–3:00 PM

Location: Wellesley, Marriott Copley Place

Registration Fee: \$44

Discover how to easily implement engineering practices in your classroom through a variety of engaging, challenging,

and practical engineering design experiences connected to the NGSS. Designed to actively engage participants in engineering-focused learning experiences, this short course highlights 21st-century skills while modeling how to effectively facilitate collaborative yet challenging learning experiences and connect each to specific content and concepts. Participants will explore the challenges today’s teachers face as they strive to effectively and fully implement engineering design as a connection within their classroom before leaving the workshop enthusiastically empowered with several engineering experiences ready for immediate implementation. Box lunch included.

**STEM in Motion: The Pasta Car Challenge! (SC-14)**

**Donna Taylor** (*dtaylor@nps.org*), Northbridge Middle School, Whitinsville, Mass.

**Kelly Graveson** (*kgraveson@douglasps.net*), **Jessica Findlay** (*jfindlay@douglasps.net*), and **Rachel Usher** (*rusher@douglasps.net*), Douglas Middle School, Douglas, Mass.

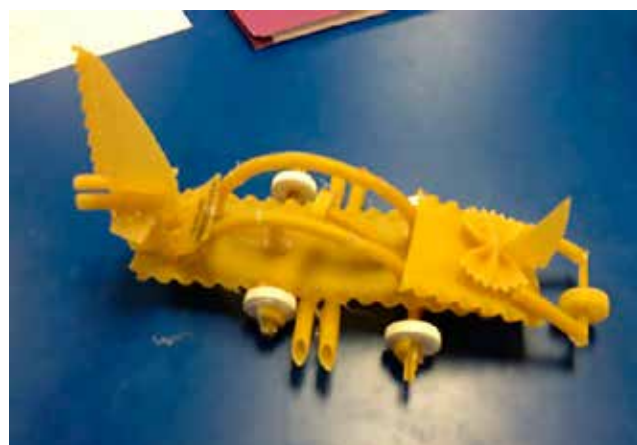
Level: Upper Elementary–Middle Level

Date/Time: Friday, April 4, 2:00–5:00 PM

Location: Tremont, Marriott Copley Place

Registration Fee: \$29

3-2-1 Go! Engage your students with a creative, collaborative engineering design challenge. Join us to experience STEM integration made easy and leave with ready-to-use materials! Participate in a Pasta Car Engineering Design Challenge that you can easily adapt and take back to your classroom. Throughout the “challenge,” participants will be immersed in an inquiry-based learning experience that seamlessly integrates all aspects of science, technology, engineering, art, and mathematics (STEAM). Participants will receive ready-to-use lesson plans that can be adapted to a variety of levels and subject areas, as well as access to our STEM Integration wiki.



—Photo courtesy of Donna Taylor

STEM in Motion: The Pasta Car Challenge! (SC-14)

### ★ Integrating Outdoor Teaching and Learning into the Boston Public Schools Science Curriculum (SC-15)

**John Sheridan** ([jacksheridan381@gmail.com](mailto:jacksheridan381@gmail.com)) and **Kristin Metz** ([kristinmetz@outlook.com](mailto:kristinmetz@outlook.com)), Boston Schoolyard Initiative, Boston, Mass.

**Dean M. Martin** ([dmartin2@bostonpublicschools.org](mailto:dmartin2@bostonpublicschools.org)), **Beverly Nadeau**, **Angela Palo**, **Elizabeth Hadly** ([elizabeth.b.ely@gmail.com](mailto:elizabeth.b.ely@gmail.com)), **Sarah Colella** ([sarmarcolella@gmail.com](mailto:sarmarcolella@gmail.com)), and **Jose Rosa** ([jrosa@bostonpublicschools.org](mailto:jrosa@bostonpublicschools.org)), Boston (Mass.) Public Schools

**Holly Rosa** ([hollyrosa@gmail.com](mailto:hollyrosa@gmail.com)), Russell Elementary School, Dorchester, Mass.

**Luis J. Arroyo** ([larroyo2@bostonpublicschools.org](mailto:larroyo2@bostonpublicschools.org)), Taylor Elementary School, Mattapan, Mass.

**Melanie LaForce**, CEMSE, The University of Chicago, Ill.  
Level: Elementary

Date/Time: Friday, April 4, 3:00–6:00 PM

Location: Boylston, Marriott Copley Place

Registration Fee: \$34

Boston Public Schools science teachers will share their experiences playing a leadership role in developing materials and courses that integrate outdoor science teaching into the BPS science curriculum as part of a 10-year project that included a substantial investment in natural habitats and outdoor classrooms, school yards, and professional development by the city and private funders through the Boston Schoolyard Initiative. We will engage you in activities that demonstrate the value of outdoor science instruction for English language learners; Special Education students; and full-inclusion schools, and discuss our own evolution in learning to use outdoor instruction effectively. For more information, visit [www.schoolyards.org](http://www.schoolyards.org). Note: Dress to go outside.

### Back It Up: Evidence-based Argumentation (SC-16)

**April Chancellor** ([april.chancellor@msichicago.org](mailto:april.chancellor@msichicago.org)), Museum of Science and Industry, Chicago, Ill.

**Susanne Hokkanen** ([shokkanen@dis119.com](mailto:shokkanen@dis119.com)), Colin Powell Middle School, Matteson, Ill.

Level: Grades 4–8

Date/Time: Friday, April 4, 3:00–6:00 PM

Location: Simmons, Marriott Copley Place

Registration Fee: \$57

In this short course, participants will practice approaches with differing levels of rigor that require students to use evidence to support statements. Examples include observation and inference, claims-evidence-reasoning charts, and student-facilitated fishbowl-styled Socratic seminars. Presenters will model how to use evidence-based argumentation to increase the level of rigorous thinking while incorporating several pedagogical practices. Bring pen/pencil and notebook. For more details, visit [bit.ly/lhOXib](http://bit.ly/lhOXib).

### ⚙️ How Do We Explore? Teaching the NGSS Through NOAA Ocean Exploration (SC-17)

**Susan E. Haynes** ([susan.haynes@noaa.gov](mailto:susan.haynes@noaa.gov)), NOAA Office of Ocean Exploration and Research, Barrington, R.I.

Level: Middle Level–High School

Date/Time: Saturday, April 5, 7:30 AM–5:15 PM

Location: Off-site, New England Aquarium

Registration Fee: \$49

With a focus on the integration of science and engineering in the NGSS, participants will be introduced to middle school and high school lessons targeting how the ocean is explored and the technologies used to understand the 95% of our ocean that remains virtually unknown. Participants will discover the unique combination of instruments used in modern ocean exploration, how cutting-edge exploration is communicated in real time, and how to bring this exploration into their classrooms. Participants will receive the NOAA Ship *Okeanos Explorer* Education Materials Collection, *V2: How Do We Explore?*, and free entrance to the New England Aquarium. Continental breakfast and lunch included. Please bring laptop/tablet.

Note: Please meet your short course leader 15 minutes prior to departure time in the Northwest Lobby of the BCEC on the Exhibit Level for this off-site short course at the New England Aquarium.



### Supporting K–12 Students in Argumentation Across Reading, Writing, and Talking (SC-18)

**Katherine L. McNeill** ([kmcneill@bc.edu](mailto:kmcneill@bc.edu)), Boston College, Chestnut Hill, Mass.

**Pamela Pelletier** ([pam.pelletier@gmail.com](mailto:pam.pelletier@gmail.com)), and **Dean M. Martin** ([dmartin2@bostonpublicschools.org](mailto:dmartin2@bostonpublicschools.org)), Boston (Mass.) Public Schools

**Nancy Blasi** ([nblasi@boston.k12.ma.us](mailto:nblasi@boston.k12.ma.us)), James P. Timilty Middle School, Boston, Mass.

Level: Grades K–12

Date/Time: Saturday, April 5, 8:00–11:00 AM

Location: Boylston, Marriott Copley Place

Registration Fee: \$22

The NGSS and CCSS, ELA stress the importance of having students engage in argumentation using evidence. In this short course, emphasis will be placed on how to support K–12 students in this important scientific practice. We have worked with teachers successfully using a framework that consists of four components: claim, evidence, reasoning, and rebuttal. We will introduce the framework as well as illustrate examples from talking, writing, and reading.



**The Role of Oral and Written Language in Inquiry-based Science Learning (SC-19)**

**Karen Worth** (*kworth@wheelock.edu*), and **Jeff Winokur** (*jwinokur@wheelock.edu*), Wheelock College, Boston, Mass.

**Martha Heller-Winokur** (*mwinokur@rcn.com*), Independent Literacy Consultant, Boston, Mass.

Level: Elementary

Date/Time: Saturday, April 5, 8:00–11:00 AM

Location: St. Botolph, Marriott Copley Place

Registration Fee: \$51

This short course focuses on the role of discourse and writing in inquiry-based science as students question, plan investigations, document work in notebooks, develop reports, and debate ideas. Using the CCSS, ELA and the scientific practices in the NRC *Framework* and the NGSS, we provide a framework for considering connections between science learning and the development of critical literacy skills. Attention is paid to how speaking, listening, and writing skills are practiced and reinforced when applied in the authentic context of scientific investigation and how, conversely, science can become the focus of language arts instruction.



**Leading the Way; Classroom Teachers in Action (SC-20)**

**Lorraine McKinin** (*lmckinin@assetinc.org*) and **Diane DeMario** (*ddemario@assetinc.org*), ASSET STEM Education, Pittsburgh, Pa.

Level: Grades K–12

Date/Time: Saturday, April 5, 8:00–11:00 AM

Location: Simmons, Marriott Copley Place

Registration Fee: \$29

In this short course, participants will experience various strategies and practices of leadership skills. The purpose here is to equip teachers with the skills necessary to become effective leaders both in their classroom and with their colleagues. Beginning with why leadership from the classroom is important, participants will discover how and what is needed to inspire the actions of others. Part of the short course is giving participants a chance to explore their natural leadership strengths and how these strengths lend themselves to different leadership roles. Finally, different roles will be considered that leaders can take as a way to make changes in their classroom and school environment. Participants will begin to develop a personal leadership plan to ultimately inspire a collaborative culture in their school, influence teaching practices among their peers, and improve student learning.



**Building Structures with Young Children to Support STEM Learning (SC-21)**

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

Level: Preschool–Kindergarten

Date/Time: Saturday, April 5, 8:00 AM–12 Noon

Location: Tremont, Marriott Copley Place

Registration Fee: \$27

This short course is aimed at teachers of students ages 3 to 5 who want to maximize the science, math, and engineering opportunities embedded in children's block building experiences. We will share lessons learned from an IES-funded program, Cultivating Young Scientists (CYS), that builds teachers' knowledge and skills in planning, facilitating, and assessing children's physical science learning and inquiry. In this short course, participants will engage in their own inquiry-based structures investigations; analyze videos and classroom artifacts to explicate connections to math, engineering, and inquiry; and learn, use, and practice research-based strategies for supporting language and literacy-rich building explorations in their own classrooms.

**Teaching Astronomy with Small Telescopes (SC-22)**

**Constance E. Walker** (*cwalker@noao.edu*), **Robert T. Sparks** (*rsparks@noao.edu*), **Stephen M. Pompea** (*spompea@noao.edu*), National Optical Astronomy Observatory, Tucson, Ariz.

Level: Middle Level–College

Date/Time: Saturday, April 5, 9:00 AM–1:00 PM

Location: Wellesley, Marriott Copley Place

Registration Fee: \$92

Engage in a series of hands-on activities using low-cost materials to learn about refraction, the focal point of lenses, and how to build a simple refracting telescope. Each participant will assemble and test their own Galileoscope, a high-quality, low-cost telescope developed by a team of leading astronomers, optical engineers, and science educators. Participants will test the Galileoscope, explore its optics, and learn to mount the Galileoscope on a tripod for observing. With this easy-to-assemble refractor, participants will be able to see the celestial wonders that Galileo first glimpsed 400 years ago, such as lunar craters and mountains, four moons circling Jupiter, the phases of Venus, Saturn's rings, and countless stars invisible to the unaided eye. Receive a CD with lesson plans, observing guides, and free astronomy software. A Galileoscope and tripod are included, and each participant will take home their own working telescope. Bring your laptop. For more details, visit [www.teachingwithtelescopes.org](http://www.teachingwithtelescopes.org).

*Tickets for field trips can be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader in the Northwest Lobby of the BCEC on the Exhibit Level at least 15 minutes prior to departure time.*



—Courtesy of the Harvard Museum of Natural History

**Teaching About Oceans and Coasts: An Insider’s Look at Research Institutions in the Woods Hole Area** **\$55**

T-1 Thursday, April 3 8:00 AM–5:30 PM

Explore ocean and coastal research at renowned Woods Hole area laboratories! At Waquoit Bay National Estuarine Research Reserve ([www.waquoitbayreserve.org](http://www.waquoitbayreserve.org)), we’ll learn about research on estuary systems and coastal impacts of climate change using data from Research Reserves in the Northeast. At Woods Hole Oceanographic Institution ([www.whoi.edu](http://www.whoi.edu)), we’ll hear about current research on oceans and climate and tour the docks to see some amazing new ocean technology. At the Woods Hole Science Aquarium operated by the National Marine Fisheries Service ([aquarium.nefsc.noaa.gov](http://aquarium.nefsc.noaa.gov)), we’ll learn about research on fisheries and take an insider’s tour of the aquarium. Enjoy lunch on own at one of Woods Hole’s many restaurants. Travel time will be 1.5 hours each way.

*Note:* Photo ID is required. Dress warmly and wear comfortable shoes for walking in shoreline areas.

**Science in the Schoolyard: Outdoor Classrooms Designed for Learning** **\$43**

T-2 Thursday, April 3 8:30 AM–12:30 PM

Through an 18-year partnership with the City of Boston and the Boston Schoolyard Initiative (BSI), Boston Public Schools have become leaders in outdoor science education. At present, 32 schools have state-of-the-art outdoor classrooms, and BSI Science in the Schoolyard™ resources have been used nationally. Efforts also include teacher-led courses providing professional development on teaching life science, Earth science, and energy concepts through outdoor instruction. We will visit three K–5 outdoor

classroom schools to look at a range of outdoor classroom designs. Participants will learn about the features that facilitate high-quality science teaching, view an outdoor science class in process, and talk with teacher leaders about the impact of outdoor teaching they have observed in their schools with special attention to student interest in science, ability to apply science concepts to real-world contexts, and support for English language learners and students with disabilities.

*Note:* Wear comfortable shoes, and dress for the weather.

**Lions, Tigers, and Leopards, Oh My: Bridging the Gap between Formal and Informal Science Education** **\$71**

T-3 Thursday, April 3 8:30 AM–12:30 PM

At New England’s Franklin Park Zoo, we will focus on how to use museums, or in this case living museums, to reach students. We will make the connection between informal and formal education by revealing how to use informal science education facilities to connect to science in the classroom. Learn tips and tricks to improve science teaching at the elementary level. Educators at Franklin Park Zoo will reveal how anyone can “do science.” Participants will leave with a set of strategies on how to enhance their science lessons through hands-on, inquiry-based activities. Learn new teacher moves and how to lead scientific discussions—all while being in the company of lions, tigers, and leopards. Oh my!

*Note:* Behind-the-scenes areas include stairs and potentially wet floors, participants should be able to walk up stairs and be stable enough to navigate tight quarters.

**Inside View of a Biotech Company Transforming Discovery into Care** \$52; by preregistration only

T-4 Thursday, April 3 8:30 AM–1:30 PM

Come learn what goes on at a biotech company! Learn about the drug development process from early stage research to marketing an approved medicine. You'll also get to hear about some of Biogen's current research to discover new medicines to treat devastating diseases and tour some labs. And finally, chat with employees from a wide variety of departments over lunch and find out what excites them about working at a biotech company. You'll leave with new personal knowledge and career information you can bring back to your students! Buffet lunch generously donated by Biogen Idec.

**iRobot Tour** \$29; by preregistration only

T-5 Thursday, April 3 12 Noon–4:30 PM

Discover the history and evolution of iRobot and its robots. Founded in 1990 by Massachusetts Institute of Technology roboticists, iRobot's vision has been to make practical robots a reality—e.g. its well-known vacuum cleaning robot, iRobot Roomba®. iRobot's Research Group performs cutting-edge research to meet the advanced needs of sponsors with integrated robotic solutions pursuing R&D

opportunities with leading academic research institutions, businesses, and other technology innovators. Visitors will receive a tour of iRobot's Cool Stuff Room, showcasing the ideas, inspiration, and technology behind their robots. Visitors will also learn about the variety of STEM careers and career paths involved in the robotics industry. The tour will include a short demonstration of a robot in action. Travel time is an hour each way.

**Behind the Scenes at the Harvard Museum of Natural History** \$44; by preregistration only

T-6 Thursday, April 3 12:45–5:00 PM

The Harvard Museum of Natural History is an engaging place to bring students on a field trip, but have you ever wondered what is hidden behind-the-scenes of a museum? Are you interested in the rare, the ancient, or the odd? Join us for a behind-the-scenes tour of Harvard's amazing zoological collections, comprising more than 21 million specimens not accessible to the public. A Harvard researcher will provide insights into the importance of museum collections to scientific research, share current research at Harvard, and answer questions, as you look closely at specimens. You will visit one collection where you will see species holotypes, specimens collected by 18th century explorers, and newly described species. Possible tours include Invertebrate and Vertebrate

**SOLD OUT**

**SOLD OUT**



T-5: iRobot Tour

Photo courtesy of iRobot

Paleontology, Mammalogy, Ornithology, Herpetology, Entomology, or Ichthyology. Following the tour, you will explore the public museum and try out a gallery activity that models how students can learn from museum collections.

### **To Mars and Beyond at the Christa McAuliffe Center** **\$49**

T-7 Thursday, April 3 1:00–6:00 PM

Come and take a simulated spaceflight mission in the Challenger Learning Center! Step into our futuristic Mars control and spacecraft and you will find out just what a VOYAGE TO MARS will entail! Take on the role of a scientist living and working on Mars or an astronaut journeying to the Red Planet. Learn what could happen if the Sun spews a coronal mass ejection toward the spacecraft or how to respond to dust storm emergencies on the surface of Mars! If that is not enough, you will also have a seat in the 30' digital planetarium facility and its state-of-the-art STEM multimedia classroom built around the Spitz SciDome XD high-definition projection system. We will start by exploring Earth, our OASIS IN SPACE with its vast oceans that make life possible. Then we will journey by other planets and moons in our solar system to learn about their characteristics such as atmosphere, temperature, and composition to better understand how and why Earth is so uniquely qualified to support life. Wear comfortable clothing and be prepared for the ultimate field trip experience! Travel time is an hour each way.

### **Whaling History Kept Relevant by Whale Biology** **\$48**

T-8 Thursday, April 3 1:00–6:15 PM

Join us for a guided tour of the New Bedford Whaling Museum, the world's most comprehensive museum devoted to the global story of whales, whaling, and the cultural history of the region. But it's more than just a history museum filled with 20 galleries of fine art, rare scrimshaw, nautical artifacts, the world's largest ship model, as well as a depiction of a voyage around the world with ethnographic pieces brought back on whale ships. The museum also tells the whale's story with the skeletons of four large whale species, artifacts that focus on recent conservation efforts by science and industry, and displays that answer the most common whale biology questions posed by our visitors. Museum galleries and artifacts are used daily to teach school groups of all ages. The museum is located in the heart of the New Bedford Whaling National Historical Park. For more information, visit [www.whalingmuseum.org](http://www.whalingmuseum.org). Travel time is 75 minutes each way.



**F-3:**  
**Exploring the New England Aquarium**

—Photo courtesy of W. Chappell/Greater Boston Convention and Visitors Bureau

### **Owl Prowl** **\$97**

T-9 Thursday, April 3 4:30–9:30 PM

An evening adventure awaits you at the Needham Science Center. Upon arrival, enjoy a casual hot meal, salad, and beverage. Tour our 49-year-old facility and meet our live animal collection. The Owl Prowl field trip begins with an introduction to the characteristics of owls, opportunities to discuss their habitats, predators, prey, and life habits. As species are introduced, several taxidermy mounts will be observed and handled. Participants will receive an owl pellet for dissection, become familiar with dissection tools, use classification charts, and learn how to analyze the contents of the owl pellet. A curriculum packet to take home is included. After sunset, the group will venture out doors to the Needham Conservation woods in hopes of encountering a live owl in the wild. Remember to dress appropriately for walking in the woods. Join us! Who knows what awaits you?

*Note:* Sturdy, close-toed shoes and long sleeves are recommended. Flashlights are provided by the Science Center. Needham Conservation woods are not handicapped accessible.

**Agassiz’s Footsteps: 150 Years of Rocky Intertidal Ecology at the Northeastern University Marine Science Center \$43**

F-1 Friday, April 4 8:00 AM–12:15 PM

More than 150 years ago, pioneering Swiss geologist Louis Agassiz spent his summers studying the rocks and the life between the tides at East Point, Nahant. After the turn of the 20th century, the U.S. Army took over the site as part of the Boston Harbor Coastal Defenses (World War II) and as a Nike-Ajax missile facility (Cold War). When the site was decommissioned, Northeastern University opened up a marine lab at the very tip of this site. Today, the Marine Science Center is a hub for research, education, and outreach that serves undergraduate and graduate students, as well as hosting an active outreach program that serves more than 6,200 people per year. Experience a “typical” field program as well as field survey methodologies. Hear firsthand about research being conducted at the facility. We will also take a modest walk around historic East Point.

*Note:* Release forms are required for all participants. Program will include some outdoor walking and tidepooling. Participants should be prepared for a modest half-mile walk. Bring an extra layer, rain gear, and hats/gloves.

**Woods Hole, a Hub of Marine Science Research**

**\$47; by preregistration only**

F-2 Friday, April 4 8:15 AM–6:00 PM

Woods Hole village is a hub of marine science research with several famous marine science institutions, including the Woods Hole Oceanographic Institution (WHOI), the Marine Biological Laboratory, Woods Hole Research Center, and NOAA’s Northeast Fisheries Science Center. In addition, it is the home campus of the Sea Education Association. Our tour will include a visit to WHOI, the world’s largest private, nonprofit oceanographic research institution and a leader in the exploration of the ocean. We will have an opportunity to see and hear about some of the research going on there and tour of the facilities. Scientists and researchers will be available to answer questions as well. We will also tour the Marine Biological Labs. Lunch will be on your own at Seafood Sam’s. Travel time is close to two hours each way.

**Exploring the New England Aquarium \$53**

F-3 Friday, April 4 8:30 AM–12 Noon

Join New England Aquarium staff for a behind-the-scenes tour of the aquarium, explore the exhibits, and learn about their conservation and educational programs. Participants will have the chance to visit the newly renovated Giant

Ocean Tank exhibit as well as the new Blue Planet Action Center. During the tour, participants will have a special opportunity to explore areas generally closed to the public. The field trip will also include a tour of our Teacher Resource Center. Participants will walk away with free materials for classroom use.

*Note:* Participants must be at least 10 years old. For safety reasons, wear appropriate footwear— sneakers and other rubber-soled close-toed shoes are preferred.

**Rehabilitation Programs at Spaulding \$51**

F-4 Friday, April 4 8:30 AM–12:30 PM

Spaulding Rehabilitation Hospital is a nationally ranked rehabilitation hospital and serves as a teaching hospital for Harvard Medical School. Recently Spaulding transitioned its operations to a brand-new hospital in the Charlestown Navy Yard. Recognized as LEED Gold for its efficiency in energy usage and environmental sensibilities, the hospital was the first new free-standing hospital to open in Boston in more than 30 years. Participants will experience many of innovative features such as wave action automated door technology and view architectural features designed to integrate persons who use wheelchairs. Participants will visit the Adaptive Technology Center, Motion Analysis Lab, view various robotic orthoses, and see and operate advanced lift equipment that facilitates safe movement for both patients and staff. For more information, visit [www.spauldingrehab.org](http://www.spauldingrehab.org).

**Where Does “It” Go After You Go?**

**\$32; by preregistration only**

F-5 Friday, April 4 8:30 AM–12:45 PM

It was only a little over 20 years ago that Boston Harbor was known as the “dirtiest harbor in America.” Today, it’s “a Great American Jewel.” The \$3.8 billion invested in the treatment facilities at Deer Island have proven to be a great success and the harbor cleanup is widely recognized as one of the nation’s greatest environmental achievements. Visit Deer Island, one of the most technologically advanced wastewater treatment plants in the country to find out how approximately 350 million gallons of Metro Boston’s waste water is treated. The tour begins in the historic pump station with an interactive “Down the Drain” presentation of the wastewater treatment process, followed by a tour of the facility. Educational resource material will be provided to help you introduce the topic of wastewater treatment into your classroom. For more information, visit [www.mwra.com](http://www.mwra.com).

*Note:* Photo ID required to tour. No sandals or open-toed shoes allowed. Long pants are recommended.

**Explorations at MIT** (Four field trips)

Friday, April 4

1:00–5:00 PM

**F-6 MIT LEGO@DNA Proteins Workshop**

• \$64; by preregistration only

Understanding how environmental agents, such as chemicals, smoking, and solar radiation affect DNA and protein molecules allows scientists to study health and disease with tools never before available to medicine. This kind of research is conducted at MIT's Center for Environmental Health Sciences (CEHS), an interdisciplinary network of biologists, chemists, civil and environmental engineers, biological engineers, and microbiologists. Explore DNA and protein structure, transcription, translation, and protein folding using hands-on LEGO® kits, digital and physical models, and guided discussion. Learn how changes in our DNA can lead to disease! This workshop includes free time to explore the MIT Museum. From MIT history and robots to holograms and kinetic sculptures, the MIT Museum has something for everyone! For more information, go to [bit.ly/1dpY0XW](http://bit.ly/1dpY0XW).

**F-7 MIT Aeronautics**

• \$54; by preregistration only

Visit AeroAstro Learning (student) Labs, including the iconic Wright Brothers Wind Tunnel. See displays and materials for introducing aerospace to young people and learn about Zero Robotics, a high school competition involving a robotic satellite program where the finalists' programs are run on the International Space Station.

**F-8 MIT Augmented Reality Games**

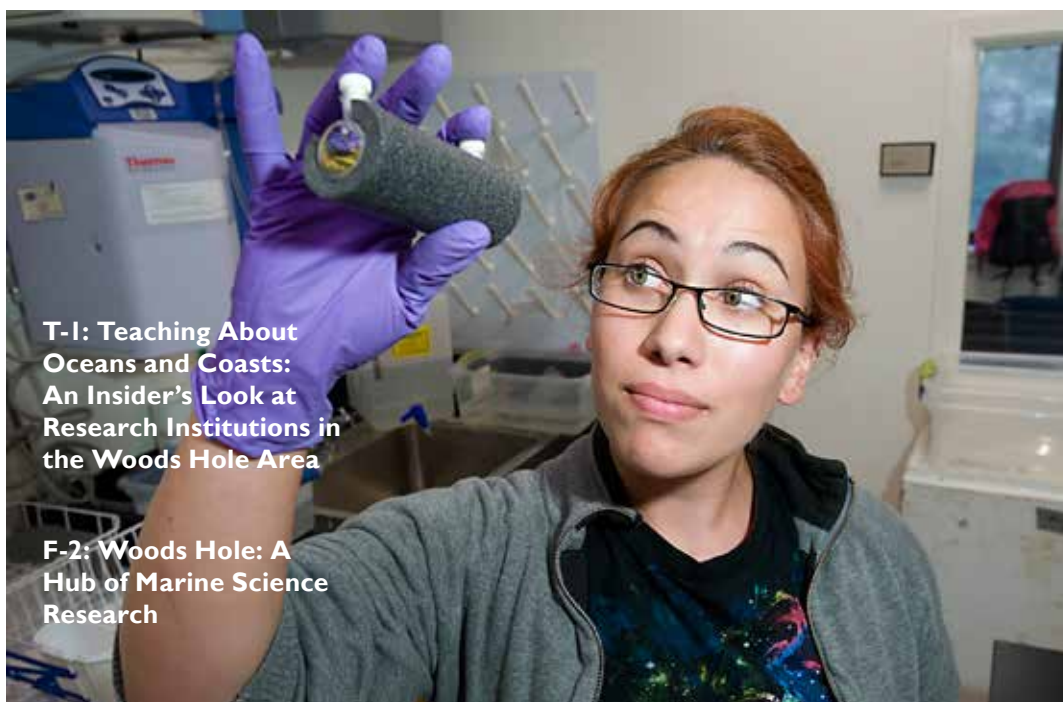
• \$45; by preregistration only

Are you ready to augment your learning with augmented reality (AR) games? Visit the MIT Scheller Teacher Education Program (STEP) Lab and learn about TaleBlazer, our location-based augmented reality game platform. AR games combine a digital overlay of game elements within a real-world context. Try a demo of an outdoor AR game (*weather permitting, wear walking shoes*) and learn about our NSF-funded research around using AR games to enhance STEM education. Participants will also receive an introduction to using our TaleBlazer Editor to create your own AR games. Visit [www.taleblazer.org](http://www.taleblazer.org) for more information.

**F-9 MIT BLOSSOMS—Interactive Video STEM Lessons**

• \$45; by preregistration only

Visit the MIT lab that has been the home of MIT BLOSSOMS for five years. BLOSSOMS stands for Blended Learning Open Source Science Or Math Studies ([blossoms.mit.edu](http://blossoms.mit.edu)). This is an international project building a repository of compelling interactive educational videos in STEM for high school classes. The focus is on developing critical thinking skills, excitement about STEM careers, showing relevance of STEM to everyday lives, and developing cross-cultural awareness and sensitivity. Join us for a presentation of BLOSSOMS, a discussion of current BLOSSOMS projects (*including a Massachusetts teacher contest to create BLOSSOMS lessons*), and hands-on sampling of BLOSSOMS lessons.



**T-1: Teaching About Oceans and Coasts: An Insider's Look at Research Institutions in the Woods Hole Area**

**F-2: Woods Hole: A Hub of Marine Science Research**

—Photo courtesy of Tom Kleindinst/WHOI



**Marvelous Majority: Invertebrates** **\$82**

F-10 Friday, April 4 1:00–5:30 PM

This field trip is designed to introduce participants to the study of invertebrates, the marvelous majority of life on Earth, through outdoor explorations. We will explore several different habitat areas, hunt for evidence of or actual live creatures, make hands-on observations, collect data, collect pond water samples, and dig for creepy crawlies. Upon return to the science center lab, we will investigate the pond water to identify the invertebrates present. Using magnification tools, classification charts, and models, learn strategies for inquiry-based classroom implementation for grades 4–8. A short science content PowerPoint on squid will be viewed. In pairs, experience using dissection tools and dissect a squid. Classroom curriculum materials to implement these labs will be distributed. Time permitting, we will do an echinoderm exploration and make a set of materials to take home. To conclude the field trip, Needham Science Center staff will share strategies for live animal use in the classroom as participants observe and ask questions about several examples of invertebrates from the Science Center’s live animal collection. We will provide a light snack and beverages.

*Note:* Dress appropriately for exploration in the woods. Insect repellent will be provided. Sturdy, close-toed shoes and long sleeves are recommended. Needham Conservation Woods are not handicapped accessible. Squid is a mollusk and will be handled (not ingested) at this workshop. In rare cases, squid can be an allergy concern.

**Diversity in Biomedical Careers and Scientific Storytelling** **\$39**

F-11 Friday, April 4 1:15–5:00 PM

This field trip is comprised of two parts—a tour of Harvard Medical School and Harvard School of Dental Medicine followed by a workshop on “The Art of Scientific Storytelling” by Dr. Rafael Luna. On the tour, you will learn about Harvard’s pipeline programs to increase awareness about careers in biomedical sciences for students from underrepresented groups and disadvantaged backgrounds. For the interactive workshop, Dr. Rafael Luna, CEO and founder of Luna Scientific Storytelling, LLC, will discuss ways to promote the communication of science in a narrative format. Dr. Luna is an international speaker and gives dynamic presentations on the promotion of oral and written communication of complicated scientific concepts using a logical, narrative format.

**Back to the Future: Learning from Nature as Both Teacher and Child** **\$59**

S-1 Saturday, April 5 8:30 AM–12:30 PM

Children will gravitate toward learning in the natural world if they feel safe and encouraged to explore. This field trip takes participants to two habitats at the Arnold Arboretum, and uses the content of a field study for first grade students (STC “Organisms”) to help teachers learn to guide children’s observations of living things. During the field trip, you and a small team will search for organisms in the leaf litter and decaying logs of a small woodland, using probes and bug boxes to closely observe what you encounter. Later you will travel to man-made ponds more than 140 years old that attract diverse wildlife that differs from the woodlands. The field trip will focus on the skills teachers need to confidently share both wild and cultivated outdoor places with young children. All materials for the field study will be provided by Arnold Arboretum.

*Note:* Plan to dress in layers, wear waterproof shoes, and bring a raincoat.



**S-1: Back to the Future: Learning from Nature as Both Teacher and Child**

—Photo courtesy of Arnold Arboretum

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## STORE HOURS

Wednesday	5:00 PM–8:00 PM
Thursday	7:00 AM–5:30 PM
Friday	7:00 AM–5:30 PM
Saturday	7:00 AM–5:00 PM
Sunday	7:30 AM–12 Noon

**NSTA** National  
Science  
Teachers  
Association

*This form is for planning purposes only. Do NOT submit to NSTA.*  
**NSTA 2014 Boston 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 Boston conference. Sessions/events such as field trips, short courses, meetings, and exhibit hall visits are not available for online evaluation. However, these events still qualify for professional development.

**Beginning April 23, 2014, Boston transcripts can be accessed at the NSTA Learning Center (*learningcenter.nsta.org*)** by logging on with your Boston Badge ID# and then clicking on “My PD Record and Certificates.” Keep this form and use it to add the following activities to your Boston 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#** \_\_\_\_\_

Visit [www.nsta.org/evaluations](http://www.nsta.org/evaluations) to evaluate workshops, presentations, and exhibitor workshops. See page 17 of the conference program for instructions. ***And don’t forget, the more sessions you attend and evaluate, the more chances you have to win a Kindle Fire HDX 7”!***

**Sample Questions:**

- |   |  |
|---|--|
| 1. I selected this session:<br>a. for immediate classroom use.<br>b. based on the reputation of the speaker.<br>c. to improve my personal pedagogical knowledge/skill.<br>d. to improve my science content knowledge. | 2. The session met my needs.<br>3. The information presented was clear and well organized.<br>4. Safe practices were employed.<br>5. The session avoided commercial solicitation<br>(n/a for exhibitor workshops and NSTA Press® sessions).<br>6. The session should be repeated at another NSTA conference. |
|---|--|

**Sample Responses:**

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

**Wednesday, April 2 7:00 AM–8:00 PM**

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

**Thursday, April 3 7:30 AM–12 Midnight**

Start Time	End Time	Activity/Event Title
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***We’re giving a Kindle Fire to two lucky attendees who evaluate sessions that they attend. The more sessions you attend and evaluate, the more chances you have to win!***

**Friday, April 4 7:00 AM–12 Midnight**

Start Time	End Time	Activity/Event Title
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**Saturday, April 5 7:30 AM–12 Midnight**

Start Time	End Time	Activity/Event Title
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**Sunday, April 6 8:00 AM–12 Noon**

Start Time	End Time	Activity/Event Title
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## Conference Program • Meetings and Social Functions

### Monday, March 31

Council of State Science Supervisors (CSSS) Annual Meeting  
By Invitation Only  
Seaport Ballroom A, Seaport..... 7:00 AM–5:00 PM

### Tuesday, April 1

Council of State Science Supervisors (CSSS) Annual Meeting  
By Invitation Only  
Seaport Ballroom A, Seaport..... 7:00 AM–5:00 PM

### Wednesday, April 2

NSELA Professional Development Institute (Registration Office)  
Grand Blrm. C, Westin Waterfront ..... 7:00–8:30 AM

Council of State Science Supervisors (CSSS) Annual Meeting  
By Invitation Only  
Seaport Ballroom A, Seaport..... 7:00 AM–5:00 PM

FOSS Third Edition Institute  
By Invitation Only  
Pacific F, Renaissance..... 8:00 AM–5:00 PM

FOSS Middle School Institute  
By Invitation Only  
Pacific G, Renaissance..... 8:00 AM–5:00 PM

Dr. Lowery Presents the Nature of Inquiry Institute  
By Invitation Only  
Pacific H, Renaissance..... 8:00 AM–5:00 PM

NSELA Professional Development Institute  
By Registration Through NSELA  
Grand Blrm. B, Westin Waterfront..... 8:30 AM–4:30 PM

National Marine Educators Association Mid-Year Board Meeting  
By Invitation Only  
Commonwealth C, Westin Waterfront..... 8:30 AM–5:00 PM

SESD Preconference  
By Registration Through SESD  
Otis, Westin Waterfront..... 9:00 AM–4:00 PM

FOSS Luncheon  
By Invitation Only  
Atlantic 1, Renaissance ..... 12 Noon–1:00 PM

Pathways: A Crosswalk Bridging Topics Meeting  
By Invitation Only  
Mediterranean, Renaissance..... 12 Noon–6:00 PM

NSTA/CAEP Development of Program Report Workshop  
By Invitation Only  
Griffin, Westin Waterfront ..... 1:00–4:00 PM

SESD Board Meeting  
Quincy, Westin Waterfront ..... 4:00–6:00 PM

New Science Teacher Academy Reception  
By Invitation Only  
Pacific A–E, Renaissance ..... 5:00–7:00 PM

Corporate Donor Reception  
By Invitation Only  
Room 3810, Marriott Copley Place..... 5:30–7:30 PM

STELAR Convening Meeting  
Otis, Westin Waterfront..... 5:30–8:00 PM

### Thursday, April 3

New Science Teacher Academy Breakfast  
By Invitation Only  
Pacific D/E, Renaissance ..... 7:30–9:00 AM

NSELA Membership Breakfast  
By Invitation Only  
Commonwealth A/B, Westin Waterfront... 7:30–9:30 AM

DuPont Continental Breakfast  
By Invitation Only  
Burroughs, Westin Waterfront ..... 8:00 AM–12 Noon

Global Conversations in Science Education Conference  
By Preregistration only (M-1 ticket required)  
Grand Blrm. A/B, Westin Waterfront..... 8:00 AM–1:00 PM

NESTA Annual Board Meeting  
Lighthouse II, Seaport ..... 8:00 AM–5:00 PM

Committee on Research in Science Education Meeting  
Thompson, Renaissance ..... 8:30–10:30 AM

Science Safety Advisory Board Meeting  
Mediterranean, Renaissance..... 9:00–10:30 AM

## Conference Program • Meetings and Social Functions

Focus Group on Supporting 21st-Century Skills in High School Math and Science Students Through Librarian and Teacher Collaboration  
By Invitation Only

Executive Boardroom, Westin Waterfront.... 9:00–10:30 AM

Retired Members Advisory Board Meeting

Hale, Westin Waterfront ..... 9:00–10:30 AM

Committee on Coordination and Supervision of Science Teaching Meeting

Pacific C, Renaissance .....9:00–11:00 AM

NSTA International Lounge

Revere, Westin Waterfront..... 9:00–5:00 PM

Awards and Recognitions Committee Meeting

Bering Boardroom, Renaissance..... 10:30 AM–12:30 PM

*Science & Children* Advisory Board Meeting

Georges, Renaissance ..... 11:00 AM–12:30 PM

Urban Science Education Advisory Board Meeting

Mediterranean, Renaissance..... 11:00 AM–12:30 PM

Committee on High School Science Teaching Meeting

Spectacle, Renaissance ..... 11:00 AM–12:30 PM

*Science Scope* Advisory Board Meeting

Thompson, Renaissance..... 11:00 AM–12:30 PM

Special Needs Advisory Board Meeting

Executive Boardroom, Westin Waterfront .... 11:30 AM–1:00 PM

Committee on Preschool–Elementary Science Teaching Meeting

Georges, Renaissance ..... 1:00–3:00 PM

Committee on Professional Development in Science Education Meeting

Mediterranean, Renaissance..... 1:00–3:00 PM

Committee on Multicultural/Equity in Science Education Meeting

Pacific C, Renaissance ..... 1:00–3:00 PM

Committee on College Science Teaching Meeting

Spectacle, Renaissance ..... 1:00–3:00 PM

Committee on Preservice Teacher Preparation Meeting

Thompson, Renaissance..... 1:00–3:00 PM

Nominations Committee Meeting

Bering Boardroom, Renaissance.....1:30–3:00 PM

Technology Advisory Board Meeting

Hale, Westin Waterfront .....1:30–3:00 PM

Committee on Informal Science Meeting

Bulfinch, Westin Waterfront..... 1:30–3:30 PM

Committee on Middle Level Science Teaching Meeting

Quincy, Westin Waterfront ..... 1:30–3:30 PM

Northeast State Association Leader Sharing Session

Adams, Westin Waterfront..... 2:00–3:00 PM

Council for Elementary Science International (CESI) Board Meeting

By Invitation Only

Alcott, Westin Waterfront ..... 3:00–6:00 PM

Dorothy K. Culbert Chapter and Associated Groups Social

Pacific A/B, Renaissance ..... 3:30–4:30 PM

Science Matters Advisory Board Meeting

Bering Boardrm., Renaissance ..... 3:30–5:00 PM

*The Science Teacher* Advisory Board Meeting

Georges, Renaissance..... 3:30–5:00 PM

*Journal of College Science Teaching* Advisory Board Meeting

Mediterranean, Renaissance..... 3:30–5:00 PM

Association for Multicultural Science Education (AMSE) Board Meeting

By Invitation Only

Seaport Ballroom C, Seaport.....3:30–5:30 PM

Outstanding Science Trade Books Committee Meeting

By Invitation Only

Spectacle, Renaissance ..... 4:00–5:00 PM

Board/Council Meet and Greet

By Invitation Only

Faneuil, Westin Waterfront ..... 4:30–6:00 PM

Dow Reception

By Invitation Only

Atlantic 1/2, Renaissance ..... 5:00–6:30 PM

## Conference Program • Meetings and Social Functions

Online Advisers Social  
By Invitation Only  
Adams, Westin Waterfront..... 5:30–6:30 PM

EDC Reception  
By Invitation Only  
Grand Ballroom C, Westin Waterfront..... 5:30–8:00 PM

HHMI Night at the Movies  
Grand Ballroom A/B, Westin Waterfront....6:00–7:30 PM

APAST Board of Directors Meeting  
By Invitation Only  
Seaport Ballroom C, Seaport..... 6:00–8:00 PM

Teach for America Networking Reception  
Otis, Westin Waterfront..... 6:00–8:00 PM

### Friday, April 4

AMSE Alice J. Moses Breakfast  
By Invitation Only  
Lighthouse II, Seaport Hotel ..... 7:00–9:00 AM

APAST Breakfast Meeting  
By Invitation Only  
Flagship A, Seaport Hotel..... 7:00–9:00 AM

High School Breakfast (M-2)  
(Tickets Required: \$50)  
Seaport Ballrm. B, Seaport Hotel ..... 7:30–9:00 AM

Science in the Community Breakfast (M-3)  
(Sponsored in part by DuPont) (Tickets Required: \$15)  
Ballrm. West, BCEC ..... 7:30–9:00 AM

Next Steps Networking Forum  
By Invitation Only  
Seaport Ballrm. A, Seaport Hotel .....7:30–10:00 AM

Aerospace Programs Advisory Board Meeting  
Hale, Westin Waterfront .....8:30–10:30 AM

NSTA Reports Advisory Board Meeting  
Georges, Renaissance..... 9:00–10:30 AM

NSTA International Lounge  
Revere, Westin Waterfront.....9:00 AM–5:00 PM

Development Advisory Board Meeting  
By Invitation Only  
Exec. Boardrm., Westin Waterfront .....9:30–10:30 AM

Next Steps Advisory Board Meeting  
By Invitation Only  
Seaport Ballrm. C, Seaport Hotel..... 10:30 AM–12 Noon

ASTE/NSELA Luncheon (M-4)  
(Tickets Required: \$65)  
Gr. Ballrm. E, Westin Waterfront ..... 12 Noon–2:00 PM

NSTA Chapter and District Director Ice Cream Social in Honor  
of Wendell Mohling (sponsored by GEICO)  
Booth #1107, Exhibit Hall, BCEC ..... 1:30–2:30 PM

GLBT Science Teachers Annual Meeting  
Hancock, Westin Waterfront ..... 2:00–3:00 PM

NMLSTA Board of Directors Meeting  
Exec. Brdrm., Westin Waterfront ..... 2:30–4:30 PM

AMSE Membership Meeting  
Seaport Ballrm. C, Seaport Hotel..... 3:00–5:00 PM

International Advisory Board Meeting  
Hale, Westin Waterfront ..... 3:00–5:00 PM

Polar Educators International Open Meeting  
Paine, Westin Waterfront ..... 3:00–5:00 PM

SCST Business Meeting  
Caspian, Renaissance ..... 3:30–5:00 PM

NSTA Recommends Meeting  
Independence Brdrm., Westin Waterfront... 4:00–5:00 PM

Shell Reception  
By Invitation Only  
Atlantic 1, Renaissance ..... 5:00–5:45 PM

APAST Business Meeting and Social  
By Invitation Only  
Flagship A, Seaport Hotel..... 5:00–7:00 PM

NSTA Learning Center Reception  
By Invitation Only  
Harbor Ballrm. I, Westin Waterfront ..... 5:00–7:00 PM

## Conference Program • Meetings and Social Functions

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NSTA Student/Student Chapter Reception  
Open to all preservice teachers and those who work with them  
Atlantic 2/3, Renaissance..... 5:30–7:30 PM

NSTA Teacher Awards Gala (M-5)  
(Tickets Required: \$80)  
Pacific A–E, Renaissance ..... 6:15–8:45 PM

NESTA Friends of Earth Science Reception  
Off-site, Museum of Science ..... 6:30–7:00 PM

SCST Dessert Social and Poster Session  
Pacific F/H, Renaissance..... 7:00–9:00 PM

President’s Mixer  
Atlantic Ballrm., Renaissance..... 9:00 PM–12 Mid.

### Saturday, April 5

NGSS@NSTA Forum GE Foundation Welcome Breakfast  
By Invitation Only  
210A/B, BCEC ..... 7:00–8:30 AM

AMSE/NSTA Minority Caucus George Washington Carver  
Breakfast  
By Invitation Only  
Lighthouse II, Seaport Hotel ..... 7:00–9:00 AM

NSTA Past Presidents’ Breakfast  
By Invitation Only  
Harbor Ballrm. II, Westin Waterfront ..... 7:30–8:15 AM

NSTA Past Presidents Advisory Board Meeting  
Harbor Ballrm. II, Westin Waterfront ..... 8:15–9:15 AM

West Texas Teachers’ Coffee  
Carlton, Westin Waterfront..... 9:00–10:30 AM

NSTA International Lounge  
Revere, Westin Waterfront..... 9:00 AM–5:00 PM

GLBT Science Teachers Roundtable Discussion  
Paine, Westin Waterfront ..... 11:00 AM–12 Noon

Association for Multicultural Science Education (AMSE) Town  
Hall Meeting  
Lighthouse II, Seaport Hotel ..... 11:00 AM–1:00 PM

NSTA/SCST College Luncheon (M-6)  
(Tickets Required: \$65)  
Atlantic 3, Renaissance..... 12 Noon–1:30 PM

CESI/NSTA Elementary Science Luncheon (M-7)  
(Tickets Required: \$65)  
Harbor Ballrm. II, Westin Waterfront .. 12 Noon–2:00 PM

Aerospace Educators Luncheon (M-8)  
(Tickets Required: \$65)  
Gr. Ballrm. A/B, Westin Waterfront ... 12 Noon–2:00 PM

An Exploration of Uncommon Collaboration for Success in STEM  
Seaport Ballrm. C, Seaport Hotel..... 2:00–4:00 PM

NSTA Council Roundtable  
By Invitation Only  
Adams, Westin Waterfront..... 2:00–4:00 PM

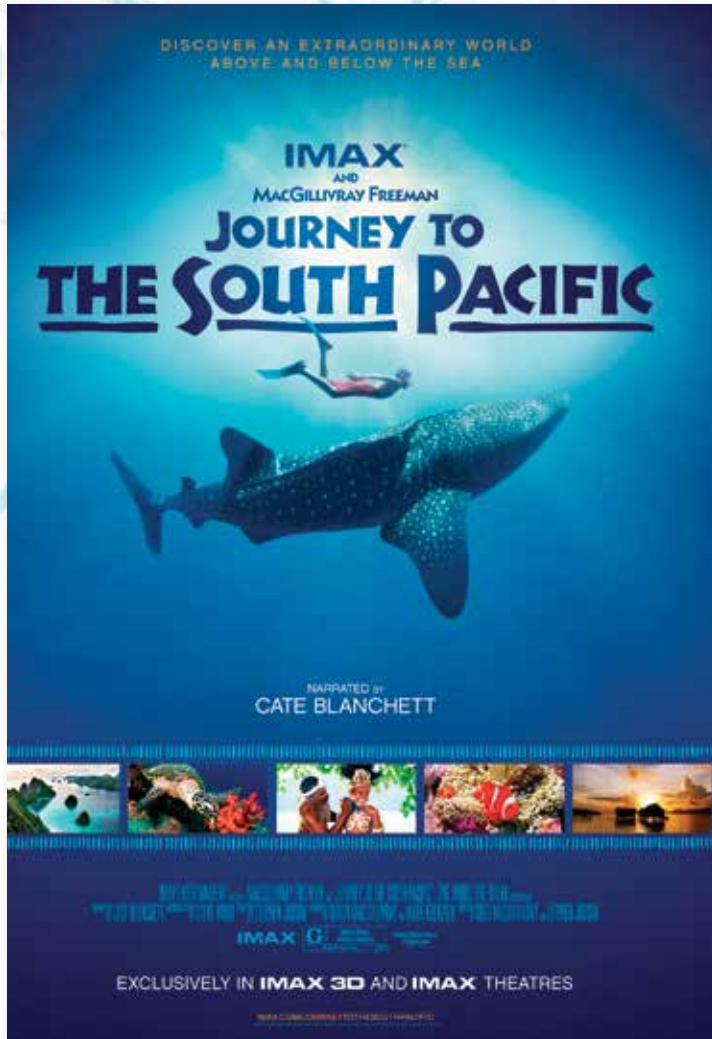
NCAA Final Four Watch Party! (M-9)  
(Tickets Required: \$20)  
Atlantic Ballrm., Renaissance ..... 7:30 PM–12 Mid.

### Sunday, April 6

NSTA Life Members’ Breakfast (M-10)  
(Tickets Required: \$50)  
Douglass, Westin Waterfront ..... 7:00–8:00 AM



# TAKE AN ADVENTURE IN IMAX®



Visit BrainPOP's booth #524 to get your free screening pass, free giveaways, and learn more about *Journey to the South Pacific* and *Island of Lemurs: Madagascar*!

## SCREENING DETAILS

- WHEN:** Thursday, April 3rd 6:00pm (*Journey to the South Pacific*)  
8:00pm (*Island of Lemurs: Madagascar*)
- WHERE:** New England Aquarium IMAX theatre  
1 Central Wharf, Boston, MA 02110
- HOW:** Must present screening pass for entry
- WHAT:** Feature Presentation & Free Concessions

Visit [JourneyToTheSouthPacific.IMAX.com](http://JourneyToTheSouthPacific.IMAX.com) and [IslandOfLemurs.IMAX.com](http://IslandOfLemurs.IMAX.com) to download free educator guides and more! Don't forget to opt in for IMAX's Educator Exclusive newsletter to receive updates on IMAX original films and other great educational tools for the classroom.

## Conference Program • Affiliate Sessions

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### Association for Multicultural Science Education (AMSE)

President: Robert Ferguson

#### Thursday, April 3

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8:00–9:00 AM	Scientific Concepts Made “Ridiculously” Simple Using Case Studies	Constitution, Seaport
9:30–10:30 AM	Creating Project Based Learning (PBL) Experiences	Constitution, Seaport
	Following the Lead of the <i>Next Generation Science Standards</i> in Promoting Equity in Science and Engineering Education for All Students	Constitution, Seaport
11:00 AM–12 Noon	Developing Science and Engineering Skills Through Informal Science Programs	Constitution, Seaport
12:30–1:30 PM	Helping Students Make Sense of Climate Change	Constitution, Seaport
2:00–3:00 PM	Engineering Through Aquaculture Technology for Women	Constitution, Seaport
3:30–5:30 PM	Association for Multicultural Science Education (AMSE) Board Meeting (By Invitation Only)	Seaport Ballroom C, Seaport

#### Friday, April 4

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7:00–9:00 AM	AMSE Alice J. Moses Breakfast (By Invitation Only)	Lighthouse II, Seaport
9:30–10:30 AM	Using Games and Challenges to Formatively Assess Students’ Conceptual Understanding in Science	Constitution, Seaport
	The Smarts Are There	Constitution, Seaport
11:00 AM–12 Noon	Leadership for the Next Generation in Science Education	Constitution, Seaport
12:30–1:30 PM	A Science Teacher’s Power: Concrete Strategies for Improved Classroom Equity	Constitution, Seaport
	Small Talk, Big Ideas!	Constitution, Seaport
2:00–2:30 PM	Science Instruction for All Students	Constitution, Seaport
3:00–5:00 PM	AMSE Membership Meeting	Seaport Ballroom C, Seaport

#### Saturday, April 5

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7:00–9:00 AM	AMSE/NSTA Minority Caucus George Washington Carver Breakfast (By Invitation Only)	Lighthouse II, Seaport
9:30–10:30 AM	Enhancing a STEM Culture Through Multidisciplinary Education and Research Teams	Constitution, Seaport
11:00 AM–1:00 PM	Association for Multicultural Science Education (AMSE) Town Hall Meeting	Lighthouse II, Seaport
12:30–1:00 PM	A Glimpse at Science Education in India	Constitution, Seaport

**Association for Science Teacher Education (ASTE)**

*President: Joanne K. Olson*

**Friday, April 4**

8:00–9:00 AM	A Paradigm Shift Is Underway—Are You and Your Students Ready?	Pacific F, Renaissance
9:30–10:30 AM	A Place-based Approach for Technically Integrated Science Instruction: The River Run Experience  Transforming STEM Education—Your Classroom and Beyond	Pacific F, Renaissance
12 Noon–2:00 PM	ASTE/NSELA Luncheon (Tickets Required: M-4) Speaker: Raj Chetty	Grand Ballroom E, Westin Waterfront
2:00–3:00 PM	Understanding the Relationship Between Mass, Volume, and Density by Engineering a Prototype of a Prosthetic Limb	Pacific E, Renaissance

**Saturday, April 5**

8:00–9:00 AM	Designing the Strongest Voltaic Cell in a High School Classroom	Pacific E, Renaissance
9:30–10:30 AM	Preparing Teachers to Explore Global Climate Change with Their Middle and High School Students	Pacific E, Renaissance
11:00 AM–12 Noon	The Circus Is Coming to Town—Center of Gravity, STEM Design Challenge	Pacific E, Renaissance
12:30–1:30 PM	Mastering the Science Practices: Using Hands-On Performance Assessment with K–5 Students	Pacific E, Renaissance
2:00–3:00 PM	Uncovering Evolution: An Inquiry-oriented Activity for Introducing Evolution by Way of Modeling an Archaeological Excavation	Pacific E, Renaissance
3:30–4:30 PM	Dollar Store Elementary Science: Activities and Ideas to Help Build Your Science Teaching Confidence	Pacific E, Renaissance
5:00–5:30 PM	A Case Study of Sheltered Instruction in Science Education with English Language Learners	Pacific E, Renaissance

## Conference Program • Affiliate Sessions

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### Association of Science-Technology Centers (ASTC)

President: Margaret Glass

#### Thursday, April 3

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8:00–9:00 AM	Teaching with Collections: Bringing the <i>Next Generation Science Standards</i> to Life	251, BCEC
12:30–1:30 PM	Partnering to Strengthen Elementary Science Instruction in Chicago	251, BCEC
2:00–3:00 PM	Leveraging Informal Science Organizations to Address the <i>Next Generation Science Standards</i>	251, BCEC

#### Friday, April 4

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8:00–9:00 AM	How Science On a Sphere® Can Captivate Your Students with Animated Earth System Science Data	251, BCEC
9:30–10:30 AM	Connecting Museum Learning Experiences to Science and <i>Common Core</i> Literacy Standards	251, BCEC
11:00 AM–12 Noon	Science Centers and Schools = Essential Partners	251, BCEC
12:30–1:30 PM	Connecting Science and Literacy: The National Writing Project and Science Centers	251, BCEC
2:00–3:00 PM	Full STEAM Ahead	251, BCEC

### Council for Elementary Science International (CESI)

President: Julie Thomas

#### Thursday, April 3

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3:00–6:00 PM	Council for Elementary Science International (CESI) Board Meeting (By Invitation Only)	Alcott, Westin Waterfront
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#### Friday, April 4

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10:00–11:00 AM	Family Science Events—Logistics, Engaging Science, and Parent Involvement	211, BCEC
11:00 AM–12 Noon	Do You Have a Problem?	211, BCEC
12 Noon–1:00 PM	So You Want to Be a Scientist—Where Science Meets Adventure	211, BCEC
1:00–2:00 PM	The Life Cycle of Literacy Through Science	211, BCEC
2:00–3:00 PM	Engineering Is Everywhere (E2)	211, BCEC
3:00–4:00 PM	Encouraging Environmental Stewardship Through an Integrated Science, Social Studies, and Literacy Activity	211, BCEC
4:00–5:00 PM	Using Web-based Tools to Connect Science, Literacy, and Technology in the Elementary Grades	211, BCEC

#### Saturday, April 5

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9:30–10:30 AM	Physical Science from Animals!	211, BCEC
12 Noon–2:00 PM	CESI/NSTA Elementary Science Luncheon (Tickets Required: M-7) Speaker: Susan H. Wirth	Harbor Ballroom II, Westin Waterfront

### Council of State Science Supervisors (CSSS)

President: Juan-Carlos Aguilar

#### Monday, March 31

7:00 AM–5:00 PM	Council of State Science Supervisors (CSSS) Annual Meeting (By Invitation Only)	Seaport Ballroom A, Seaport
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#### Tuesday, April 1

7:00 AM–5:00 PM	Council of State Science Supervisors (CSSS) Annual Meeting (By Invitation Only)	Seaport Ballroom A, Seaport
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#### Wednesday, April 2

7:00 AM–5:00 PM	Council of State Science Supervisors (CSSS) Annual Meeting (By Invitation Only)	Seaport Ballroom A, Seaport
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#### Thursday, April 3

8:00–9:00 AM	The Value of Integratedness: Exploring Methods for Integrating Mathematics in Scientific Practices	Harbor Ballroom III, Westin Waterfront
2:00–3:00 PM	Assessment of the NGSS: Implementing the Recommendations from the NRC <i>Framework</i>	Harbor Ballroom III, Westin Waterfront
3:30–4:30 PM	Unique NGSS-focused Webinars from a Collaborative Partnership Model for State Science Teachers and Principals Associations	Commonwealth C, Westin Waterfront

#### Friday, April 4

8:00–9:00 AM	Core K–12 Ideas That Support Student Understanding of the NGSS	Harbor Ballroom I, Westin Waterfront
9:30–10:30 AM	A Vision for Science Education: The Integration of the NGSS Practices in Classroom Instruction	Harbor Ballroom I, Westin Waterfront
11:00 AM–12 Noon	Understanding the Student Science Performances in the NGSS	Harbor Ballroom I, Westin Waterfront
12:30–1:30 PM	Professional Development for the NGSS and <i>Common Core</i> Literacy in Elementary Classrooms	Grand Ballroom C, Westin Waterfront
2:00–3:00 PM	The Next Generation of Science Leaders—What Does It Take to Prepare and Support Them?	Commonwealth A, Westin Waterfront
3:30–4:30 PM	Teaching Engineering Concepts and Skills—Beyond Activitymania	Commonwealth A, Westin Waterfront
5:00–6:00 PM	Simulations for Assessments that Integrate Practices, Core Ideas, and Crosscutting Concepts	Commonwealth A, Westin Waterfront

## Conference Program • Affiliate Sessions

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

*President: Lynn Bryan*

#### Thursday, April 3

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8:00–9:00 AM	Zydeco: A New iPad Application to Enhance Scientific Explanations	Pacific F, Renaissance
12:30–1:30 PM	Exploring Student Reasoning Using Models in Earth Science	Pacific F, Renaissance
2:00–3:00 PM	Reconfiguring the Urban Science Experience: The Power of Diversity, Social Context, and the Local Environment	Pacific F, Renaissance
3:30–4:30 PM	Creating School Scientific Communities Among Urban Refugee ELL Populations	Pacific F, Renaissance
	Role-Playing STEM Professionals: A Game-like Approach Based on Video Game Research	
5:00–6:00 PM	Continuous Learning Through Classroom Observation Cycles	Pacific F, Renaissance

#### Friday, April 4

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8:00–9:00 AM	Young Children’s Understandings of Earth’s Surface Features and Changes	253A, BCEC
	Establishing Trust via Lesson Study	
9:30–10:30 AM	There Is Much More to Teaching Evolution Than Just Presenting the Biological Science	253A, BCEC
11:00 AM–12 Noon	Exploring Next Generation Curriculum Models Implementing the Vision in the NRC <i>Framework</i> and the <i>NGSS</i>	253A, BCEC
12:30–1:30 PM	Research to Inform the Implementation of the <i>NGSS</i>	253A, BCEC

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

*President: Patty McGinnis*

#### Thursday, April 3

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2:30–4:30 PM	NMLSTA Board of Directors Meeting	Executive Boardroom, Westin Waterfront
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#### Friday, April 4

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8:00 AM–2:00 PM	Meet Me in the Middle Day (See page 42)	Commonwealth and Grand Ballrooms, Westin Waterfront
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### National Science Education Leadership Association (NSELA)

*President: Darlene Ryan*

#### Wednesday, April 2

7:00–8:30 AM	NSELA Professional Development Institute (Registration Office)	Grand Ballroom C, Westin Waterfront
8:30 AM–4:30 PM	NSELA Professional Development Institute By Registration Through NSELA	Grand Ballroom B, Westin Waterfront

#### Thursday, April 3

7:30–9:30 AM	NSELA Membership Breakfast By Invitation Only	Commonwealth Ballroom A/B, Westin Waterfront
12:30–1:30 PM	Implementing the NGSS—Are You Prepared to Lead the Change Process?	Commonwealth Ballroom C, Westin Waterfront

#### Friday, April 4

8:00–9:00 AM	Tools for Science Leaders, Part 1	Alcott, Westin Waterfront
9:30–10:30 AM	Tools for Science Leaders, Part 2	Alcott, Westin Waterfront
11:00 AM–12 Noon	Lead, Follow, or Get Out of the Way	Alcott, Westin Waterfront
12 Noon–2:00 PM	ASTE/NSELA Luncheon (Tickets Required: M-4) Speaker: Raj Chetty	Grand Ballroom E, Westin Waterfront
2:00–3:00 PM	Disciplinary Literacy in Middle School Science Classrooms	Alcott, Westin Waterfront
4:00–6:00 PM	The NGSS—Where Are We Now, and Where Do We Want to Go?	Grand Ballroom A, Westin Waterfront

#### Saturday, April 5

8:00–9:00 AM	Cultivating Diverse Leadership in Science	Alcott, Westin Waterfront
9:30–10:30 AM	Digital Curriculum, Mobile Devices, and Student Achievement? Action Research Results	Alcott, Westin Waterfront
12:30–1:30 PM	Leading School–Level Program Change in Science	Quincy, Westin Waterfront
3:30–4:30 PM	Baby Steps: Implementing the NGSS	Cmmwlth. Ballrm. B, Westin Waterfrton

## Conference Program • Affiliate Sessions

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### Society for College Science Teachers (SCST)

President: Nancy Elwess

#### Thursday, April 3

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8:00–9:00 AM	Using POGIL to Promote Student Learning in a High School/University Dual Enrollment Anatomy and Physiology Class <i>Allegro Ma Non Troppo</i> —Coaching as a Way to Promote Faculty Pedagogical Change in Undergraduate Physics Courses	Caspian, Renaissance
9:30–10:30 AM	Perceived Values of Instructional Components in a Science Methods Course Involving a College Teaching Experience Investigating the Specialized Knowledge that University Science Professors Draw Upon While Using Mathematical Representations to Teach Science	Caspian, Renaissance
12:30–1:30 PM	Introductory Laboratory Activities for Biology Students An Adventure in Flipping an Inquiry-based Introductory Biology Course to Increase Active Learning	Caspian, Renaissance
2:00–3:00 PM	A Study on the Attitudes of Biology Majors Toward Evolutionary Theory The Relationship Between Guided Student-Generated Questioning and Chemistry Achievement and Chemistry Self-Efficacy in Elementary Preservice Teachers	Caspian, Renaissance
3:30–4:30 PM	Using the Primary Scientific Literature in Your Science Class Teaching and Learning the Language of Chemistry and Biology	Caspian, Renaissance
5:00–6:00 PM	Helping Students Assess the Science Implicating MMR Vaccine as a Cause of Autism Bringing Evolution Alive Through Skull Analysis	Caspian, Renaissance

#### Friday, April 4

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8:00–9:00 AM	Assessing the NGSS Performance Expectations: Teachers' Reflections on Successes and Challenges when Using Hands-On Performance Tasks Headline News: Using Current Topics to Facilitate Student Research, Argumentation, and Understanding of the Multivariate Nature of Controversies	Caspian, Renaissance
9:30–10:30 AM	Dealing with Interdisciplinary Challenges—Students' Perceptions of and Performance on Chemistry-related Biological Concepts The Impact of Collective Group Motivation on Student Learning in a Nonmajors Biology Course	Caspian, Renaissance
12:30–1:30 PM	SCST Marjorie Gardner Lecture: Authentic Learning, Student Engagement, and Socratic Course Design (Speaker: Michael W. Klymkowsky)	Caspian, Renaissance



**Society for College Science Teachers (SCST), continued**

2:00–3:00 PM	Using Bean Beetle “Vision” to “Change” the Undergraduate Biology Student’s Idea of Scientific Investigations	Caspian, Renaissance
	Using Digital Microscopy as a Means of Teaching the Quantification of Qualitative Data	
3:30–5:00 PM	SCST Business Meeting	Caspian, Renaissance
7:00–9:00 PM	SCST Dessert Social and Poster Session	Pacific F/H, Renaissance

**Saturday, April 5**

12 Noon–1:30 PM	NSTA/SCST College Luncheon (Tickets Required: M-6) Speaker: Michael Jackson	Atlantic 3, Renaissance
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**NSTA Teacher Awards Gala**

**Friday, April 4, 6:15–8:45 PM**  
**Pacific A–E, Renaissance, Cost: \$80**

*All Conference Attendees are invited for the President’s Mixer—9:00 PM–12 Midnight in the Atlantic Ballroom (DJ and cash bar)*

**H**osted by Ira Flatow, come enjoy a fabulous evening celebrating with this year’s teacher award recipients! **ALL** of the teacher awards will be presented in one grand evening. Join your colleagues in recognition of this year’s winners.

*By ticket only: M-5;  
Evening/Cocktail attire requested.*

**NSTA** National Science Teachers Association



## Future-proof software and sensor technology for science.

**SPARKvue®** is the most advanced science learning software available and it is designed to easily and actively engage students in scientific and engineering practices. SPARKvue provides sensor data collection and visualization – with assessment – in a modern intuitive learning environment.

### SPARKvue Software Features

- Real-time data collection and visualization
- Interactive, hands-on lab activities
- Integrated, customizable assessment
- Bar graph and table displays
- Bluetooth wireless support
- Video capture

### **NEW!** SPARKvue Features

- ▶ Real-time sharing and collaboration
- ▶ SPARKvue cloud services
- ▶ Chromebook support

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**Enter to Win!**

Enter to win SPARKscience classroom sets featuring PASCO's award-winning SPARKvue™ software & our all NEW SPARKlink Air wireless interface.



(iPads not included)

# FREE Hands-On Workshops

**Thursday – April 3, 2014 -  
Room 104A**

Explore STEM Integration with PASCO Technology!  
Free Starter Kits for Attendees!  
8:00am-9:30am

Advancing NGSS Practices with Probeware  
Free Starter Kits for Attendees!  
10:00am-11:30am

PASCO's SPARKscience for K-8 Students—  
Free Starter Kits for Attendees!  
12:00pm-1:30pm

Equip Your Tablet with SPARKvue®: (File-Sharing)  
Software and Sensor Technology for Science -  
Free Starter Kits for Attendees!  
2:00pm-3:30pm

PASCO's SPARKscience for High School Students-  
Free Starter Kits for Attendees!  
4:00pm-5:30pm

**Friday – April 4, 2014  
Room 104A**

Explore STEM Integration with PASCO Technology!  
Free Starter Kits for Attendees!  
8:00am-9:30am

Advancing NGSS Practices with Probeware  
Free Starter Kits for Attendees!  
10:00am-11:30am

PASCO's SPARKscience for K-8 Students.  
Free Starter Kits for Attendees!  
12:00pm-1:30pm

Equip Your Tablet with SPARKvue®: (File-Sharing)  
Software and Sensor Technology for Science  
Free Starter Kits for Attendees!  
2:00pm-3:30pm

PASCO's SPARKscience for High School Student Free  
Starter Kits for Attendees!  
4:00pm-5:30pm

**Free probeware starter kits, including five sensors and USB interface (a \$600 value), will be given to 5 lucky attendees!**

**NEW!**

## Optical Dissolved Oxygen Sensor

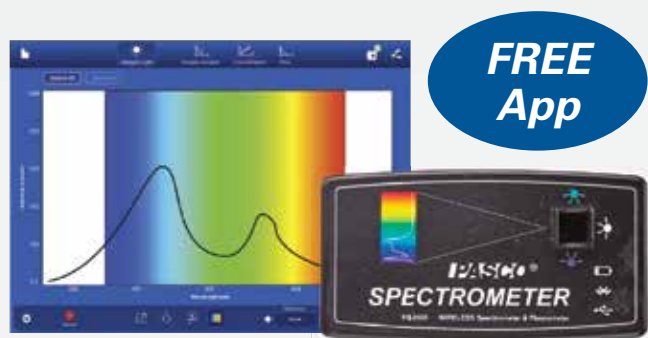
Measuring Dissolved Oxygen has never been faster, easier or more affordable.



**NEW!**

## Wireless PASCO Spectrometer

Now PASCO offers Bluetooth spectroscopy for your computers and tablets!

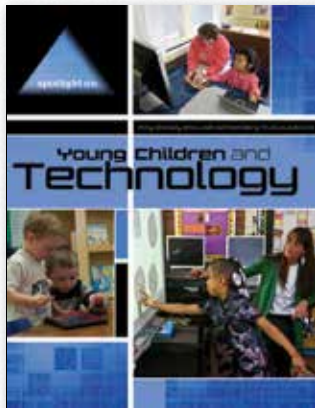
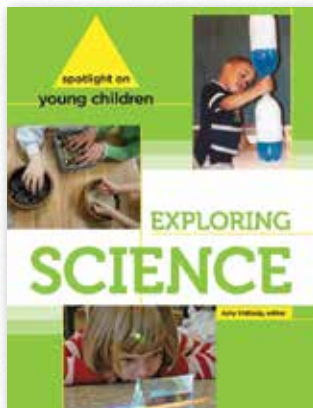
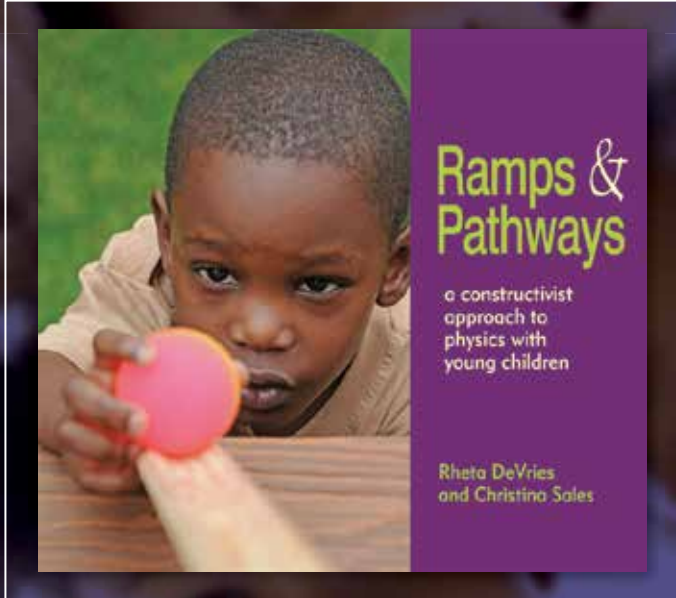
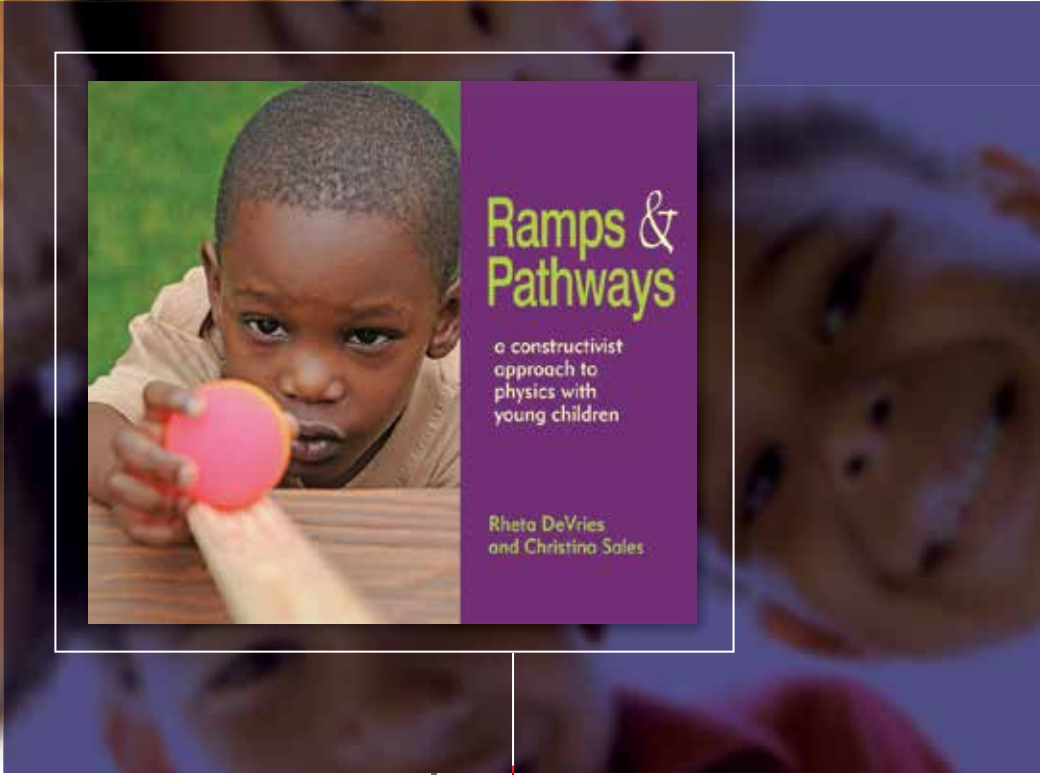


PASCO is the proud sponsor of the STEM Educator Award:  
*Recognizing excellence and innovation in the field of STEM education.*

**STEM  
EDUCATOR  
AWARD**

**NSTA** National  
Science  
Teachers  
Association

Celebrate  
NAEYC's first  
time exhibiting  
at NSTA!



✳ Join us every day  
for demonstrations  
of physics and  
young children  
based on our  
book **Ramps  
and Pathways.**

### 7:00–8:30 AM Meeting

**NSELA Professional Development Institute (Registration Office)**

*Grand Ballroom C, Westin Waterfront*

For more information, visit [nsela.org](http://nsela.org).

### 7:00 AM–5:00 PM Meeting

**Council of State Science Supervisors (CSSS) Annual Meeting**

*(By Invitation Only)*

*Seaport Ballroom A, Seaport*

For more information, visit [www.csss-science.org](http://www.csss-science.org).

### 8:00 AM–4:00 PM Meeting

**Pathways: A Crosswalk Bridging Topics Meeting**

*(By Invitation Only)*

*Mediterranean, Renaissance*

### 8:00 AM–5:00 PM Meetings

**FOSS Third Edition Institute**

*(By Invitation Only)*

*Pacific F, Renaissance*

**FOSS Middle School Institute**

*(By Invitation Only)*

*Pacific G, Renaissance*

**Dr. Lowery Presents the Nature of Inquiry Institute**

*(By Invitation Only)*

*Pacific H, Renaissance*

### 8:30 AM–4:30 PM Meeting

**NSELA Professional Development Institute**

*(By Registration Through NSELA) Grand Blrm. B, Westin Waterfront*

For more information, visit [nsela.org](http://nsela.org).

### 8:30 AM–5:00 PM Meeting

**National Marine Educators Association Mid-Year Board Meeting**

*(By Invitation Only) Commonwealth Ballroom C, Westin Waterfront*

*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 in heavy type at the right immediately following the session title. On page 179, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

<b>(Bio)</b>	=	<b>Biology/Life Science</b>
<b>(Chem)</b>	=	<b>Chemistry/Physical Science</b>
<b>(Earth)</b>	=	<b>Earth/Space Science</b>
<b>(Env)</b>	=	<b>Environmental Science</b>
<b>(Gen)</b>	=	<b>Integrated/General Science</b>
<b>(Phys)</b>	=	<b>Physics/Physical Science</b>

## Glossary

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

## Strands

The Boston Conference Committee has planned the conference around the following four strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 38.



**Science and Literacy: A Symbiotic Relationship**



**Teaching Elementary Science with Confidence!**



**Leading from the Classroom**



**Engineering and Science: Technological Partners**

The following icons will be used throughout this program.



**Global Conversations in Science Education Conference**



**NSTA Press® Sessions**



**Professional Development Institutes**

9:00 AM–4:00 PM NSTA PDIs

**PDI** NGSS Practices of Science: Student Reasoning at the Core of Science Instruction (PDI-1)

(Grades K–8) 203, BCEC

By Preregistration Only

Paul J. Numedahl, BSCS, Colorado Springs, Colo.

For description, see page 48.

**PDI** Increasing Language Skills and Access to Rigorous Science Education: Examining the Opportunities That the Next Generation Science Standards Provide to English Learners (PDI-2)

(Grades K–12) 204 A/B, BCEC

By Preregistration Only

Okhee Lee, University of Miami, Coral Gables, Fla.

For description, see page 48.

**PDI** Building STEM Capacity with NGSS: Addressing Engineering and Technology in the Next Generation Science Standards (PDI-3)

(Grades K–12) 206 A/B, BCEC

By Preregistration Only

Mariel Milano, Orange County Public Schools, Orlando, Fla.

For description, see page 49.

**PDI** Integrating Science Practices with CCSS ELA Strategies Using Teaching Cases and Online Data Tools (PDI-4)

(Grades 5–12) 208, BCEC

By Preregistration Only

Jim Short, American Museum of Natural History, New York, N.Y.

For description, see page 49.

**PDI** Deepening Thinking and Reasoning Through Discussion and Writing in K–5 Inquiry-based Science (PDI-5)

(Grades K–5) 209, BCEC

By Preregistration Only

Jeff Winokur, Wheelock College, Boston, Mass.

For description, see page 49.

9:00 AM–4:00 PM NSTA PDI One-Day Work Sessions

**PDI** One-Day Work Session: Designing Effective Science Lessons Aligned to the Next Generation Science Standards (PDI-6)

(General) 211, BCEC

By Preregistration Only

Anne Tweed, 2004–2005 NSTA President, and McREL, Denver, Colo.

For description, see page 50.

**PDI** One-Day Work Session: NGSS 101: An Introduction to the Next Generation Science Standards (PDI-8)

(Grades K–12) 212, BCEC

By Preregistration Only

Joseph Krajcik, Michigan State University, East Lansing

For description, see page 50.

**PDI** One-Day Work Session: Developing Formative and Summative Assessments of NGSS Performance Expectations (PDI-7)

(Grades K–8) 254B, BCEC

By Preregistration Only

Angela Haydel DeBarger, SRI International, Menlo Park, Calif.

For description, see page 50.

9:00 AM–4:00 PM Meeting

SESD Preconference

(By Registration Through SEDS) Otis, Westin Waterfront

Science educators, special education teachers, parents, and/or administrators at all levels learn and share information and strategies on teaching science to students with disabilities.

For more information, visit [www.sesd.info](http://www.sesd.info); to register, please contact Sami Kahn at [samikahn@mail.usf.edu](mailto:samikahn@mail.usf.edu).

12 Noon–1:00 PM Luncheon

FOSS Luncheon

(By Invitation Only) Atlantic 1, Renaissance

1:00–4:00 PM Workshop

NSTA/CAEP Development of Program Report Workshop

(By Invitation Only) Griffin, Westin Waterfront

For details, visit [www.nsta.org/preservice](http://www.nsta.org/preservice).

**SOLD OUT**

**4:00–6:00 PM Meeting**  
**SESD Board Meeting**

*Quincy, Westin Waterfront*

The annual business meeting of Science Education for Students with Disabilities, an associated group with NSTA, is open to everyone—please join us! For more information, visit [www.sesd.info](http://www.sesd.info).

**5:00–7:00 PM Reception**  
**New Science Teacher Academy Reception**

*(By Invitation Only)*

*Pacific A–E, Renaissance*

**5:00–8:00 PM Reception**  
**Pathways: A Crosswalk Bridging Topics Reception**

*(By Invitation Only)*

*Atlantic 3, Renaissance*

**5:30–7:30 PM Reception**  
**Corporate Donor Reception**

*(By Invitation Only)*

*Room 3810, Marriott Copley Place*

**5:30–8:00 PM Meeting**  
**STELAR Convening Meeting**

*Otis, Westin Waterfront*

The STELAR Center will be hosting an evening event to reconnect with past and current ITEST PI's as well as make new connections by introducing the ITEST program and STELAR community to new audiences.

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# Thursday, April 3

	Featured Speakers/Special Events	Featured Speakers/Special Events	Featured Speakers/Special Events	First-Timer Sessions/Special Events
8:00 AM		<p><b>Global Conversations in Science Education Conference (M-I)</b> 8:00 AM–1:00 PM Grand Ballroom A/B, Westin Waterfront</p> <p><b>Building and Sustaining Leadership to Support New Reforms and Development of Literacy</b></p> <p>Speakers: Jari Lavonen and Joseph Krajcik</p>		<p><b>First-Timers' Meeting</b> Is This Your First NSTA Conference? 8:00–9:00 AM Harbor Ballroom I/II Westin Waterfront</p>
9:00 AM	<p><b>General Session</b> 9:15–10:30 AM Grand Ballroom, BCEC Speaker: Mayim Bialik <i>sponsored by Texas Instruments</i></p>			
10:00 AM				
11:00 AM				<p><b>Meet the Presidents Board/Council</b> 11:05–11:30 AM Exhibit Hall Entrance, BCEC</p>
12 Noon			<p><b>Special Session</b> STEM Behind Hollywood—Adventure, Drama, and Mystery in Your Classroom 12 Noon–1:00 PM Grand Ballroom, BCEC Speakers: Mayim Bialik and Steven Schlozman <i>sponsored by Texas Instruments</i></p>	
1:00 PM	<p><b>Mary C. McCurdy Lecture</b> 12:30–1:30 PM 210C, BCEC Speaker: David A. Aguilar</p>			
2:00 PM	<p><b>Special Session</b> 2:00–3:00 PM 210C, BCEC Speaker: Gregg Treinish <i>sponsored by National Geographic Learning</i></p>	<p><b>Featured Presentation</b> 2:00–3:00 PM Grand Ballroom, BCEC Speakers: Stephen L. Pruitt and Rodger W. Bybee</p>		
3:00 PM				
4:00 PM	<p><b>Featured Presentation</b> 3:30–4:30 PM 210C, BCEC Speaker: Yvonne M. Spicer <i>sponsored by Shell</i></p>	<p><b>The Planetary Society Lecture</b> 3:30–5:30 PM Grand Ballroom, BCEC Speaker: Bill Nye</p>		<p><b>First-Timers' Meeting</b> Conference Tips for First-Timers 3:30–4:30 PM Harbor Ballroom I/II Westin Waterfront</p>
5:00 PM			<p><b>Special Session</b> Climate: A Fascinating Scientific Topic with Challenges and Opportunities for Science Educators 5:00–6:00 PM 252A, BCEC Speaker: Paul A. O'Gorman</p>	
6:00 PM		<p><b>Special Evening Session</b> 6:00 PM–12 Midnight Pacific A/B, Renaissance <b>A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC Framework, and the NGSS, Part I</b></p>		
7:00 PM				
8:00 PM				



## 7:30–9:00 AM Breakfast

### New Science Teacher Academy Breakfast

(By Invitation Only) Pacific D/E, Renaissance

## 7:30–9:30 AM Breakfast

### NSELA Membership Breakfast

(By Invitation Only) Commonwealth Blrm. A/B, Westin Waterfront

For more information, visit [nsela.org](http://nsela.org).

## 8:00–8:30 AM Presentations

### SESSION 1

#### Science + Literacy in PreK Science Instruction

(Gen)

(Preschool) 158, BCEC

**Tiffany R. Lee** ([tiffany.r.lee@colorado.edu](mailto:tiffany.r.lee@colorado.edu)), University of Colorado, Boulder

Drawing upon findings from a multiyear research collaboration with a preK program, we will explore the intersections of science and literacy in early childhood education.

### SESSION 2

#### The Best Teachers Lead from the Classroom (Phys)

(Middle Level) 159, BCEC

**Gioya A. De Souza-Fennelly** ([gioyafennelly@aol.com](mailto:gioyafennelly@aol.com); [gd2409@tc.columbia.edu](mailto:gd2409@tc.columbia.edu)), Teachers College, Columbia University, New York, N.Y.

The best science teachers lead by example by using their action research plans and data-driven teaching and learning, and by presenting authentic data and student work at local, state, and national levels.

## Science Area

A science area category is associated with each session. These categories are abbreviated in heavy type at the right immediately following the session title. On page 179, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

<b>(Bio)</b>	=	<b>Biology/Life Science</b>
<b>(Chem)</b>	=	<b>Chemistry/Physical Science</b>
<b>(Earth)</b>	=	<b>Earth/Space Science</b>
<b>(Env)</b>	=	<b>Environmental Science</b>
<b>(Gen)</b>	=	<b>Integrated/General Science</b>
<b>(Phys)</b>	=	<b>Physics/Physical Science</b>

## Glossary

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

## Strands

The Boston Conference Committee has planned the conference around the following four strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 38.



**Science and Literacy: A Symbiotic Relationship**



**Teaching Elementary Science with Confidence!**



**Leading from the Classroom**



**Engineering and Science: Technological Partners**

The following icons will be used throughout this program.



**Global Conversations in Science Education Conference**



**NSTA Press® Sessions**



**Professional Development Institutes**

## 8:00–9:00 AM Presentations

### SESSION 1

#### NMEA Session: Whale-of-a-Tale Share-a-Thon (Env)

(Informal Education) 052 A/B, BCEC

**Lauren Rader** (*lrader@oceanology.org*), Project Oceanology, Groton, Conn.

**Bill Andrade** (*billandrade@hotmail.com*), Swampscott Middle School, Swampscott, Mass.

**Becky J. Cox**, The University of Tennessee at Martin

**Susan E. Haynes** (*susan.haynes@noaa.gov*), NOAA Office of Ocean Exploration and Research, Barrington, R.I.

**Trisha LeBlanc**, Audubon Aquarium of the Americas, New Orleans, La.

**Tami Lunsford**, Newark Charter Junior/Senior High School, Newark, Del.

**Diana Payne**, Connecticut Sea Grant, Groton

**Carol Steingart** (*carolsteingart@gmail.com*), Coast Encounters, LLC, Wells, Maine

**Emily Weiss**, Birch Aquarium at Scripps, La Jolla, Calif.

Presider: Susan Haynes

The National Marine Educators Association invites you to engage in hands-on activities and take home resources for your classroom. Join us to discover how you can become involved in both ocean and freshwater initiatives from local and national organizations to promote ocean and climate literacy. After the share-a-thon, stay for the day for an NMEA track of sessions in the same room!

### SESSION 2

#### Second-Grade Science Collaborations: Exploring States of Matter, Forces, Motion, and Energy

(Chem)

(Elementary) 160A, BCEC

**Emily Schmitt Lavin** (*eschmitt@nova.edu*), Nova Southeastern University, Fort Lauderdale, Fla.

College students and faculty/parents worked together with second-grade teachers to develop hands-on science activity days that link to the science standards and workbook exercises.

### SESSION 3

#### Using Popular Children's Films to Teach Science

(Gen)

(Elementary–Middle Level) 160C, BCEC

**Michelle L. Klosterman** (*klostermanml@missouri.edu*) and **Jamie A. Foulk**, University of Missouri, Columbia

**Krista L. Adams** (*kadams12@unl.edu*), University of Nebraska–Lincoln

**Stephen B. Witzig** (*switzig@umassd.edu*), UMass Dartmouth, Fairhaven, Mass.

Children's films are for more than entertainment! Learn how to leverage films to effectively engage your students in science based on research in this field.

### SESSION 4

#### The Sun, the Soil, and the Tomato: Gardening as a Vehicle to Teach Earth and Space Concepts and Bridge the Summer Hiatus with Scientific Exploration

(Env)

(Elementary) 161, BCEC

**Wendy M. Tekverk** (*wtekverk@gmail.com*), Boston University, Boston, Mass.

Science shouldn't stop for the summer. Discover a cross-curricular, multiyear project involving Sun and soil measurements, scientific investigations, and gardening. Free seeds and materials included.

### SESSION 5

#### WeatherBlur: Climate Change, Community, and Kids

(Earth)

(Elementary–Middle Level) 162A, BCEC

**Ruth Kermish-Allen** (*rallen@islandinstitute.org*) and **Rachel Thompson** (*rthompson@islandinstitute.org*), Island Institute, Rockland, Maine

WeatherBlur works with students, fishermen, and scientists via an online platform using classical inquiry and place-based education pedagogy to explore the local effects of climate change.

### SESSION 6

#### Claymation: Science and Creativity

(Phys)

(Elementary–High School) 205C, BCEC

**Daniel P. Carroll** (*daniel.carroll@apsva.us*), Yorktown High School, Arlington, Va.

**Ryan Carroll** (*almcomcomedy@gmail.com*), Massachusetts College of Art, Boston

Come learn how to engage your students in creating clay animation as a vehicle for introducing and assessing science standards.

**SESSION 7**

**Do You Need a New Science Lab?**

*(Middle Level–High School)*

**(Chem)**

252A, BCEC

**Ruth Ruud** (*ruth.ruud@yahoo.com*), Venice, Fla.

**Rachael Schmidt** (*rschmidt@nsta.org*), Program Manager, Science Education Competitions, NSTA, Arlington, Va.

Come learn how to win a Shell Science Lab Makeover (\$20,000 value) for your school.

**SESSION 8**

**Collaboration Is Key**

*(Elementary)*

**(Gen)**

252B, BCEC

**Geri L. Evans** (*gevans@hoover.k12.al.us*), Bluff Park Elementary School, Birmingham, Ala.

**Karen Darroch** (*kdarroch@hoover.k12.al.us*), Green Valley Elementary School, Birmingham, Ala.

Where can technology take you with your science classes? What's working in your classroom? Collaborate and connect with other teachers and connect even after the conference is over.

**SESSION 9**



**NSTA Press® Session: Teaching for Conceptual Understanding with the NGSS**

*(General)*

253A, BCEC

**Page Keeley** (*pagekeeley@gmail.com*), 2008–2009 NSTA President, Jefferson, Maine

**Richard D. Konicek-Moran** (*konmor@comcast.net*), Professor Emeritus, UMass Amherst, Mass.

What does it really mean to teach for conceptual understanding? Find out how you can use the authors' new book to transform and guide teaching and foster deeper learning of the NGSS.



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#### SESSION 10



**NSTA Press® Session: Doing Good Science in Middle School (Gen)**  
(General) 254A, BCEC

**Olaf Jorgenson** ([ojorgenson@a-cs.org](mailto:ojorgenson@a-cs.org)), Almaden Country School, San Jose, Calif.

**Rick Vanosdall** ([rick.vanosdall@mtsu.edu](mailto:rick.vanosdall@mtsu.edu)), Middle Tennessee State University, Murfreesboro

**Vicki Massey** ([gvmassey@cox.net](mailto:gvmassey@cox.net)), NSTA Director, District XIV, Mesa, Ariz.

Find out how *Doing Good Science in Middle School* has evolved with the NGSS, STEM, and technology's rise since we published our first edition in 2004.

#### SESSION 11

**Teaching Technology Engineering in Context (Gen)**  
(Middle Level) 255, BCEC

**Scott A. Jewell** ([scooterjewell@yahoo.com](mailto:scooterjewell@yahoo.com)), Ipswich Middle School, Ipswich, Mass.

Let's examine different technological systems with a view toward teaching students about these systems in the context of a larger world.

#### SESSION 12 (two presentations)

(Middle Level–High School)

257A, BCEC

##### **Inland Fish and Warming Waters (Bio)**

**Liz Duff** ([lduff@massaudubon.org](mailto:lduff@massaudubon.org)), Mass Audubon, Wenham, Mass.

Discover simple methods of teaching about climate change, its potential impact on cold-water fish, and ways people can help make a difference.

##### **Aquarium Design: Biological Engineering (Bio)**

**Brian E. Slopey** ([bslopey@u32.org](mailto:bslopey@u32.org)), U32 High School, Montpelier, Vt.

High school students are challenged to develop a sustainable aquarium design, using engineering practices encompassing skills and knowledge that extend what is meant by “inquiring” in science. This session will share the process used in guiding students through developing an aquarium design project using Next Generation engineering standards.

#### SESSION 13

##### **Fourth Down and Inches: Concussions and Football's Make-or-Break Moment (Bio)**

(General)

257B, BCEC

**Carla Killough McClafferty**, Author, Benton, Ark.

Carla Killough McClafferty, author of *Fourth Down and Inches: Concussions and Football's Make-or-Break Moment*, uncovers the research that may change the future of football.

#### SESSION 14



**sTem: Merging Technology with Engineering (Gen)**  
(General) 259B, BCEC

**Ben Smith** ([ben@edtechinnovators.com](mailto:ben@edtechinnovators.com)) and **Jared Mader** ([jared@edtechinnovators.com](mailto:jared@edtechinnovators.com)), York, Pa.

Technology should play an integrated role in teaching in a STEM classroom. Come see some best practices to design and conduct experiments.

#### SESSION 15



**Preparing for the Future: Developing Science Teacher Leaders (Gen)**

(General)

260, BCEC

**Ericka S. Lawton** ([esll@rice.edu](mailto:esll@rice.edu)), Rice University, Houston, Tex.

Many teachers rarely view themselves as potential leaders within their school. Learn techniques that will identify, develop, and support future leaders within your science program.

**SESSION 16**

**Science, Technology, and Culture (Earth)**  
(High School/Informal Education) 261, BCEC

**Christina Pease** (*cpease@amnh.org*), American Museum of Natural History, New York, N.Y.

Come see how science, technology, and culture can intersect in an astronomy course for English language learners.

**SESSION 17**

**Genetics Education in the Age of Genomics (Bio)**  
(High School–College) Atlantic 1, Renaissance

**Scott T. Woody** (*swoody@wisc.edu*), University of Wisconsin, Madison

Experience a hands-on approach that uses plants and a polymerase chain reaction (PCR) to help students make the connection between phenotypes and underlying DNA sequence-based genotypes.

**SESSION 18**

**Teaching Fruit Fly Genetics with Cards (Bio)**  
(High School–College) Atlantic 3, Renaissance

**Andrea Bierema** (*abierema@wmich.edu*) and **Reneé S. Schwartz** (*r.schwartz@wmich.edu*), Western Michigan University, Kalamazoo

Discover how to teach fruit fly genetics using a hands-on activity that encourages students to collect data but does not require live animal use.

**SESSION 19**

**Preparing Tomorrow’s Leaders (Gen)**  
(General) Brewster, Renaissance

**Carrie Ann Sharitt** (*sharitt\_carrie@columbusstate.edu*) and **Gail Sinkule** (*sinkule\_gail@columbusstate.edu*), Columbus State University, Columbus, Ga.

Learn about opportunities that are available for preservice teachers, ways to fund these experiences, and how they will benefit students in the future.

# CALLING ALL MIDDLE SCHOOL EDUCATORS

Friday, April 4, 2014 | 8:00 AM–2:00 PM | Westin Boston Waterfront

**\*Must be registered for the conference to attend\***

Join us for a special **“Meet Me in the Middle Day,”** designed just for middle school educators, at **NSTA’s 2014 National Conference in Boston!**

The day’s events will include a Bring Your Own Breakfast networking session, more than a dozen presentations specifically for middle school educators, and an afternoon share-a-thon.

*Sponsored by the National Middle Level Science Teachers Association (NMLSTA)*



#mmitm

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Attend for a chance to win an iPad mini and other door prizes!



**SESSION 20** (two presentations)

(*High School–College*) *Caspian, Renaissance*

**SCST Session: Using POGIL to Promote Student Learning in a High School/University Dual Enrollment Anatomy and Physiology Class (Bio)**

**Murray Jensen** (*msjensen@umn.edu*), University of Minnesota, Minneapolis

Join us for an introduction to a set of Process-Oriented Guided Inquiry Learning activities designed for use in introductory anatomy and physiology courses.

**SCST Session: *Allegro Ma Non Troppo*—Coaching as a Way to Promote Faculty Pedagogical Change in Undergraduate Physics Courses (Phys)**

**Maria C. Simani** (*maria.simani@ucr.edu*), University of California, Riverside

Coaching promotes changes in instructional practices even for veteran faculty. Results from a pilot study will be discussed as pedagogical changes were tested in an undergraduate physics course.

**SESSION 21**

**Food: A Unifying Subject Area for Environmental Science (Env)**

(*High School–College*) *Pacific A/B, Renaissance*

**Andrew Friedland** (*andy.friedland@dartmouth.edu*), Dartmouth College, Hanover, N.H.

Understanding all aspects of food systems—including the energy inputs—will lead your students to have a greater appreciation of many aspects of environmental science.

**SESSION 22** (two presentations)

(*General*) *Pacific G/H, Renaissance*

**Science for Artists of All Ages (Gen)**

**Carrie Hanover** (*chanover@walnuthillarts.org*), **Kathy Liu** (*kliu@walnuthillarts.org*), and **Thomas Keenan** (*tkeenan@walnuthillarts.org*), Walnut Hill School for the Arts, Natick, Mass.

We'll share ideas for projects and experiments that link science and the arts. Discover how to get your students' creative (and sometimes competitive) juices flowing!

**Moving from STEM to STEAM in the 21st Century (Gen)**

**Sandy Buczynski** (*sandyb@sandiego.edu*), University of San Diego, Calif.

Walk away with examples of how and when to integrate the arts into your STEM classrooms for stronger connections to 21st-century skills.

**SESSION 23**

**AMSE Session: Scientific Concepts Made “Ridiculously” Simple Using Case Studies (Bio)**

(*High School*) *Constitution, Seaport*

**Chelia McCoo Dogan** (*chelia.mccoodogan@aliefisd.net*), Elsie High School, Houston, Tex.

This session will assist you in understanding the relevance and implementation of the NGSS with the use of case studies as a powerful tool to enhance scientific instruction with multicultural populations.

**SESSION 24** (two presentations)

(*High School*) *Flagship A, Seaport*

**Catalyzing STEM Education via the National Academy of Engineering Grand Challenges—From Philadelphia to Kenya (Gen)**

**Jessica S. Ward** (*jward@coe.drexel.edu*) and **Mary Jo Grdina** (*mfg29@drexel.edu*), Drexel University, Philadelphia, Pa. Drexel University's NSF GK–12 program pairs engineering graduate students with Philadelphia and Kenyan science teachers to develop hands-on STEM activities related to the high school curriculum.

**Transitions: Student to Teaching Assistant (Gen)**

**Jennifer C. Hlentas** (*jalemo@gmail.com*) and **Kristi E. Vilberg** (*kvilberg@gmail.com*), High School of Hospitality Management, New York, N.Y.

The peer-enabled restructured classroom (PERC) allows a typical classroom to be transformed into a cooperative learning environment where previous students act as teaching assistant scholars (TAS) to facilitate math and science content instruction as well as grow personally and professionally.

**SESSION 25** (two presentations)

(*Middle Level–High School*) *Lighthouse I, Seaport*

**Using Communication Technology to Facilitate Scientific Literacy (Gen)**

**Shireen A. VanBuskirk** (*s.vanb@sympatico.ca*), Queen's University, Kingston, Ont., Canada

Let's explore four case studies in which innovative teachers used various technologies to enhance student communication and collaboration. Student perspectives are also included.

**Flipping for Science and Engineering! (Gen)**

**Traci K. Richardson**, Stillwater High School, Stillwater, Okla.

Discover how to integrate technology into your curricula by flipping your classes, allowing you to better address science and engineering practices.



Students at Busch Gardens assist the animal care team with the care of an injured bird.



You all know one - the exceptional student that loves nature. The one that likes to clean the home of the class' guinea pig or fish bowl. The one that is always staring out the window, wishing to be outside. The one that idolizes famous scientists like Jacques Cousteau. Yes, that student. The one who will someday become a conservation leader.

**And you, their teacher, are the key to their inspiration.**

At SeaWorld Parks & Entertainment we are reminded of the importance and influence of teachers every day. The animals we rescue, the people we educate, and the species we save were often influenced by the teachers in our lives.

**We were that student in your classroom.**

We owe a lot to you - the teacher. For more than 50 years, we've been sharing our passion for protecting wildlife and wild places, and providing ways to extend this passion into your classroom. Visit our new website, created just for you, for free resources and ways to inspire your students to protect the world we share.

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SEAWORLD PARKS & ENTERTAINMENT

**SESSION 26**

**Science Teacher Leadership to Strengthen a Learning Environment (Gen)**

(Middle Level–High School) Plaza A, Seaport

**Myrna Hernandez** (*myrnahernandez@live.com*), **Maria Ortiz** (*marialmmm8@yahoo.com*), **Minnuette Rodriguez** (*mrhmonarca@gmail.com*), and **Sandra Beltran** (*sanbeltranmor@gmail.com*), University of Puerto Rico, San Juan

Presider: Marta Fortis, University of Puerto Rico, San Juan  
Teachers developed and implemented science projects in collaboration with University of Puerto Rico, Río Piedras research faculty and graduate and undergraduate students relating to environmental issues—connecting the university to schools and communities via field sites for research, learning, and networking.

**SESSION 27**

**Educaching: Finding Treasure to Capture Students' Attention (Gen)**

(High School) Plaza B, Seaport

**Matthew J. Jacobs**, The Norwich Free Academy, Norwich, Conn.

Through the use of GPS technology, high school students research and find hidden caches to spark classroom learning and interest.

**SESSION 28** (two presentations)

(Middle Level–High School) Plaza C, Seaport

**Interactive Notebooks: An Organizational Tool That REALLY Works! (Gen)**

**Robin Benoit** (*rbenoit@nrds.net*) and **Liz Miller** (*emiller@nrds.net*), Florence Sawyer School, Bolton, Mass.

Come find out how interactive notebooks can help your students focus on processing and understanding content by removing the haze of disorganization. Handouts!

**Integrating Probes in the Interactive Notebook (Gen)**

**Jen MacColl** (*jmaccoll@susd.org*), Chaparral High School, Scottsdale, Ariz.

Integrating probes in the interactive notebook allow students to take risks, stimulate thinking, and experience cognitive dissonance. Probing questions allow teachers to recognize students' prior knowledge and misconceptions and make valuable instructional decisions.

**SESSION 29**

**Inquiry, Science and Engineering Practices, and the Next Generation Science Standards (Gen)**

(General) Commonwealth Ballroom C, Westin Waterfront

**Cynthia J. Long** (*clong@mcrel.org*), McREL, Denver, Colo.  
**Anne Tweed** (*atweed@mcrel.org*), 2004–2005 NSTA President, and McREL, Denver, Colo.

Explore and apply the science and engineering practices from the NGSS and learn how these practices help students think and act like scientists through inquiry.

**SESSION 30**

**Applying NGSS Engineering Standards to Classroom Practice (Gen)**

(Supervision/Administration) Douglass, Westin Waterfront

**Mary Haggerty** (*mary\_haggerty@wgbh.org*), WGBH Educational Foundation, Boston, Mass.

Walk away with strategies for integrating the *Next Generation Science Standards* and engineering-specific content into your classroom using PBS' extensive collection of STEM multimedia resources.

**SESSION 31** (two presentations)

(General) Griffin, Westin Waterfront

**Teaching Scientific Literacy Through Writing Arguments (Gen)**

**Julia C. Phelan** (*julia.phelan@ucla.edu*) and **Jay Phelan** (*jay@ucla.edu*), University of California, Los Angeles

Attention will be paid to development and testing of performance-based assessments, frameworks, and instructional supports in literacy and science.

**FAST: Formative Assessment for Science Teachers (Gen)**

**Amelia W. Gotwals** (*gotwals@msu.edu*), **Dante Cisterna** (*cisterna@msu.edu*), and **Dawnmarie Ezzo** (*ezzoda@msu.edu*), Michigan State University, East Lansing

We will discuss and provide video examples of formative assessment tools and strategies for teachers to scaffold student learning of core disciplinary ideas and science practices.

**SESSION 32**

**First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference? (Gen)**

(General) Harbor Ballroom I/II, Westin Waterfront

**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.

**SESSION 33**

**CSSS Session: The Value of Integratedness: Exploring Methods for Integrating Mathematics in Science Practices (Gen)**

(General) Harbor Ballroom III, Westin Waterfront

**Tiffany N. Neill** ([tneill@ou.edu](mailto:tneill@ou.edu)) and **Levi J. Patrick** ([levi.j.patrick@gmail.com](mailto:levi.j.patrick@gmail.com)), Oklahoma State Dept. of Education, Oklahoma City

Explore the integration of math and science with model lessons and a simple-to-use rubric that supports anyone who is interested in starting or deepening integration.

**SESSION 34**

**Building Effective STEM Partnerships (Gen)**

(General) Lewis, Westin Waterfront

**Adaliz Gonzalez, Lupe Leon** ([lleon@schools.nyc.gov](mailto:lleon@schools.nyc.gov)), **Marlyn Orque Claro** ([ms.orque@inwood52.org](mailto:ms.orque@inwood52.org)), and **Ernesto Pasco** ([mr.pasco@inwood52.org](mailto:mr.pasco@inwood52.org)), Inwood Intermediate School 52, New York, N.Y.

**Roy Harris** ([rharris2@schools.nyc.gov](mailto:rharris2@schools.nyc.gov)), Center for Educational Innovation-Public Education Association, New York, N.Y.

**David Graeber**, Children’s First Network 534 (CEI-PEA), Bronx, N.Y.

Find out how a team of teachers built a culture of collegiality proven to be effective for the teaching of STEM lessons and development of units aligned to the NGSS and CCSS. This partnership and collegiality among teachers enable students to make connections across content areas in STEM.

**SESSION 35**

**Garbage In/Garbage Out: Quality Online Learning Begins with Great Next Gen Courses (Gen)**

(General) Stone, Westin Waterfront

**Brian C. Bridges** ([bbridges@clrn.org](mailto:bbridges@clrn.org)), Stanislaus County Office of Education, Modesto, Calif.

Inputs matter. How can you tell if an online course is any good; whether it engages students in active learning or challenges them with authentic higher-level work? We’ll detail the California Learning Resource Network (CLRN) course review process, from publisher entry to publication, outlining criteria, including iNACOL’s course standards for receiving our certification as part of our University of California partnership.



## Need help navigating?

If this is your first NSTA conference, please join us at our conveniently offered sessions for first-time conference attendees where we’ll walk through the program and you’ll learn how to get the most from your conference experience. Door prizes!

**First-Timer Attendee Sessions • Thursday, April 3**

**8:00–9:00 AM ● 3:30–4:30 PM**

**Harbor Ballroom I & II, The Westin Boston Waterfront**



SESSION 36

**Mirror, Mirror, on the Wall: Using Reflection to Improve Professional Development (Gen)**

(General) Webster, Westin Waterfront

**Eric Hall** ([eric.hall@dmschools.org](mailto:eric.hall@dmschools.org)) and **Maureen Griffin** ([maureen.griffin@dmschools.org](mailto:maureen.griffin@dmschools.org)), Hoover High School, Des Moines, Iowa

Teaching teachers can be a challenge. We'll explore how using various modes of reflective thinking can challenge teachers and take their practice to the next level.



**8:00–9:00 AM Workshops**

**The Tagging and Tracking of Marine Animals (Env)**

(Middle Level–High School/Informal Education) 157C, BCEC

**Lacey E. Moore** ([lmoore@mbayaq.org](mailto:lmoore@mbayaq.org)), Monterey Bay Aquarium, Monterey, Calif.

Join Monterey Bay Aquarium educators for inquiry-, technology-, and standards-based activities exploring the tagging and tracking of ocean animals. These activities are appropriate for middle school and high school classrooms with computers and internet.

**STEM Integration—Don't Leave a Letter Out! (Gen)**

(Elementary) 162B, BCEC

**Shannon K. McManus** ([smcmanus@mos.org](mailto:smcmanus@mos.org)), Museum of Science, Boston, Mass.

How are science, technology, engineering, and math related? This hands-on workshop will explore activities and techniques that foster meaningfully integrated STEM experiences in elementary classrooms.

**PDI BSCS Pathway Session: A Vision of Inquiry Using the NGSS Practices of Science and Engineering (Gen)**

(General) 203, BCEC

**Paul J. Numedahl** ([pnumedahl@bscs.org](mailto:pnumedahl@bscs.org)) and **Anne Westbrook**, BSCS, Colorado Springs, Colo.

This session will deepen participants' understanding of inquiry-based science teaching and the science and engineering practices. Video cases of actual classroom teaching will be used to showcase the practices and provide a springboard for an in-depth look at inquiry-based science teaching as it relates to the NGSS.

**Integrating Bioethical Case Studies into the Science Curriculum (Bio)**

(Middle Level–High School) 205A, BCEC

**Terry Maksymowych** ([tmaksymowych@ndapa.org](mailto:tmaksymowych@ndapa.org)), Academy of Notre Dame de Namur, Villanova, Pa.

The study of bioethics in the science classroom can encour-

age scientific literacy as well as the development of critical-thinking and problem-solving skills.

**Citizen Science for All Seasons: Project BudBurst in Your Classroom (Bio)**

(Elementary–High School) 205B, BCEC

**Sandra Henderson**, National Ecological Observatory Network, Boulder, Colo.

Get your students involved in a national climate change field campaign by making simple observations of plants in your community. Hands-on activities and handouts provided.

**PDI Wheelock Pathway Session: The Insightful Use of Science Notebooks (Gen)**

(General) 209, BCEC

**Lori A. Fulton** ([fultonl@hawaii.edu](mailto:fultonl@hawaii.edu)), University of Hawaii at Manoa, Honolulu

When used insightfully, science notebooks can help students develop scientific understandings. This workshop examines strategies that help teachers implement science notebooks in an insightful manner.

**A Virtual Field Trip Connects Classrooms to the Wonder of Antarctic Penguins (Gen)**

(Elementary–Middle Level) 211, BCEC

**Jean Pennycook** ([jean.pennycook@gmail.com](mailto:jean.pennycook@gmail.com)), Central Valley Science Project, Fresno, Calif.

Explore new learning as you take your classroom on a virtual field trip to Antarctica. Watch life as it unfolds in an Adélie Penguin breeding colony.

**Connecting Science and Math Through Story Problems (Gen)**

(Elementary) 213, BCEC

**Glenda S. Pepin** (*gpepin@clemson.edu*), Clemson University, Greenville, S.C.

**Jennifer W. Schumpert** (*jschump@clemson.edu*), Clemson University, Clemson, S.C.

Develop connections between science and mathematics in early childhood through inquiry-based science investigations that facilitate constructing story problems proposed in the *Common Core State Standards, Mathematics*.

**ASTC Session: Teaching with Collections: Bringing the Next Generation Science Standards to Life (Bio)**

(Elementary–Middle Level) 251, BCEC

**Wendy Derjue-Holzer** (*wderjue@hmn.harvard.edu*) and **Amy Gunzelmann** (*gunzelmann@hmn.harvard.edu*), Harvard Museum of Natural History, Cambridge, Mass.

**Fran Ludwig** (*fludwig12@yahoo.com*), Retired Educator, Lexington, Mass.

**Wendy Hanlon** (*wendyhanlon@quincypublicschools.com*), Atlantic Middle School, Quincy, Mass.

Collections are at the heart of many museums. Join teachers and museum educators to practice learning through observations and discuss how to apply this to your classroom.



**NSTA Press® Session: Next Time You See... (Gen)**  
(Preschool–Elementary) 253C, BCEC

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

The author of the *Next Time You See* series from NSTA Press will share books and activities that teach the NGSS and CCSS...and inspire a sense of wonder about the natural world.

**Hands-On Project Based Learning (Gen)**  
(Middle Level) 254B, BCEC

**Patricia J. Hillyer** (*phillyer@marsd.k12.nj.us*), Matawan-Aberdeen Regional School District, Cliffwood, N.J.

**Darrell M. Williams** (*dawilliams@ewingboe.org*), Fisher Middle School, Ewing, N.J.

Too many standards, not enough time? Two passionate educators demonstrate how Project Based Learning can allow you to soar to new heights, reaching all the standards!

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**2nd Prize** Ward's Digital Slides: High School Life Science Set. A \$250 value.

**3rd Prize** TeacherGeek Advanced Rubber Band Racer, Classroom 10-Pack. A \$150 value.



**ecosySTEMs: Using Ecology as an Integrating Context for STEM Education (Env)**

(Informal Education) 256, BCEC

**Meg K. Edstrom** ([meg@fbes.org](mailto:meg@fbes.org)), Ferry Beach Ecology School, Saco, Maine

Discover how field ecology provides the ultimate setting for authentic application of STEM skills. Scientific process, technology, and the *Next Generation Science Standards* will be addressed.



**Doing Problem-based Science Challenges and Managing Your Classroom—How to Do Both Successfully! (Gen)**

(Elementary–Middle Level) 259A, BCEC

**William J. Sumrall** ([sumrall@olemiss.edu](mailto:sumrall@olemiss.edu)) and **Kristen M. Sumrall** ([kmcurry@olemiss.edu](mailto:kmcurry@olemiss.edu)), The University of Mississippi, University, Miss.

Emphasis will be placed on classroom management issues while involving students in active inquiry-based challenges. Time-saving strategies and other management issues addressed. Handouts!

**A PBL Involving Coffee Temperature (Chem)**

(High School–College) Atlantic 2, Renaissance

**April J. Brass** ([abross@verizon.net](mailto:abross@verizon.net)), Hunterdon Central Regional High School, Flemington, N.J.

Brew up some new learning in your classroom. In this Project Based Learning activity, participants will examine the effects of a material upon controlling the temperature of coffee.

**NARST Session: Zydeco: A New iPad Application to Enhance Scientific Explanations (Chem)**

(Elementary–High School) Pacific F, Renaissance

**Ibrahim Delen** ([delenibrahim@gmail.com](mailto:delenibrahim@gmail.com)) and **Joseph Krajcik**, Michigan State University, East Lansing

**Steven McGee** and **Jenn Duck**, The Learning Partnership, Western Springs, Ill.

By using Zydeco, students collect data outside the classroom and then bring those data back to the classroom to create scientific explanations by using a claim-evidence-reasoning model.

**Dissecting Formative Assessment (Gen)**

(Middle Level–High School) Seaport Ballroom A, Seaport

**Louise Chapman** ([lchapman@volusia.k12.fl.us](mailto:lchapman@volusia.k12.fl.us)), Volusia County Schools, Deland, Fla.

**David A. Young** ([dayoung7@gmail.com](mailto:dayoung7@gmail.com)), Fayetteville High School, Fayetteville, Ark.

What is formative assessment, how do you create formative assessments, and how do you know that it did what you wanted it to do?

**Using the National Facilities Standards to Plan and Design Your School Science Classroom/Laboratory (Gen)**

(General) Grand Ballroom C, Westin Waterfront

**LaMoine L. Motz** ([llmotz@comcast.net](mailto:llmotz@comcast.net)), 1988–1989 NSTA President, and Science Education/Facilities Specialist, White Lake, Mich.

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

Presider: LaMoine L. Motz

Join the NSTA Team on Planning and Designing School Science Facilities for an interactive and hands-on session on planning and designing your new/renovated science facilities with the NGSS. Learn how the latest research on teaching and safe practices provides a guide for what makes flexible, modular, and safe teaching spaces, and how YOUR input can make a difference in the planning.

**Putting It All Together: Developing Connections Between the CCSS and NGSS (Gen)**

(General) Grand Ballroom D, Westin Waterfront

**David W. Brothers** ([davidbrothers@wentzville.k12.mo.us](mailto:davidbrothers@wentzville.k12.mo.us)) and

**Keri Skeeters** ([keriskeeters@wentzville.k12.mo.us](mailto:keriskeeters@wentzville.k12.mo.us)), Wentzville (Mo.) R-IV School District

Join us for engaging activities that reveal the close relationship among the NGSS science and engineering practices, the *CCSS Mathematics*, and the *CCSS ELA*.

**Woodles: The Case for Embedded Vocabulary (Gen)**

(General) Grand Ballroom E, Westin Waterfront

**Christopher J. Thompson** ([cthompson@rice.edu](mailto:cthompson@rice.edu)), Rice University, Houston, Tex.

**Lara Arch** ([larch1@rice.edu](mailto:larch1@rice.edu)), Rice University, STEMscopes, Houston, Tex.

Vocabulary “strategies” for cramming science words into kids’ heads will continue to fail until we reexamine our whole approach. Come learn our approach.

**8:00–9:00 AM Exhibitor Workshop**

**Effortlessly Integrate CCSS ELA into Your Middle School Science Curriculum (Gen)**

(Grades 6–8)

156C, BCEC

Sponsor: It's About Time

**Presenter to be announced**

*Project-Based Inquiry Science* (PBIS) promotes the development of reading, writing, and presenting in a science classroom. Discover how the structure of a project-based science curriculum provides you with the opportunity to target the CCSS ELA, including students working collaboratively, writing explanations from evidence, and participating in small group and whole class discussions.

**8:00–9:30 AM Short Course**

**The Dirt on Earth System Science: Exploring SOIL with Making Sense of SCIENCE™ (SC-1)**

(Grades K–12)

Boylston, Marriott Copley Place

Tickets Required; \$27

**Nick Balster** ([njbalster@wisc.edu](mailto:njbalster@wisc.edu)), University of Wisconsin–Madison

**Kirsten Daehler** ([kdaehle@wested.org](mailto:kdaehle@wested.org)), WestEd, Redwood City, Calif.

For description, see page 52.

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**NSTA** National  
Science  
Teachers  
Association

**8:00–9:30 AM Presentation**

**SESSION 1**

**PDI** **OELA Pathway Session: Discourse Strategies to Assist English Language Learners to Engage in Physical Science (Gen)**

(Elementary–High School)

204 A/B, BCEC

**Rita Januszyk**, Gower West Elementary School, Wil-  
lowbrook, Ill.

**Emily Miller** (*emilycatherine329@madison.k12.wi.us*), Madi-  
son (Wis.) Metropolitan School District

**Maria Santos**, Oakland (Calif.) Public School District

**Cory Buxton** (*buxton@uga.edu*), The University of Geor-  
gia, Athens

Science and ESL teachers will discuss and engage in physi-  
cal science activities by blending the three dimensions of  
the NGSS. Participants will develop a systems model and  
construct an explanation of an observed phenomenon while  
communicating with one another using a language other  
than English, signs, symbols, and gestures. Participants will  
discuss both the challenges English language learners face  
communicating in a discourse-rich classroom as envisioned  
by the NRC *Framework* and the NGSS and the opportunities  
discourse strategies can provide for science learning. Sci-  
ence engagement by English language learners offers access  
to science learning and language development as well as a  
pathway to college and career readiness.

**8:00–9:30 AM Exhibitor Workshops**

**AUTOPSY: Forensic Dissection Featuring Carolina’s  
Perfect Solution® Pigs (Bio)**

(Grades 6–12)

102A, BCEC

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!

**Keep Calm and Chemistry On: Successful Lab Activi-  
ties for the New Chemistry Teacher (Chem)**

(Grades 9–12)

102B, BCEC

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!

**Integrative STEM Learning K–2 (Gen)**

(Grades K–2)

103, BCEC

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Engage in disciplinary core ideas from the *Next Generation  
Science Standards* and learn how to incorporate science and  
engineering practices and crosscutting concepts. Learn how  
science, technology, engineering, and mathematics can be  
integrated as part of your STEM school model.







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**Explore STEM Integration with PASCO Probe-ware—Free Sensor Set for Five Attendees! (Gen)**

(Grades 6–12) 104A, BCEC

Sponsor: PASCO scientific

**Tom Loschiavo**, PASCO scientific, Roseville, Calif.

Experience a showcase of sensor-based activities compatible with iPad, Android, Chromebook, Mac, and PC environments that engage students as they deepen their understanding of science concepts. A variety of topics in biology, chemistry, physics, Earth, environmental, and physical science will be available for demonstration. Five lucky attendees will win a 50th Anniversary Sensor Pack—a \$600 value!

**Investigating Chemical Batteries (Chem)**

(Grades 6–8) 104C, BCEC

Sponsor: LAB-AIDS, Inc.

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

Although we live a battery-powered lifestyle, most of us (middle school and high school students included) have no idea how batteries actually work. In this hands-on workshop, participants will be engaged in an activity from SEPUP's *Issues and Physical Science* from LAB-AIDS. Make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries in the waste stream.

**Ecology and Evolution of Infectious Disease: How Dangerous Pathogens Emerge, Spread, and Evade Our Defenses (Bio)**

(Grades 9–12) 105, BCEC

Sponsor: Pearson

**Joseph Levine**, Author, Concord, Mass.

Deadly diseases like bird flu appear out of nowhere. Why? How? Use this thrilling, interdisciplinary field to teach cross-cutting core concepts and address NGSS goals.

**Comets: Visitors from the Past (Earth)**

(Grades 5–12) 106, BCEC

Sponsor: Simulation Curriculum Corp.

**Herb Koller** ([hkoller@simcur.com](mailto:hkoller@simcur.com)), Simulation Curriculum Corp., Minnetonka, Minn.

Join us as we use Simulation Curriculum's award-winning *Starry Night Middle School* and *Starry Night High School* to study the origin, importance, and possible dangers of comets. Follow a comet as it streaks toward the Sun and examine possible past, present, and future interactions with our home planet.

**Genotype to Phenotype—Mapping Genes to Traits in Dogs (Bio)**

(Grades 9–College) 107A, BCEC

Sponsor: Howard Hughes Medical Institute

**Melissa Csikari**, Colonial Forge High School, Stafford, Va.

**Elinor Karlsson**, The Broad Institute, Harvard University, Cambridge, Mass.

The ability to analyze and interpret DNA sequence data is an increasingly important skill in the biological sciences. In this workshop, you will learn from a scientist who routinely deciphers DNA sequences how to link specific SNPs to traits in our four-legged friends. You will then learn about and receive free hands-on activities and DVDs to help you teach gene mapping and sequence analysis.

**Forces, Energy, and Motion (Gen)**

(Grades 4–10) 109A, BCEC

Sponsor: K'NEX Education

**Presenter to be announced**

It's off to the races! Join us as we investigate potential and kinetic energy and force and motion with K'NEX® cars. Gravity, rubber bands, springs, wind, battery motors, and flywheels will power models as we explore complex STEM concepts. How will your car perform? How would you redesign your model to make it a first-place car? Strategies that empower students to design and complete their own experiments from the teacher's guide will be emphasized and STEM concepts that support standards will be stressed.

**Molecular-Level Visualization and Simulation: Getting Ready for the Next Generation Science Standards (Chem)**

(Grades 7–College) 109B, BCEC

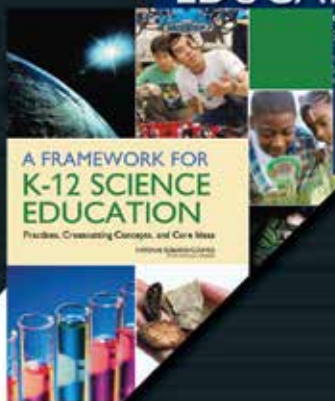
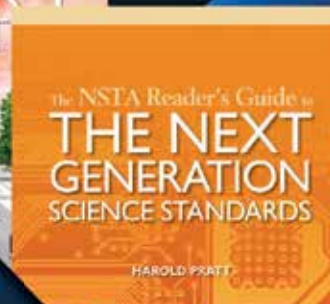
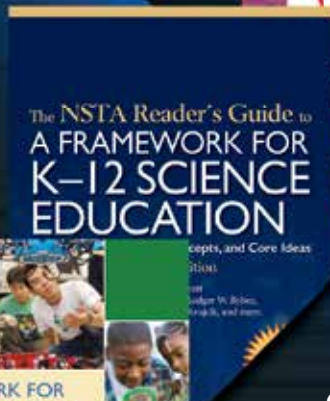
Sponsor: Wavefunction, Inc.

**Paul Price** ([sales@wavefun.com](mailto:sales@wavefun.com)), Wavefunction, Inc., Irvine, Calif.

Would you like to teach chemistry more effectively with the help of molecular models and simulations that are scientifically sound? Bring your laptop (Windows or Mac OS X) to this hands-on workshop and start using *ODYSSEY* High School Chemistry to engage your students and address the *Next Generation Science Standards*.

# NGSS@NSTA

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**NSTA** National Science Teachers Association

**Diagnosing the Silent Killer: A Simulation of the Clinical Detection of Diabetes** (Bio)

(Grades 10–College) 150, BCEC  
Sponsor: Edvotek Inc.

**Danielle Snowflack**, **Jack Chirikjian** ([info@edvotek.com](mailto:info@edvotek.com)), and **Tom Cynkar**, Edvotek Inc., Washington, D.C. According to the International Diabetes Federation (IDF), an estimated 382 million individuals are living with diabetes in 2013, and that number is expected to nearly double by 2035. It is important to effectively diagnose and treat the disease early because increased levels of sugar in the blood cause serious complications if left untreated. Participants distinguish between the two main types of diabetes using urinalysis and ELISA and receive a free flash drive and entry into a T-shirt drawing at the end of the workshop.

**DSM and STEM: Challenges for the Elementary Student** (Gen)

(Grades K–6) 151A, BCEC  
Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky. Activities from the Delta Science Modules program provide ample opportunity for elementary students to engage in STEM-based challenges. Discover a process that fosters the STEM initiative. Receive a workshop packet and related Delta materials.

**Chemistry and the Atom: Fun with Atom Building Games!** (Phys)

(Grades 5–12) 151B, BCEC  
Sponsor: CPO Science/School Specialty Science

**Scott Eddleman** and **Nathan Olsson**, CPO Science/School Specialty Science, Nashua, N.H. Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students with opportunities to grasp atomic structure and its connection to the periodic table.

**FOSStering the Common Core: Science-centered Language Development** (Gen)

(Grades K–6) 152, BCEC  
Sponsor: Delta Education/School Specialty Science–FOSS

**Brian T. Campbell**, The Lawrence Hall of Science, University of California, Berkeley  
Discover the ways language is used to help elementary students make sense of their active-learning FOSS experiences. We will model a FOSS investigation using listening and speaking, reading and writing, and language-development strategies to further content knowledge, science practices, and academic literacy.

**Physics with Vernier** (Phys)

(Grades 9–College) 153A, BCEC  
Sponsor: Vernier Software & Technology  
**David Carter** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Conduct a variety of physics experiments using Vernier sensors with a LabQuest 2 or computer in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!

**Inquiry-based Biology with Vernier** (Bio)

(Grades 9–College) 153B, BCEC  
Sponsor: Vernier Software & Technology

**John Melville** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Involving your students in inquiry-based biology can be easy and fun. Many investigations have already been designed and tested in our lab book, *Investigating Biology through Inquiry*. In this engaging hands-on workshop, you will learn how to conduct an inquiry-based biology investigation using Vernier sensors with a LabQuest 2.

**Immersive Digital Environments for a Deeper Understanding of Disciplinary Core Ideas** (Gen)

(Grades 6–8) 153C, BCEC  
Sponsor: Amplify Education, Inc.

**Jennie Kristoffersen** ([jkristoffersen@amplify.com](mailto:jkristoffersen@amplify.com)), Amplify Education, Inc, Brooklyn, N.Y.

Learn ways to transition to a model that uses dynamic digital assets for 21st-century science learning that meet you where you are and help optimize your digital classroom experience. This workshop will showcase several digital assets that motivate students to explore, investigate, and master ecosystems.

**COMMON Practices That Get to the CORE of Great Instruction Using Discovery Education Science Techbook** (Gen)

(General) 154, BCEC  
Sponsor: Discovery Education

**Brad Fountain**, Discovery Education, Silver Spring, Md. This workshop will provide concrete examples and activities that meet the *Common Core State Standards* through science instruction. We will explore how the resources available in the Discovery Education Science Techbook are easily utilized to enhance science instruction and address literacy skills through science journals and digital media.

**Iron Teacher: NGSS Edition** (Gen)  
(Grades 6–12) 156A, BCEC

Sponsor: Ward’s Science

**Theresa Hendrick**, Ward’s Science, Rochester, N.Y.

Based on the popular cooking show, this workshop will put you head-to-head with your fellow teachers as you quickly develop an experiment that reflects the spirit of the NGSS. Along the way, you’ll learn ways to teach the scientific investigations in your classroom while engaging students and having fun. Valuable prizes for the winning team!

**MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started** (Gen)  
(Grades 6–8) 156B, BCEC

Sponsor: LEGO® Education

**William J. Church**, Littleton High School, Littleton, N.H.

Middle school physical science + robotics = great learning experiences! Get your hands on the latest LEGO® MINDSTORMS Education EV3 curriculum and resources designed to address the *Next Generation Science Standards* and cover renewable energy, thermal physics, mechanics, and light.

**Identify Patient Zero of a Zombie Apocalypse!** (Bio)  
(Grades 7–College) 157B, BCEC

Sponsor: Bio-Rad Laboratories

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

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

# ELEMENTARY EXTRAVAGANZA

**Friday, April 4, 2014**

8:00–10:00 AM • Ballroom East  
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- Learn about award and grant programs
- Walk away full of ideas and arms filled with materials
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from Baylor College of Medicine

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Organizations participating in the Elementary Extravaganza include the Association of Presidential Awardees in Science Teaching, the Council for Elementary Science International, the NSTA Committee on Preschool–Elementary Science Teaching, *Science & Children* authors and reviewers, and the Society of Elementary Presidential Awardees.



**New Advanced Inquiry Labs for AP Biology from Flinn Scientific (Bio)**

(Grades 9–12) 258A, BCEC  
 Sponsor: Flinn Scientific, Inc.

**Jennifer Sternberg** (*jssternberg@flinnsci.com*) and **Irene Cesa** (*icesa@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill. Four big ideas, more great labs! The revised AP Biology curriculum integrates scientific inquiry and reasoning through a series of student-directed, inquiry-based laboratory investigations. Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided inquiry labs for AP Biology. We will share proven strategies for improving students' ability to generate meaningful questions, design experiments, and analyze scientific evidence. Handouts provided for all activities include alignment with the new AP Biology curriculum.

**8:00–10:00 AM Presentation**

**SESSION 1**

**PDI AMNH Pathway Session: Constructing Explanations Based on Evidence About the Evolution of Antibiotic-resistant Bacteria (Bio)**

(Middle Level–High School) 208, BCEC

**Dave Randle** (*drandle@amnh.org*) and **Cristina A. Trowbridge**, American Museum of Natural History, New York, N.Y.

Presider: Jim Short, American Museum of Natural History, New York, N.Y.

This session explores how scientists are investigating the evolution of methicillin-resistant *Staphylococcus aureus* (MRSA) and how to construct evolutionary trees to explain evolutionary relationships.

**8:00–10:00 AM Workshop**

**PDI NGSS Pathway Session: STEM Lesson Essentials and the NGSS (Gen)**

(General) 206 A/B, BCEC

**Mariel Milano** (*mariel.milano@ocps.net*), Orange County Public Schools, Orlando, Fla.

**Cary I. Sneider** (*csneider@pdx.edu*), Portland State University, Portland, Ore.

**Jo Anne Vasquez** (*jvasquez@helios.org*), 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz. Want to know how to implement authentic STEM teaching and learning into your classroom? *STEM Lesson Essentials* provides all the tools and strategies you'll need to design integrated, interdisciplinary STEM lessons and units that are relevant and exciting to your students and help them master 21st-century skills.

**8:00 AM–12 Noon Breakfast**

**DuPont Continental Breakfast**

(By Invitation Only) Burroughs, Westin Waterfront



**8:00 AM–1:00 PM Global Conversations in Science Education Conference**

**Building and Sustaining Leadership to Support New Reforms and Development of Literacy (M-1)**

(General) Grand Ballroom A/B, Westin Waterfront

*By Preregistration Only*

NSTA has planned a day dedicated to science education from an international perspective. This conference commences with a plenary talk by a distinguished international scholar who discusses the problems and challenges related to the theme, followed by a series of interactive panels and a poster session with a full complement of papers. The conference concludes with a final plenary talk by a distinguished international scholar.

8:00–8:30 AM	Continental Breakfast
8:30–9:00 AM	Welcome and Introductions Norman G. Lederman and Judith S. Lederman, Conference Cochairs Bill Badders, NSTA President Paul Nordhaus, Chair, NSTA International Advisory Board, 2013–2014
9:00–10:00 AM	Plenary Session (p. 105) <i>Leadership, Professional Teachers, and Reforms in a Finnish Science Education Context</i> Speaker: Jari Lavonen, Professor of Physics and Chemistry Education and Head of Dept. of Teacher Education, University of Helsinki, Finland
10:00–10:10 AM	Break
10:10–10:55 AM	Interactive Panel #1: Science and Literacy (p. 113)
10:55–11:15 AM	Poster Session (p. 114)
11:15 AM–12 Noon	Interactive Panel #2: Engineering and Science Partnerships (p. 117)
12 Noon–1:00 PM	Plenary Session (p. 118) <i>Working Together to Promote Science Education Throughout the Globe</i> Speaker: Joseph Krajcik, Director of CREATE for STEM Institute and Professor of Science Education, Michigan State University, East Lansing
1:00 PM	Closing Remarks

**8:00 AM–5:00 PM Meeting**  
**NESTA Annual Board Meeting**

*Lighthouse II, Seaport*

Members of the NESTA Board will meet to review progress and plan for the coming year. Attendance is open for those interested in listening. Visit [www.nestanet.org](http://www.nestanet.org) for more information.

**8:30–10:30 AM Meeting**  
**Committee on Research in Science Education Meeting**

*Thompson, Renaissance*

**8:30 AM–12:15 PM Short Course**

 **Banana Remote Controllers Linking with Purpose (SC-2)**

*(Middle Level–High School/Inf.) Off-site (Museum of Science)*

**Tickets Required; \$62**

**Stephanie Chang** ([stephanie@makered.org](mailto:stephanie@makered.org)), Maker Education Initiative, Sebastopol, Calif.

**Danielle Martin** ([dmmartin@mos.org](mailto:dmmartin@mos.org)), Museum of Science, Boston, Mass.

For description, see page 52.



 **9:00–10:00 AM Global Conversations in Science Education Conference Plenary Session Leadership, Professional Teachers, and Reforms in a Finnish Science Education Context**

*(General)*

*Grand A/B, Westin Waterfront*

**By Preregistration Only**



**Jari Lavonen** ([jari.lavonen@helsinki.fi](mailto:jari.lavonen@helsinki.fi)), Professor of Physics and Chemistry Education and Head, Dept. of Teacher Education, University of Helsinki, Finland

The Finnish approach to school reforms is strategy based and incorporates the idea of autonomous decision making at the district or school level. Join Dr. Lavonen as he discusses how this strategy-based approach has been applied in implementing curriculum design and the use of information and communication technologies in Finnish school education. Leadership is required at the national and school level, as well as a certain type of leadership to organize a successful professional development plan in the area of reforms.

*Jari Lavonen is professor of physics and chemistry education and head of the Department of Teacher Education at the University of Helsinki. Widely published, Jari has authored numerous journal articles and books on science education. He has served as president of the Finnish Association for Research on Teaching of Mathematics and Science and director of the Finnish Graduate School for Mathematics, Physics, and Chemistry Education. For the last 28 years, he has been researching science and technology education as well as teacher education focusing on curriculum development and use of information and communication technologies in education.*

**9:00–10:30 AM Meetings**  
**Science Safety Advisory Board Meeting**

*Mediterranean, Renaissance*

**Focus Group on Supporting 21st-Century Skills in High School Math and Science Students Through Librarian and Teacher Collaboration**

*(By Invitation Only) Executive Boardroom, Westin Waterfront*

This focus group is gathering baseline data about perceptions of and experiences with teacher/librarian collaboration for the promotion of 21st-century skills.

**Retired Members Advisory Board Meeting**

*Hale, Westin Waterfront*

**9:00–11:00 AM Meeting**

**Committee on Coordination and Supervision of Science Teaching Meeting**

*Pacific C, Renaissance*

**9:00–11:30 AM Exhibitor Workshop**

**Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4) (Bio)**

*(Grades 9–College) 157A, BCEC*

Sponsor: Bio-Rad Laboratories

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

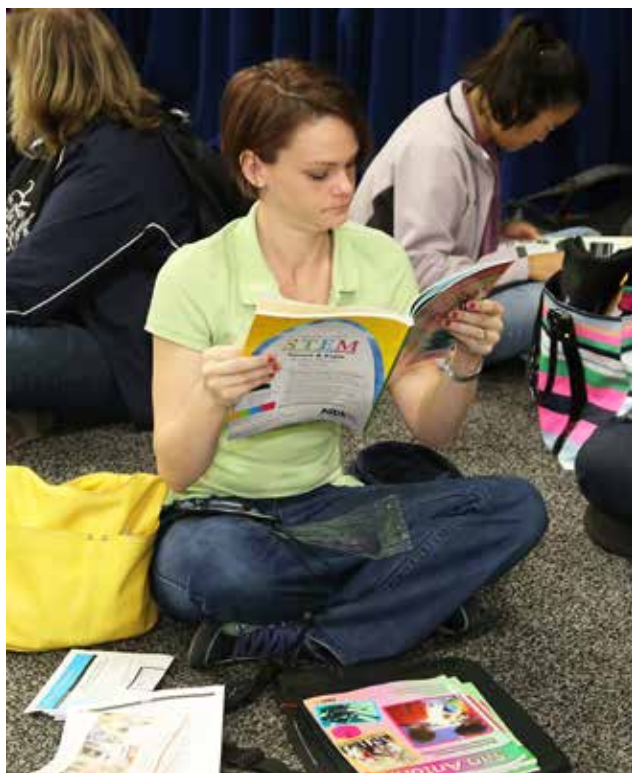
In this hands-on workshop, you will generate protein profiles from distant and closely related species of fish using protein gel electrophoresis. Test the hypothesis that protein profiles are indicators of evolutionary relatedness and construct cladograms from your own gel results. Learn about proteomics and explore the central mantra of biology: DNA>RNA>Protein>Trait.

**9:00 AM–5:00 PM Networking Opportunity**

**NSTA International Lounge**

*Revere, Westin Waterfront*

Please stop by the NSTA International Lounge to relax or meet colleagues while you're at the conference. The lounge is open Thursday through Saturday, 9:00 AM–5:00 PM.



**9:15–10:30 AM General Session**

**The Power of One Teacher**

*(General)*

*Grand Ballroom, BCEC*

*Sponsored by Texas Instruments*



**Mayim Bialik**, Actress, STEM Advocate, Teacher, and Texas Instruments Brand Ambassador

**@missmayim**

Presider and Introduction of Speaker: Bill Badders, NSTA President, and Retired Director, Cleveland Math and Science Partnership, Cleveland Heights, Ohio

Platform Guests: Mayim Bialik; Bill Badders; Karen L. Ostlund, NSTA Retiring President, and The University of Texas at Austin; Juliana Texley, NSTA President-Elect, Boca Raton, Fla.; Carolyn Hayes, NSTA President-Elect-Elect, and Indiana University, Indianapolis; Betsey Clifford, President, Massachusetts Association of Science Teachers (MAST), Stoughton; William Clark, President, Massachusetts Science Education Leadership Association, Waltham; Patricia Ruane, NSTA Director, District I; Program Committee, NSTA Boston National Conference; and Science Consultant, Fairfield, Conn.; David L. Evans, NSTA Executive Director, Arlington, Va.; Joyce Croce, Chairperson, NSTA Boston National Conference, and Retired Educator, Tyngsborough, Mass.; Marilyn Richardson, Program Coordinator, NSTA Boston National Conference, and Fitchburg State University, Fitchburg, Mass.; Pam Pelletier, Local Arrangements Coordinator, NSTA Boston National Conference, and Boston (Mass.) Public Schools

Mayim Bialik stars on the science-focused comedy *The Big Bang Theory* as Sheldon's neurobiologist girlfriend, and she is also a neuroscientist in real life. But she didn't always see herself filling either role; it took one teacher to change her perception of who can be a scientist and what that label really means. Today, Mayim is helping change the perception of scientists while reaching out to teachers to be that source of inspiration that leads a student to a lifelong love of science and learning.

*Mayim's path from child actress to neuroscientist to playing a scientist on TV's #1 comedy has led to her role offscreen as an advocate for science, technology, engineering, and math (STEM) education. As the brand ambassador for Texas Instruments Education Technology, she meets with educators and students around the nation to inspire young people to pursue STEM in their studies and future careers.*



# JOIN US AT THE NSTA EXPO #1107

GIVEAWAYS

LIVE PRESENTATIONS

SOCIAL MEDIA HUB

FREE HANDOUTS

- Find out what's new with NGSS@NSTA (hint: our new NGSS@NSTA Hub will be launching soon!) and connect with NGSS curators
- Hear about and sign up for upcoming webinars based around critical topics in science education
- Learn more about NSTA professional programs and how they benefit you
- Learn all about our special benefits for members, and why joining NSTA is a smart career choice
- Discover our teacher awards and how to get your students and community involved in our competitions

WE CAN'T WAIT TO MEET YOU!

**NSTA** National  
Science  
Teachers  
Association

### 9:30–10:30 AM Presentations

#### SESSION 1 (two presentations)

(High School–College)

*Caspian, Renaissance*

**SCST Session: Investigating the Specialized Knowledge That University Science Professors Draw Upon While Using Mathematical Representations to Teach Science** (Gen)

**Stephen B. Witzig** ([switzig@umassd.edu](mailto:switzig@umassd.edu)), **Kristen A. Degnan**, **Margaret M. French**, **Yenny F. Otalora**, and **Heather L. Trahan-Martins**, UMass Dartmouth, Fairhaven, Mass.

Review findings from an in-depth qualitative study of teacher professional knowledge focusing on four science faculty in different disciplines.

**SCST Session: Perceived Values of Instructional Components in a Science Methods Course Involving a College Teaching Experience** (Bio)

**Donald P. French** ([dfrench@okstate.edu](mailto:dfrench@okstate.edu)) and **Julie M. Angle** ([julie.angle@okstate.edu](mailto:julie.angle@okstate.edu)), Oklahoma State University, Stillwater

Join us as we discuss how a college biology laboratory teaching experience can affect preservice teachers' preparation to teach about the nature of science and evolution.

#### SESSION 2

**AMSE Session: Creating Project Based Learning Experiences** (Gen)

(General)

*Constitution, Seaport*

**Robert L. Ferguson** ([r.l.ferguson1@csuohio.edu](mailto:r.l.ferguson1@csuohio.edu)), Cleveland State University, Cleveland, Ohio

Learn more about Project Based Learning (PBL), a special case of inquiry used to invigorate any curriculum. We'll discuss examples from urban high schools.

### 9:30–10:30 AM Workshop

**NMEA Session: Navigating Oceans of Data (Earth)**

(Middle Level–High School/Informal)

*052 A/B, BCEC*

**Pat Harcourt** ([pharcourt@gmail.com](mailto:pharcourt@gmail.com)), Woods Hole Science and Technology Education Partnership, Woods Hole, Mass. Are you looking for student-friendly data sets? Check out some wonderful data and visualizations about the ocean, coasts, and climate—instructions included!



### 9:30–10:30 AM Exhibitor Workshop

**Active Chemistry: A Project-based Program Capturing the Essence of the NGSS and STEM** (Chem)

(Grades 9–College)

*156C, BCEC*

Sponsor: It's About Time

**Arthur Eisenkraft**, 2000–2001 NSTA President, and UMass Boston, Mass.

Before the NGSS or STEM, Dr. Arthur Eisenkraft recognized the need and developed this proven program, which can help you implement STEM and the essence of the *Next Generation Science Standards*. See the Engineering Design Cycle and learn how chemists, teachers, and science educators designed a true project-driven course for Next Generation students of all levels.

### 10:00–11:30 AM Presentation

#### SESSION 1

**PDI OELA Pathway Session: Using Three Promising Practices to Increase Language Development and Science Learning** (Gen)

(Elementary–High School)

*204 A/B, BCEC*

**Maria Santos**, Oakland (Calif.) Public School District. Learn how academic language development and science learning is actualized across K–12 classrooms. Join us for a discussion about three promising practices—observational protocol in science, science writing assessment, and science notebooking—and discover how these tools can help build a coherent frame for teachers, coaches, principals, and district leaders to discuss science instruction and student learning at scale.

**10:00–11:30 AM Exhibitor Workshops****Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (Bio)***(Grades 6–12) 102A, BCEC*

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.

**Bring Visual Science into Grades K–5 Classrooms—It's a Game Changer! (Gen)***(Grades K–5) 102B, BCEC*

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!

**STEM—Early Childhood Style! (Gen)***(Kindergarten) 103, BCEC*

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Explore techniques to provide quality *Next Generation Science Standards* instruction for kindergarten. Utilize integrative STEM instruction that incorporates *CCSS ELA* Reading, Writing, Speaking, and Listening strategies through inquiry. Learn how to prepare kindergartners for future careers in the workforce and ensure effective achievement. Leave with tools to accelerate your STEM journey.

**Advancing NGSS Practices with Probeware—Free Sensor Set for Five Attendees! (Gen)***(Grades K–12) 104A, BCEC*

Sponsor: PASCO scientific

**Dorothy Haggerty**, PASCO scientific, Roseville, Calif.

Learn about the essential tools you need to integrate NGSS science and engineering practices into your instruction. You'll experience how to effectively engage students in the eight practices by using PASCO probeware and SPARKvue® software on iPads. Five lucky attendees will win a 50th Anniversary Sensor Pack—a \$600 value!

**Light and Color: Engaging Classroom Activities****(Phys)***(Grades 5–12)**104B, BCEC*

Sponsor: Arbor Scientific

**Buzz Putnam** ([dputna@wboro.org](mailto:dputna@wboro.org)), Whitesboro High School, Marcy, N.Y.

Strap in for amazing light and color demos presented by award-winning physics teacher Buzz Putnam. These classroom-ready activities include mixing primary colors to cast shadows in cyan and magenta, graphing emission lines of gas tubes with the RSpec-Explorer, and answering his famous "mirror challenge" question! Door prizes included.

**Explore NGSS Science and Engineering Practices and Problem Solving Through Racing (Phys)***(Grades 9–12)**104C, BCEC*

Sponsor: LAB-AIDS, Inc.

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

Problem solving and modeling are learned skills. Join us to explore them with activities from Ten80's Student Racing Challenge: STEM Program from LAB-AIDS. You'll maximize the power of electric radio-controlled vehicles through data collection and graphing. You'll then apply this content to maximize torque through gearing, apply Newton's laws of motion, and use battery chemistry to increase useful life and drive time...and you'll take away samples of NGSS-focused curriculum materials.

**The Next Generation of Science Virtual Labs That Support STEM and NGSS (Chem)***(Grades 6–12)**105, BCEC*

Sponsor: Pearson

**Brian Woodfield**, Brigham Young University, Provo, Utah  
Brian Woodfield, author and creator of Pearson's innovative *Virtual Lab* series, will demo some of his latest eye-popping Science virtual labs, which are so visually realistic you have to see them to believe them. Whether you are short on time or short on lab materials in the classroom, these virtual labs give you the flexibility to experiment and for your students to explore and discover. The virtual labs meet your students where they are in the digital world and help support STEM programs and NGSS.

**Stellar Evolution Made Easy (Earth)**  
(Grades 5–12) 106, BCEC

Sponsor: Simulation Curriculum Corp.

**Herb Koller** ([hkoller@simcur.com](mailto:hkoller@simcur.com)), Simulation Curriculum Corp., Minnetonka, Minn.

Where do stars come from? Why do they form? 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 our feature-rich supplementary materials.

**Fossil and Genetic Evidence of Human Evolution (Bio)**

(Grades 6–College) 107A, BCEC

Sponsor: Howard Hughes Medical Institute

**Cindy J. Gay**, Steamboat Springs High School, Steamboat Springs, Colo.

**Satoshi Amagai**, Howard Hughes Medical Institute, Chevy Chase, Md.

The fossil record and the human genome both contain a wealth of evidence for human evolution. A variety of free resources are available on HHMI’s BioInteractive website—including short films, classroom activities, interactives, and animations—to teach how humans originally evolved, and how we continue to evolve in changing environments.

**Modeling and Engineering Design—From Ideas to Reality (Gen)**

(Grades 6–9) 107B, BCEC

Sponsor: eCYBERMISSION

**Sue Whitsett**, eCM Outreach Manager, NSTA, Arlington, Va.

Have you struggled with integrating engineering design into your classroom? Have you often wondered how to help students understand why models are important? We will discuss the use of models and prototypes as one aspect of engineering design and give you ways to implement these ideas and engineering design, in general, into your middle school science class. Using examples in the workshop, you will gain a better perspective on why modeling is important and how to help your students create and use models. In addition, we will provide you with information about the free STEM competition eCYBERMISSION, and explain how it can help you integrate engineering design and models into your classroom.

**Telling Molecular Stories with the Cellular Landscapes of David Goodsell (Bio)**

(Grades 9–College) 107C, BCEC

Sponsor: 3D Molecular Designs

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), **Shannon Colton** ([colton@msoe.edu](mailto:colton@msoe.edu)), and **Gina Vogt** ([vogt@msoe.edu](mailto:vogt@msoe.edu)), Milwaukee School of Engineering, Milwaukee, Wis.

Use amazing landscapes to tell molecular stories, such as “Your Flu Shot in Action.” Students will trace the expression of an antibody gene, synthesis of the antibody protein by ribosomes docked into the endoplasmic reticulum, and its path to the cell surface via the Golgi and secretory vesicles with this exciting new tool.

**The Harnessed Atom—New Ideas, Tools, and Resources: Nuclear Science and Energy (Chem)**

(Grades 5–9) 108, BCEC

Sponsor: U.S. Dept. of Energy, Office of Nuclear Energy

**Marie Westfall** ([marie.westfall@orau.org](mailto:marie.westfall@orau.org)), Oak Ridge Associated Universities, Oak Ridge, Tenn.

**Peter Xiques** ([peter.j.xiques@leidos.com](mailto:peter.j.xiques@leidos.com)), SAIC, Inc., Oak Ridge, Tenn.

Walk away with free STEM materials on energy sciences and nuclear energy. Harnessed Atom includes lesson plans, projects, interactive games, hands-on activities, student collaboration, and teacher resources.

**Exploring Machines (Phys)**

(Grades 4–9) 109A, BCEC

Sponsor: K’NEX Education

**Presenter to be announced**

Bring the excitement of hands-on learning to your middle school classroom! Build and investigate a variety of simple machine models, take measurements, and gather data that can be used to determine work input/output, mechanical advantage, gear ratios, effort forces, resistance forces, and more. The explorations illustrate engineering and scientifically rich content through the use of models. Applying understandings of these models to real-world examples of machines leads to a better understanding of design and machine systems in practical use. STEM concepts that support the standards will guide our exploration.



Visit us at booth #1215 and learn how to **win a STEM trip to Japan!**

A **Toshiba Tablet** giveaway every hour!



**TOSHIBA | NSTA**

# ExploraVision

How can I motivate my students to **love science?**

## the SCIENCE A-HA!

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

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

### PRIZES!

- Up to **\$240,000\*** in savings bonds + **Toshiba** products are awarded to winning students
- Teachers submitting the most team projects win a **Toshiba Tablet!**
- Schools submitting the most team projects win a **\$1000 tech upgrade** from **Toshiba!**  
\* (at maturity value)

For more information and to sign up, visit [www.exploravision.org/nationalconference](http://www.exploravision.org/nationalconference)

 1-800-EXPLOR-9  
exploravision@nsta.org

 [www.Facebook.com/ToshibaInnovation](http://www.Facebook.com/ToshibaInnovation)

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Leading Innovation >>>

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



**Molecular Modeling and the Revised AP Chemistry Curriculum: Challenges and Opportunities (Chem)**

(Grades 9–College) 109B, BCEC

Sponsor: Wavefunction

**Paul Price** ([sales@wavefun.com](mailto:sales@wavefun.com)), Wavefunction, Irvine, Calif. The recently revised curriculum introduces a slew of issues to the teaching of AP Chemistry. Bring your laptop (Windows or Mac OS X) to this hands-on workshop, install ODYSSEY AP Chemistry, and learn how to teach with molecular modeling software that is routinely encountered in college chemistry classes.

**Is This Your First Biotechnology Workshop? Welcome to the Basics! (Bio)**

(Grades 10–College) 150, BCEC

Sponsor: Edvotek Inc.

**Danielle Snowflack**, **Jack Chirikjian** ([info@edvotek.com](mailto:info@edvotek.com)), and **Tom Cynkar**, Edvotek Inc., Washington, D.C. Feeling overwhelmed by all the topics, procedures, and equipment used in the diverse biotechnology field? If so, this workshop is for you! Join us for some hands-on experimentation—you will learn about three biotechnology techniques commonly used in research labs: DNA isolation, PCR, and gel electrophoresis. Receive a free 4GB flash drive and entry into a T-shirt drawing at the end of the workshop.

**What's Going on in There? NGSS and STEM for Administrators, Trainers, and University Faculty (Gen)**

(Grades K–8) 151A, BCEC

Sponsor: Delta Education/School Specialty Science

**John Cafarella**, Consultant, Canadensis, Pa.

Gain the tools for going into a classroom and observing a science lesson, as well as ways to support and evaluate a STEM-based lesson/program through a lens of the *Next Generation Science Standards* using FOSS 3rd Edition (Delta Science Modules, too). Join us as we look at inquiry skills embedded in the science and engineering practices...along with a bit of humor, too.

**Genetics: Crazy Traits (Bio)**

(Grades 5–12) 151B, BCEC

Sponsor: CPO Science/School Specialty Science

**Scott Eddleman** and **Nathan Olsson**, CPO Science/School Specialty Science, Nashua, N.H.

In this workshop, you will use the Crazy Traits set to explore how traits are passed from parents to offspring and why there is variation in traits in a species. You will also investigate why variation is important to the survival of a species. Take away strategies for addressing the NGSS concepts of heredity and biological evolution.

**Science Practices: What Does Argumentation Look Like in an Elementary Classroom? (Gen)**

(Grades K–6) 152, BCEC

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

Join FOSS developers to learn about the science practices within the context of the FOSS program. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson.

**Chemistry with Vernier (Chem)**

(Grades 9–College) 153A, BCEC

Sponsor: Vernier Software & Technology

**Elaine Nam** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Conduct a variety of chemistry experiments using Vernier sensors with a LabQuest 2 or computer in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!

**iPad and Wireless Sensors with Vernier (Gen)**

(Grades 3–College) 153B, BCEC

Sponsor: Vernier Software & Technology

**Verle Walters** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how you can use Vernier sensors, including our new Go Wireless Temp, to support science inquiry in classrooms using iPads. This technology empowers students to collaboratively collect and independently analyze their data.

**33 Strategies for Integrating Disciplinary Literacy (Gen)**

(Grades K–5) 153C, BCEC

Sponsor: Amplify Education, Inc.

**Traci Wierman** ([twierman@berkeley.edu](mailto:twierman@berkeley.edu)) and **Rebecca Abbott** ([rebabbott@berkeley.edu](mailto:rebabbott@berkeley.edu)), The Lawrence Hall of Science, University of California, Berkeley

Discover how to increase reading comprehension, disciplinary literacy skills, and science knowledge simultaneously for ALL students. Take away 33 ready-to-use strategies for incorporating science trade books into your classroom. Learn integration strategies that provide a better way to teach both science and literacy. Free classroom materials provided.

**The Digital Classroom with Discovery Education Science Techbook—What Does It Look Like? (Gen)**

(General) 154, BCEC

Sponsor: Discovery Education

**Patti Duncan**, Discovery Education, Lakeville, Pa.

Students today engage with content differently than any previous generation. Districts across the country are selecting the complete digital curriculum resource, Discovery Education Science Techbook, over traditional textbooks. This can be achieved in any classroom. The trick is to make it work with what you have. Join us as we share strategies for one computer, several computers, and 1:1 classrooms.

**Building Readiness in Earth Science and the NGSS (Earth)**

(Grades K–5) 156A, BCEC

Sponsor: Ward’s Science

**Deborah Linscomb**, Ward’s Science, Rochester, N.Y.

Teaching Earth science in elementary school is fun when you use Ward’s NGSS Activity Kits aligned with the crosscutting concepts of “Patterns, Systems, and System Models.” As you move from station to station, you’ll participate in hands-on activities designed to develop conceptual understanding of Earth’s systems and processes. Win door prizes, too!

**MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (Gen)**

(Grades 6–8) 156B, BCEC

Sponsor: LEGO® Education

**William J. Church**, Littleton High School, Littleton, N.H.

Middle school physical science + robotics = great learning experiences! Get your hands on the latest LEGO® MINDSTORMS Education EV3 curriculum and resources designed to address the *Next Generation Science Standards* and cover renewable energy, thermal physics, mechanics, and light.

**How to Use Pop Culture Science in Your Science Classes (Bio)**

(Grades 7–College) 157B, BCEC

Sponsor: Bio-Rad Laboratories

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

Want to integrate *CCSS ELA*? Use popular science to engage students, increase science literacy, and link the *Common Core State Standards* and *Next Generation Science Standards* in your classroom. Find out how to connect real-world discoveries and issues to hands-on labs—and increase student involvement and understanding.

**Flinn Scientific Presents Best Practices for Teaching Chemistry: Experiments and Demonstrations (Chem)**

(Grades 9–12) 258A, BCEC

Sponsor: Flinn Scientific, Inc.

**Mike Frazier** (*mfrazier@flinnsci.com*) and **Irene Cesa** (*icesa@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Join us as we present exciting and interactive demonstrations, show video clips, and showcase the features and benefits of our comprehensive resources for teaching chemistry. Imagine the opportunity to learn best practices from more than 25 award-winning master teachers who shared their favorite chemistry lab activities to help us create the Flinn ChemTopic™ Labs Manuals and *Teaching Chemistry* video series. We will share stories, strategies, and inspiration culled from more than 700 experiments and demonstrations to help you build content knowledge and improve your pedagogical skills and confidence. Handouts provided for all lab activities!

 **10:10–10:55 AM Interactive Panel #1: Science and Literacy**

Grand A/B, Westin Waterfront

*By Preregistration Only*

This interactive panel composed of teachers, researchers, and policy makers will focus on science and literacy.

**10:30 AM–12:30 PM Meeting Awards and Recognitions Committee Meeting**

Bering Boardroom, Renaissance

 **10:55–11:15 AM Global Conversations in Science Education Conference Poster Session**

(General)

Grand A/B, Westin Waterfront

*By Preregistration Only*

Presider: Norman G. Lederman, Illinois Institute of Technology, Chicago

An opportunity to have focused, unrestricted interactions with your science teaching colleagues from around the world. Posters will focus on projects from various cultures and will highlight similarities and differences across cultures.

**Comparative Studies of Science Education Curricula in Japan and the Philippines**

**Fernan P. Tupas**, San Antonio, Ajuy, Iloilo, Philippines

**Crossing Boundaries: The Art of an Interdisciplinary Teaching Approach to Science**

**Mila Rosa L. Librea**, Ateneo De Manila High School, Quezon City, Philippines

**Data Literacy as a Critical Component in Scientific Literacy**

**Anthony Bartley**, Lakehead University, Thunder Bay, Ont., Canada

**G. Michael Bowen**, Mount Saint Vincent University, Halifax, Nova Scotia, Canada

**Design of Curricular Framework for Integrated Science Education**

**Eunmi Park**, Seokkwan High School, Seoul, Korea

**Jiyoung Kim**, Jayang Middle School, Seoul, Korea

**Heojeong Yoon** and **Jieun Park**, Ewha Womans University, Seoul, Korea

**Yoon-ha Lee**, Daeyoung Middle School, Seoul, Korea

**Dami Bang**, Catholic University of Korea, Seoul, Korea

**Economic Valuation of Coral Reefs and Mangroves**

**Anthony James Husemann**, International College of the Cayman Islands, Newlands, Grand Cayman

**Engineering Lab Reports**

**Gerald Rau**, National Chung Cheng University, Chiayi, Taiwan

**Fp7 Inquiry-based Science Network Across Europe**

**Sue Dale Tunnicliffe**, Institute of Education, London, U.K.

**How the Brain Works—Learning and Emotion with Classroom Experiments**

**Martin Lindner** and **Louise Bindel**, Martin-Luther-University, Halle, Germany

**How Can the Use of Technology Enhance STEM Implementation in the Science Classroom**

**Simon Barakat** and **Maya Mouhaidly**, American Community School of Beirut, Lebanon

**How Can We Improve the Lesson on Seasonal Change**

**Donghyun Chae**, Jeonju National University of Education, Jeonju, Korea

**Increasing Functional and Scientific Literacy: The African Experience**

**Mamman Audu Wasagu** and **Aliyu Umar Mohammed**, Federal College of Education, Katsina, Nigeria

**Kinetics Absorption of the Anthocyanin Present in Cranberry Juice with Base to Ecological Flow Chart as a Traffic Light for Experimental Chemistry Laboratory with Base to Green Chemistry**

**Yolanda M. Vargas Rodriguez** and **Adolfo E. Obaya Valdivia**, National Autonomous University of Mexico, Mexico City

**Korean Science Educator Partnership**

**Mary Weller**, **Amy L. Reese**, **Jaclyn F. Austin**, and **Nate Hall**, Howard County Public Schools, Ellicott City, Md.

**Peregrinations in Science Teaching, Perennial Themes of Leadership**

**Richard A. Frazier**, American Embassy School, New Delhi, India

**Physics Activities in Classroom and Home**

**Taha Massalha**, The Academic Arab College of Education in Israel, Haifa

**Raising Students' Interest in STEM and Encouraging Career Choices in Science and Engineering**

**Hagit Refaeli Mishkin**, **Yehudit Judy Dori**, and **Niva Wengrowicz**, Technion-Israel Institute of Technology, Haifa

**Dov Dori**, Massachusetts Institute of Technology, Cambridge

**Gabriela Jonas-Ahrend**, Technische Universität Dortmund Didaktik der Physik, Dortmund, Germany

**Science and Art: Essential Collaboration for the 21st Century**

**Richard A. Frazier**, American Embassy School, New Delhi, India





# Scientific Minds<sup>®</sup>

BOOTH #1443

## ONLINE LEARNING TO POWER K-12 SCIENCE EDUCATION

### WORKSHOP SCHEDULE

Friday April 4, 2014 • Room 153C

**Inspire Scientific Minds with Technology & Manipulatives** 8:00 am 3-8, Biology, Chemistry  
2:00 pm 3-8, Biology, Chemistry

*Teach critical science standards with technology and manipulatives using Scientific Minds' NEW lab kits for grades 3-8, Biology, & Chemistry. Lessons are aligned to the standards of all states and the NGSS. Attendees receive door prizes, a **FREE lab kit**, and trial access to the award-winning Science Starters program!*

**WIN PRIZES  
at Workshops &  
Booth Demos!**

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BOOTH FOR A  
DEMONSTRATION!**



[www.ScientificMinds.com](http://www.ScientificMinds.com)



**Science Learning Centres: UK School-embedded Professional Development**

**John Wardle**, Sheffield Hallam University, Sheffield, U.K.

**Teaching Alternative Energy Sources via LEGO Engineering Design**

**Ismail Marulcu** and **Kezban Mercan**, Erciyes University, Kayseri, Turkey

**Using Drama to Scaffold the Development of Scientific Understanding in Young Children**

**Deb McGregor**, Oxford Brookes University, Oxford, U.K.

**Virtual World, Real Activities—Using 3G/4G Network and GPS Navigation for Science Learning**

**Mao-Cheng Lin**, Guang Wu Junior High School, HsinChu City, Taiwan

**Chih-Che Tai**, East Tennessee State University, Johnson City

**Ting-Wei Ho**, Industrial Technology Research Institute, HsinChu City, Taiwan

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

*North Lobby, BCEC*

Presider: Bill Badders, NSTA President, and Retired Director, Cleveland Math and Science Partnership, Cleveland Heights, Ohio

Welcoming Remarks: Joyce Croce, Chairperson, NSTA Boston National Conference, and Retired Educator, Tyngsborough, Mass.

Musical Entertainment: Boston Latin School String Quartet (Boston Public Schools) under the direction of Susan Shipley

Special Guests: Bill Badders; Joyce Croce; Karen L. Ostlund, NSTA Retiring President, and The University of Texas at Austin; Juliana Texley, NSTA President-Elect, Boca Raton, Fla.; Carolyn Hayes, NSTA President-Elect-Elect, and Indiana University, Indianapolis; Betsey Clifford, President, Massachusetts Association of Science Teachers (MAST), Stoughton; William Clark, President, Massachusetts Science Education Leadership Association, Waltham; Patricia Ruane, NSTA Director, District I, Program Committee, NSTA Boston National Conference, and Science Consultant, Fairfield, Conn.; David L. Evans, NSTA Executive Director, Arlington, Va.; Marilyn Richardson, Program Coordinator, NSTA Boston National Conference, and Fitchburg State University, Fitchburg, Mass.; Pam Pelletier, Local Arrangements Coordinator, NSTA Boston National Conference, and Boston (Mass.) Public Schools; Jason Sheldrake, NSTA Assistant Executive Director, Sales, Arlington, Va.

**11:00 AM–12 Noon Workshops**

**NMEA Session: Working the NGSS into Your Curriculum Through Ocean Exploration (Gen)**

*(General) 052 A/B, BCEC*

**Susan E. Haynes** (*susan.haynes@noaa.gov*), NOAA Office of Ocean Exploration and Research, Barrington, R.I.

Delve into the high-tech world of modern ocean exploration with hands-on lessons that integrate telepresence technology, multi-beam sonar data, water chemistry instrumentation, and remotely operated vehicles.

**AMSE Session: Developing Science and Engineering Skills Through Informal Science Programs (Gen)**

*(Middle Level) Constitution, Seaport*

**Pamela O. Gilchrist** (*pogilchr@ncsu.edu*), North Carolina State University, Raleigh

Come discover how low-cost materials can be used to develop students' problem-solving skills. This workshop will share activities that reinforce science and engineering practices.

**11:00 AM–12 Noon Exhibitor Workshop**

**Merging the Three Dimensions of the Next Generation Science Standards (Gen)**

*(Grades 6–8) 156C, BCEC*

Sponsor: It's About Time

**Cary I. Sneider**, Portland State University, Portland, Ore.

One way the *Next Generation Science Standards* differ from previous documents is by merging core ideas in science with practices and crosscutting concepts. This workshop will illustrate how *Project-Based Inquiry Science* (PBIS) combines all three dimensions as students design, build, and test solutions to engaging challenges.

**11:00 AM–12:30 PM Meetings**

**Science & Children Advisory Board Meeting**

*Georges, Renaissance*

**Urban Science Education Advisory Board Meeting**

*Mediterranean, Renaissance*

**Committee on High School Science Teaching Meeting**

*Spectacle, Renaissance*

**Science Scope Advisory Board Meeting**

*Thompson, Renaissance*

**11:05–11:30 AM Special Session**  
**“Meet and Greet” the Presidents and Board/Council**  
**(Gen)**

*(General) Exhibit Hall Entrance, BCEC*  
 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!

**11:05 AM–5:00 PM Exhibits**

*Exhibit Hall A, BCEC*  
 The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You’ll discover something new and exciting in the world of science teaching. Some exhibitors will offer materials for sale.

**11:15 AM–12 Noon Interactive Panel #2:**  
**Engineering and Science Partnerships**

*Grand A/B, Westin Waterfront*  
**By Preregistration Only**

This interactive panel composed of teachers, researchers, and policy makers will focus on engineering and science partnerships.

**11:30 AM–1:00 PM Meeting**  
**Special Needs Advisory Board Meeting**

*Executive Boardroom, Westin Waterfront*



**12 Noon–1:00 PM Special Session**  
**STEM Behind Hollywood—Adventure, Drama, and**  
**Mystery in Your Classroom (Gen)**

*(General) Grand Ballroom, BCEC*

*Sponsored by Texas Instruments*




**Mayim Bialik**, Actress, STEM Advocate, Teacher, and Texas Instruments Brand Ambassador

@missmayim

**Steven Schlozman**, Professor, Harvard Medical School; Author; and Consultant, National Academy of Science’s Science & Entertainment Exchange, Boston, Mass.

You are invited to a special session with Dr. Mayim Bialik, actress, neuroscientist, and TI Brand Ambassador, and Dr. Steven Schlozman, M.D., Harvard Medical School professor, author, and consultant with the National Academy of Science’s Science & Entertainment Exchange. Dr. Bialik and Dr. Schlozman will demonstrate the TI-Nspire™ activity “Zombie Apocalypse,” the first of several entertainment-themed STEM activities produced for STEM Behind Hollywood.

They will take you step-by-step through “Zombie Apocalypse” and other STEM Behind Hollywood activities—including the space-themed “Earth Impact” and “Body of Evidence,” a simulated forensics activity—to show how they support questioning techniques and pedagogical approaches to helping students learn. STEM Behind Hollywood is a unique collaboration between TI and the Science & Entertainment Exchange that has received global acclaim for its innovative activities that promote student engagement in science, technology, engineering, and math education.

 **12 Noon–1:00 PM Global Conversations in Science Education Conference Plenary Session Working Together to Promote Science Education Throughout the Globe**

(General)

Grand A/B, Westin Waterfront

**By Preregistration Only**



**Joseph Krajcik** ([krajcik@msu.edu](mailto:krajcik@msu.edu)), Director of CREATE for STEM Institute and Professor of Science Education, Michigan State University, East Lansing  
[@krajcikjoe](https://twitter.com/krajcikjoe)

Helping all students understand energy—how it can be used to solve problems and explain phenomena—is a challenging issue in science education that cannot be solved by only one nation. It will take a collection of teachers and science education researchers from throughout the globe to begin to tackle this important challenge. Join Joseph Krajcik as he discusses these challenging issues that science educators, as part of a worldwide community, will need to work together to solve.

*Joseph Krajcik is director of the CREATE for STEM Institute, a joint institute between the Michigan State University College of Natural Science and the College of Education to improve the teaching and learning of science and mathematics through innovation and research. He is also a faculty member in science education at the CREATE for STEM Institute.*

*Dr. Krajcik began his education career as a high school chemistry and physical science teacher in Milwaukee, Wisconsin, for eight years. For 21 years, he taught at the University of Michigan before coming to MSU in 2011. For his contributions to science education, he will be awarded the 2014 George G. Mallinson Award from the Michigan Science Teachers Association.*

*During his career, Joseph has focused on working with science teachers to reform science teaching practices to promote students' engagement in and learning of science. He is currently the principal investigator and co-principal investigator for two National Science Foundation grants to design assessments and curriculum materials aligned with the NGSS. He served as lead writer for developing physical science standards for the NGSS and the lead writer for the Physical Science Design team for the NRC Framework.*

**12 Noon–1:30 PM Exhibitor Workshops**

**Introduction to Wisconsin Fast Plants® (Bio)**

(Grades K–12)

102A, BCEC

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

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

**Guiding Questions for the Next Generation K–8**

(Gen)

(Grades K–8)

103, BCEC

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Let's reflect on the makeup of the *Next Generation Science Standards*—disciplinary core ideas, science and engineering practices, crosscutting concepts, and performance expectations. Learn to apply guiding questions for each standard and grade level to begin your journey toward implementation.

**SPARKscience: Sensor-based Science for K–8—Free Sensor Set for Five Attendees! (Gen)**

(Grades K–8)

104A, BCEC

Sponsor: PASCO scientific

**Joe Todd**, PASCO scientific, Roseville, Calif.

Through an interactive iPad demonstration you'll experience how SPARKscience engages students in science and engineering practices, affording a deeper understanding of science concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue software. Five lucky attendees will win a 50th Anniversary Sensor Pack—a \$600 value!

**Color, Spectrophotometry, and Teaching the Structure of the Atom (Chem)**

(Grades 9–12)

104C, BCEC

Sponsor: LAB-AIDS, Inc.

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

How do we teach topics such as electron configurations that were graduate school material a generation ago, so that high school students can learn and understand them? Walk away with some effective ways to teach the structure of the atom. Using a user-friendly spectrophotometer from LAB-AIDS' *A Natural Approach to Chemistry* program, explore how light interacts with dyes. Then use unique spectrum cards to show how atoms, color, and spectra are related, making

a conceptual bridge between a core chemical technology, making dyes, and the fundamental structure of the atom.

### ***Conceptual Physics and Conceptual Physical Science***

**(Phys)**

*(Grades 9–12)*

105, BCEC

Sponsor: Pearson

**Paul Hewitt**, Retired Educator, St. Petersburg, Fla.

Key features of the *Conceptual* line of books will be discussed, with focus on their ancillaries, including new five- to eight-minute “Hewitt drew it!” screencasts, presently online. Samples of these tutorials will be shown and discussed.

### **Plate Tectonics: Continents on the Move (Earth)**

*(Grades 5–12)*

106, BCEC

Sponsor: Simulation Curriculum Corp.

**Herb Koller** ([hkoller@simcur.com](mailto:hkoller@simcur.com)), 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 lessons engage students with interac-

tive learning activities, thought-provoking exercises, and historical links while displaying a contextual and interactive model of Earth.

### **Genomic Neuroscience—From Synapse to Autism**

**(Bio)**

*(Grades 9–College)*

107A, BCEC

Sponsor: Howard Hughes Medical Institute

**Mary Wuerth**, Tamalpais High School, Mill Valley, Calif.

**Sandra Blumenrath**, Howard Hughes Medical Institute, Chevy Chase, Md.

HHMI’s BioInteractive website presents exciting free resources for teaching neuroscience, including animations and video clips that tell compelling stories, such as the link between autism and synaptic function, and between cell cycle regulation and brain development. Other BioInteractive neuroscience resources illustrate many core concepts ranging from cell signaling to genetic mapping.

# Come to FLINN SCIENTIFIC’s ***Morning of Inquiry***

## **Stand Back—I’m Going to Try Science!**

Making Inquiry Safe, Manageable, and Inspirational in Grades 6–12

By *Jamie Benigna*, *The Roeper School, Birmingham, MI*

**Friday, April 4, 2014 • 10:00 a.m. — 11:30 a.m.**

**Room 210 A/B, Boston Convention Center**

Science was developed by questioning and experimentation, so why is science often taught as a series of facts? To be literate in science, students should be comfortable with inquiry—asking questions and deriving answers. The inquiry approach to teaching science is reflected in recent changes to national curricula like AP and NGSS. Jamie will guide you through the process of integrating inquiry into your lesson plans for grades 6–12 no matter what subjects you teach.

Jamie will present new inquiry activities centered around chemistry, while sharing tips and ideas to help all teachers:

- Safely manage inquiry
- Reduce teacher workload
- Build inquiry skills across grade levels
- Adapt inquiry principles to other science disciplines

Handouts will be provided.

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**Practice Makes Perfect: Modeling as an NGSS Authentic Practice of Science** (Bio)

(Grades 9–College)

107C, BCEC

Sponsor: 3D Molecular Designs

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), **Gina Vogt** ([vogt@msoe.edu](mailto:vogt@msoe.edu)), and **Shannon Colton** ([colton@msoe.edu](mailto:colton@msoe.edu)), Milwaukee School of Engineering, Milwaukee, Wis.

Explore engaging hands-on physical models of proteins, DNA, and other molecular structures that make the molecular world real for your students. As students explore models, they make connections with basic concepts of biology and chemistry and work together to arrive at a solution to a challenge.

**Renewable Energy**

(Phys)

(Grades 5–9)

109A, BCEC

Sponsor: K’NEX Education

**Presenter to be announced**

Explore Going Green renewable energy with your students! Designed to address critical science, technology, engineering, and math concepts, Going Green renewable energy provides instructional models that can enhance students’ understanding. Build a model and demonstrate how it can be operated with electricity generated from wind, water, and solar power. Explore other models that complete real-world tasks with these same three renewable power sources.

**Perimeter Institute: Classroom Activities for Dark Matter** (Phys)

(Grades 9–College)

109B, BCEC

Sponsor: Perimeter Institute

**Damian Pope** ([dpope@perimeterinstitute.ca](mailto:dpope@perimeterinstitute.ca)) and **Kevin Donkers** ([kdonkers@perimeterinstitute.ca](mailto:kdonkers@perimeterinstitute.ca)), Perimeter Institute, Waterloo, Ont., Canada

Are you looking for ways to connect your students with current physics research? Join us as we explore how uniform circular motion and universal gravitation can be used to understand Dark Matter. The Mystery of Dark Matter multimedia resource is the product of collaboration between experienced educators and Perimeter Institute researchers.

**Solving the Case of the Missing Records Using DNA Fingerprinting** (Bio)

(Grades 10–College)

150, BCEC

Sponsor: Edvotek Inc.

**Danielle Snowflack**, **Jack Chirikjian** ([info@edvotek.com](mailto:info@edvotek.com)), and **Tom Cynkar**, Edvotek Inc., Washington, D.C.

Are you ready to perform a cutting-edge classroom forensic experiment? Complete a DNA fingerprinting exercise to determine who stole priceless historical documents from the Historical Society. We will identify the thief by comparing a DNA sample collected by forensic scientists at the crime scene to DNA from different suspects. Your students can solve the crime! Receive a free 4GB flash drive and entry into a T-shirt drawing at the end of the workshop.

**Teaching Argumentation for Our Next Generation** (Gen)

(Grades K–8)

151A, BCEC

Sponsor: Delta Education/School Specialty Science

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

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

**Building an Electronic Motor the STEM Way with CPO Science** (Phys)

(Grades 5–12)

151B, BCEC

Sponsor: CPO Science/School Specialty Science

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

Come use the highly versatile CPO Science Electric Motor to change variables in a hands-on learning environment using all parts of the electric motor—electromagnets, permanent magnets, commutators, coils, and rotational mass. Through observation, measurement, and experimentation, design to build a unique motor to spin at a specific rate. A true STEM learning activity.

**Online Assessment That Informs Instruction! (Gen)***(Grades 3–6)*

152, BCEC

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

Join developers for an introduction to the new assessment system created for FOSS 3rd Edition, including computer software (FOSSmap). Experience how formative assessment plays an integral role throughout the FOSS program. Grades 3–6 students can now take benchmark assessments online with most items automatically coded to generate useful reports.

**Biology with Vernier****(Bio)***(Grades 9–College)*

153A, BCEC

Sponsor: Vernier Software & Technology

**Colleen McDaniel** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Conduct a variety of biology experiments using Vernier sensors with a LabQuest 2 or computer in this engaging hands-on workshop. Experience how Vernier has been incorporating the principles of the NGSS science and engineering practices for 33 years!

**Wireless Sensor Exploration with Vernier (Gen)***(Grades 3–College)*

153B, BCEC

Sponsor: Vernier Software & Technology

**Verle Walters** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Get hands-on experience with new wireless sensors available from Vernier. Perform experiments using our Go Wireless Temp, the first in our line of wireless sensors for iPad and other supported devices. You will also use the NODE wireless sensor platform from Variable, Inc., to explore motion, temperature, and more.

**Integration of the NGSS and the Common Core State Standards in the Elementary Classroom (Gen)***(Grades 2–5)*

153C, BCEC

Sponsor: Amplify Education, Inc.

**Traci Wierman** ([twierman@berkeley.edu](mailto:twierman@berkeley.edu)) and **Rebecca Abbott** ([rebabbott@berkeley.edu](mailto:rebabbott@berkeley.edu)), The Lawrence Hall of Science, University of California, Berkeley

As you look to shift your classroom practices to reflect the three dimensions of the NGSS and incorporate informational text, come explore Seeds of Science/Roots of Reading®. This instructional approach is designed to help students access, learn, and express science concepts through inquiry science integrated with explicit disciplinary literacy instruction.

**STEMtastic Strategies****(Gen)***(General)*

154, BCEC

Sponsor: Discovery Education

**Cindy Moss**, Discovery Education, Silver Spring, Md.

Discover compelling data about why STEM teaching and learning is critical. Experience STEM strategies that are appropriate and engaging for K–12 students and learn about STEM competitions and funding sources for STEM.

**Grant Writing: Designing for Dollars****(Gen)***(Grades K–12)*

156A, BCEC

Sponsor: Ward's Science

**Rusti Berent**, Ward's Science, Rochester, N.Y.

Experience the art and science of designing a STEM project to excite funders and students alike. In this workshop, you'll practice combining resources and activities using equipment and supplies as examples that lead to powerful outcomes. Take home tools to help you budget, justify, measure, evaluate, and sustain your project.

**Machines and Mechanisms for ALL Ages (Gen)***(Grades K–6)*

156B, BCEC

Sponsor: LEGO® Education

**Kelly Reddin**, LEGO Education, Pittsburg, Kans.

From preschool to lower elementary and even through the upper elementary years, LEGO Education has simple and powered machines learning solutions for all ages. In this workshop, participants will gain hands-on experience building and completing a grade-appropriate activity using one of our machines and mechanisms platforms.

**Hands-On Integrated Science Activities for Middle School from Flinn Scientific (Gen)***(Grades 6–8)*

258A, BCEC

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.

**12:30–1:00 PM Presentations**

**SESSION 1**

**Reaching All Students: Teaching Science with Confidence to Students with Learning Disabilities**

**(Phys)**

*(Elementary–Middle Level)*

159, BCEC

**Seyithan Demirdag** (*sdemirdag@ou.edu*), University of Oklahoma, Norman

Discover how to teach science with confidence to students with learning disabilities in grade 6 inclusive science classrooms.

**SESSION 2**

**How Elementary Teachers Can Use Concept Mapping for Meaningful Learning**

**(Bio)**

*(Elementary)*

160B, BCEC

**Aparna Sharma**, Western Michigan University, Kalamazoo

Hear how elementary teachers can use concept mapping as a tool in interdisciplinary teaching to teach connections between different subjects.



**12:30–1:30 PM Mary C. McCurdy Lecture**

**Who Are You Calling an ALIEN?**

**(Earth)**

*(General)*

210C, BCEC



**David A. Aguilar** (*daquilar@cfa.harvard.edu*), Director of Public Affairs and Science Information, Harvard-Smithsonian Center for Astrophysics, and Space Artist/Author, National Geographic Society, Cambridge, Mass.

President: Leslie McRobie, Idlehurst Elementary School, Somersworth, N.H.

Introducing students to the solar system is part of the elementary school experience. But what about all of the other new solar systems we've recently discovered orbiting distant stars? Are we the only world in the universe that supports life, or could we have company? And if we do—just how strange could those neighbors be?

*David A. Aguilar is known by many titles—astronomer, naturalist, world lecturer, author, and artist. David's expertise is in communicating the wonder of science. Currently, he is the director of Public Affairs and Science Information at the Harvard-Smithsonian Center for Astrophysics as well as an astronomy illustrator/author for National Geographic. Formerly, David directed the Fiske Planetarium at the University of Colorado, Boulder.*

*As a noted science author and artist, David has published multiple books on astronomy, including Planets, Stars, and Galaxies; 13 Planets; and his latest work, Alien Worlds. He has also been a contributor to the PBS NOVA series, Evolution. His astronomy illustrations have been featured on CNN and the Weather Channel's 2013 program Gravity among others. In 2009, the International Astronomical Union designated Asteroid "1990DA" after David in tribute to his lifelong celebration of the skies through science education programs, books, lectures, space art, and programs.*



**12:30–1:30 PM Presentations****SESSION 1**

**NMEA Session: Educator at Sea—Bridging Classrooms and Oceans Through Exploration (Gen)**  
(High School) 052 A/B, BCEC

**Michael A. Romano** ([mromano@abschools.org](mailto:mromano@abschools.org)), Acton-Boxborough Regional High School, Acton, Mass.

Incorporate exploration and marine science into your teaching with strategies from a recent Educator at Sea. Leave with lesson plans, tips, and professional development ideas.

**SESSION 2**

**Science with a Story—NGSS Style! (Gen)**  
(Preschool–Elementary) 158, BCEC

**Jaymee Herrington** ([jaymee.herrington@gmail.com](mailto:jaymee.herrington@gmail.com)), K5 Science Consultant, Washington, D.C.

Science connections with nonfiction AND fiction? Too good to be true? Click your heels, Dorothy, this ain't your normal science session!

**SESSION 3**

**Integrating Writing Standards and Project Based Learning in Life Science (Bio)**  
(Middle Level) 160C, BCEC

**Pamela Bluestein** ([pbluestein@conejousd.org](mailto:pbluestein@conejousd.org)) and **Jill Magnante** ([jmagnante@conejousd.org](mailto:jmagnante@conejousd.org)), Sycamore Canyon School, Newbury Park, Calif.

This session combines a creative, collaborative science project with a writing component that can provide authentic, low-stress assessment of individual student learning.

**Evaluate Your Sessions Online!**

This year, we're giving away a Kindle Fire HDX 7" to two lucky attendees who complete a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See page 17 for details.)

**SESSION 4** (two presentations)

(Elementary–Middle Level)

161, BCEC

**Collaborative Conservation Through Birds and Citizen Science (Env)**

**Jennifer Fee** ([jms327@cornell.edu](mailto:jms327@cornell.edu)), Cornell Lab of Ornithology, Ithaca, N.Y.

Informal educators have been working with teachers across the country and beyond to connect children to each other and to nature through wikis, citizen science, and outdoor investigations. Come find out how these activities impact scientific knowledge and interest in science and conservation action in diverse students, and learn how you can be involved.

**Bringing the Outdoors In for Science Classrooms (Env)**

**Jessica L. Horton** ([hortonjc@uc.edu](mailto:hortonjc@uc.edu)), University of Cincinnati, Ohio

**Rita A. Hagevik** ([rita.hagevik@uncp.edu](mailto:rita.hagevik@uncp.edu)), The University of North Carolina at Pembroke

**Jilynn Parmly** ([jilynn.parmly@knoxschools.org](mailto:jilynn.parmly@knoxschools.org)), Brickey McCloud Elementary School, Knoxville, Tenn.

Find out how to integrate nature journaling and Google Earth to enhance students' understanding of their local environment.

**SESSION 5**

**ASTC Session: Partnering to Strengthen Elementary Science Instruction in Chicago (Gen)**

(Elementary)

251, BCEC

**Anne Marie Fayen** ([afayen@fieldmuseum.org](mailto:afayen@fieldmuseum.org)), The Field Museum, Chicago, Ill.

The Field Museum, Peggy Notebaert Nature Museum, and Northwestern University are part of the Early Elementary Science Partnership, a reform effort focusing on elementary educators and school leadership.

**SESSION 6**

**Bridging the STEM Gap with Toshiba/NSTA ExploraVision (Gen)**

(Elementary–High School)

252A, BCEC

**Rachael Schmidt** ([rschmidt@nsta.org](mailto:rschmidt@nsta.org)), Program Manager, Science Education Competitions, NSTA, Arlington, Va.

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

Motivate students and challenge them to think creatively! Learn how the ExploraVision competition encourages developmental skills necessary for success in STEM and uses the natural curiosity of students to enhance their science achievement. ExploraVision activities illustrate standards-based connections between science and technology.



**SESSION 7**

**NSTA Press® Session: Exemplary Science: Best Practices in Professional Development (Gen)**

(General) 254A, BCEC

**Susan B. Koba** (*skoba@cox.net*), NSELA Interim Executive Director, Omaha, Neb.

**Brenda Wojnowski** (*bwojnowski@gmail.com*), WAI Education Solutions, Dallas, Tex.

Join editors of the new *Exemplary Science* professional development monograph to explore various professional development approaches and determine which best fit your context and needs.

**SESSION 8**

**Here an App, There an App, Everywhere an App (Gen)**

(Elementary–Middle Level) 255, BCEC

**Beth S. Guzzetta** (*bguzzetta@allendalecolumbia.org*), **Julie S. Thompson** (*jthompson@allendalecolumbia.org*), and **Martha Bjorklund** (*mbjorklund@allendalecolumbia.org*), Allendale Columbia School, Rochester, N.Y.

**Katherine Guzzetta** (*katie.guzzetta@gmail.com*), Student, Pittsford Sutherland High School, Pittsford, N.Y.

Come explore many great iPad apps that support science literacy while encouraging student creativity and depth of content in the K–8 classroom.

**SESSION 9**

**Energy Literacy—to Infinity (or at Least Next Generation) and Beyond! (Gen)**

(Informal Education) 256, BCEC

**DaNel L. Hogan** (*lenad.nagoh@gmail.com*), Office of Pima County School Superintendent, Tucson, Ariz.

**Josh Sneiderman** (*jsneiderman@gmail.com*), U.S. Dept. of Energy, Washington, D.C.

What does it mean to be energy literate? What free resources are available to engage learners of all ages around energy topics? Come find out!

**SESSION 10** (two presentations)

(Middle Level–High School)

257A, BCEC

**An E-book Can Serve as the Center of an Interactive, Inquiry-based Exploration of the Hominid Fossil Record (Bio)**

**Robert Wallace** (*rw56@nyu.edu*), New York University, New York, N.Y.

Explore the effects of using an e-book as the managing device for an interactive, inquiry-based hands-on investigation of the hominid fossil record.

**When Students Challenge Evolution: A Historical Approach (Bio)**

**Adam R. Shapiro** (*a.shapiro@bbk.ac.uk*), Birkbeck, University of London, U.K.

Historical approaches to teaching evolution can help provide better strategies for responding when students raise questions or religious objections to the validity of the theory.

**SESSION 11**

**Instruction for the Revised AP Biology Course: Curriculum, Science Practices, and Instructional Design (Bio)**

(General) 257B, BCEC

**Tanya D. Sharpe**, The College Board, Duluth, Ga.

**Jennifer Pfannerstill** (*jennifer.pfannerstill@gmail.com*), North Shore Country Day School, Winnetka, Ill.

Members of the AP Biology Development Committee will provide instructional strategies and techniques for integrating inquiry and student-centered activities into an AP biology course. Discover how to design instruction that incorporates science practices and inquiry into your present course.

**SESSION 12**

**Helping Young Learners Explore Their Universe with PBS LearningMedia (Earth)**

(Elementary–Middle Level)

259A, BCEC

**John Sessler** (*jbsessler@pbs.org*), PBS, Arlington, Va.

Peer into the solar system, soar into distant galaxies, and expand the walls of your learning environment using PBS LearningMedia's free classroom-ready, standards-based resources.



**SESSION 13**



**Science 2.0: Putting Web 2.0 into the Science Classroom (Gen)**

(General) 259B, BCEC

**Ben Smith** ([ben@edtechinnovators.com](mailto:ben@edtechinnovators.com)) and **Jared Mader** ([jared@edtechinnovators.com](mailto:jared@edtechinnovators.com)), York, Pa.

Web 2.0 tools allow for students to create products online, all while focusing upon collaboration and creativity. Grouping and associating these products through “tagging” allows students to join the conversation with students of similar interests and ideas. Come learn how to use the best free tools on the web.

**SESSION 14**



**Opening Up Your Door: Fostering Teacher-led Communities of Inquiry and Collaboration (Gen)**

(Middle Level–High School) 260, BCEC

**Kate Markiewicz** ([kmarkiewicz@gmail.com](mailto:kmarkiewicz@gmail.com)), Boston Latin School, Boston, Mass.

Learn about and discuss how to begin, sustain, and participate in teacher-led interdisciplinary groups aimed at building

collaboration, increasing professionalism, and improving student outcomes.

**SESSION 15**

**Make It Mobile—Best Practices Science Courses in iTunes U (Gen)**

(Middle Level–High School/Supv.) 261, BCEC

**Katie Krueger** and **Eric A. Walters** ([ewalters@marymountnyc.org](mailto:ewalters@marymountnyc.org)), Marymount School of New York, N.Y.

Learn how to transform traditional science courses to mobile-based online courses in iTunes U.

**SESSION 16**

**DNA Subway: Bringing Cutting-Edge Bioinformatics into the Classroom (Bio)**

(High School–College) Atlantic 3, Renaissance

**Jermel Watkins** ([jwatkins@cshl.edu](mailto:jwatkins@cshl.edu)), Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.

Walk away with a free and easy-to-use online resource for teaching the bioinformatics of genomics and DNA barcoding in the classroom.

# NSTA District Director and Chapter Ice Cream Social

– sponsored by **GEICO**

In honor of Wendell Mohling, enjoy complimentary refreshments while meeting and networking with colleagues and representatives from all of NSTA's 18 districts. Learn more about events, initiatives, and happenings in your district, directly from your representatives, in an informal setting. The GEICO Gecko may even make an appearance!



**Friday, April 4**

**1:30–2:30 PM**

Exhibit Hall, Convention Center

NSTA Booth #1107



**SESSION 17**

**Advocacy 101 (Gen)**

(General) *Brewster, Renaissance*

**Justin D. Brosnahan** (*brosnahan.science@gmail.com*), Potomac Middle School, Dumfries, Va.

Learn the tools necessary to become an educational advocate.

Don't be afraid, everyone can do it! Come learn how!

**SESSION 18** (two presentations)

(High School–College) *Caspian, Renaissance*

**SCST Session: An Adventure in Flipping an Inquiry-based Introductory Biology Course to Increase Active Learning (Bio)**

**Donald P. French** (*dfrench@okstate.edu*) and **Michael E. Moore** (*michael.e.moore@okstate.edu*), Oklahoma State University, Stillwater

Have you tried flipping a classroom yet? Come hear about the positive results and students' mixture of reflections and insights on my first attempt.

**SCST Session: Introductory Laboratory Activities for Biology Students (Bio)**

**Nancy L. Elwess** (*elwessnl@plattsburgh.edu*) and **Sandra M. Latourelle** (*latours@plattsburgh.edu*), SUNY Plattsburgh, N.Y.

Hear about activities performed in a freshman-level biology lab during the first week that allowed students to work together with their lab partners for the first time.

**SESSION 19**

**The Museum of Inspired Learning (Gen)**

(General) *Pacific A/B, Renaissance*

**Cindy A. White** (*cindy.white@hallco.org*) and **Kelly Schollaert** (*kelly.schollaert@hallco.org*), Da Vinci Academy, Gainesville, Ga.

Come find out how to create a working museum that is standards based, interactive, and technology rich. More than 3,000 K–13 students have toured. We have also served as a source of inspiration for teachers, administrators, and superintendents from many states, including Arizona, North Carolina, and Texas, as well as Bermuda.

**SESSION 20**

**Genetically Modified Organisms and You! (Bio)**

(High School–College) *Pacific E, Renaissance*

**Shannon Burcks** and **Michelle L. Klosterman**, University of Missouri, Columbia

Where do science and engineering converge with society? Learn how science and engineering meet to produce GMO crops, and how to help students understand the complexities.

**SESSION 21**

**NARST Session: Exploring Student Reasoning Using Models in Earth Science (Earth)**

(Middle Level–High School) *Pacific F, Renaissance*

**Ann E. Rivet** (*rivet@tc.columbia.edu*), **Alison Miller** (*arileymiller13@gmail.com*), and **Cheryl Lyons** (*cal2154@gmail.com*), Teachers College, Columbia University, New York, N.Y.

**Kim A. Kastens** (*kkastens@edc.org*), Education Development Center, Inc., Waltham, Mass.

**Mei Yip-Chen**, South Orangetown Middle School, Blauvelt, N.Y.

**Karl Mattsen**, Nyack Middle School, Nyack, N.Y.

Join us as we present teachers' uses of physical dynamic models of Earth processes, and discover how these models relate to students' reasoning and learning about the full-scale Earth system.

**SESSION 22** (two presentations)

(High School–College) *Pacific G/H, Renaissance*

**Using the Inverted Classroom in Chemistry to Teach the Abstract Concepts of Atomic Structure and the Interaction of Light with Matter (Chem)**

**Emily C. Allen** (*eallen2@bu.edu*), **Peter Garik** (*garik@bu.edu*), and **Binyomin Abrams**, Boston University, Boston, Mass.

Materials are presented to support active learning in an inverted classroom to teach about atomic structure and the interaction of light with matter.

**Using Analogies to Elicit Student Ideas About Energy in Physics, Chemistry, and Biology (Phys)**

**Rachael A. Lancor** (*rlancor@edgewood.edu*), Edgewood College, Madison, Wis.

Students have different ways of understanding the role of energy in different systems. Walk away with ideas for formative assessment and a framework for interpreting student ideas.

**SESSION 23**

**AMSE Session: Helping Students Make Sense of Climate Change (Env)**

(Elementary–Middle Level) *Constitution, Seaport*

**Bobby J. Jeanpierre** (*bobby.jeanpierre@ucf.edu*), University of Central Florida, Orlando

Climate is a particularly complex system controlled by the interactions of the atmosphere, ocean, and other Earth systems. Earth's climate is governed by the very fundamental First Law of Thermodynamics. This session presents teacher-developed unit plans that illustrate how K–8 teachers tackled the complexities of issues around climate change.

**SESSION 24****Use of Problem-solving Study Groups to Impact Student Achievement (Gen)***(High School)* *Flagship A, Seaport***Leella S. Holt** (*lholt@mssc.k12.al.us*), Muscle Shoals High School, Muscle Shoals, Ala.

Presider: Kathy Eldridge, Muscle Shoals High School, Muscle Shoals, Ala.

Discussion of best practices problem-solving study groups in science classrooms. Implementation within a high school chemistry class will be shared and we'll finish with a question and answer period.

**SESSION 25** (two presentations)*(Middle Level–High School)* *Lighthouse I, Seaport***Valuing the At-Risk Student: Enhancing Motivation Through Conative Approaches (Gen)****Scott E. Diamond** (*scott.diamond@fayette.kyschools.us*), The Learning Center at Linlee, Lexington, Ky.

Conation or intrinsic motivation is a key factor differentiating the at-risk student from other similarly gifted students. We will investigate and develop valued roles for students in the classroom and community to motivate at-risk students to succeed in middle school and high school.

**Fostering the “I Don’t Know the Answer, but I Think…” Classroom (Gen)****Tatiana K. Lim-Breitbart** (*tatiana.lim@aspirepublicschools.org*), California College Preparatory Academy, Berkeley

Join me as I share three discourse strategies—everybody speaks once, turn-and-talk coaching cards, and peer coaching—to ensure 100% meaningful participation in classroom discussions. This peer coaching model builds confidence in students who see themselves as the “dumb kids” and turns them into leaders of small group discussion.

**SESSION 26****Making a Great Piece of Literature Even Better Through Science (Gen)***(Middle Level–High School)* *Plaza A, Seaport***William C. Bowman** (*wbowman@pkwy.k12.mo.us*), Parkway North High School, Creve Coeur, Mo.**Monica M. Bowman** (*mbowman@ladueschools.net*), Ladue Horton Watkins High School, St. Louis, Mo.

By integrating literature into the curriculum, we can help students appreciate the scientific knowledge of classical authors while possibly encouraging students to be avid readers.

**SESSION 27****Connecting Science for English Language Learners (Gen)***(Middle Level–High School)* *Plaza B, Seaport***Mark J. Schnurstein** (*mark.schnurstein@dmschools.org*), Hiatt Middle School, Des Moines, IowaPresider: Angela Schnurstein, Ankeny (Iowa) School District  
How do you make science connections for English language learners? In this session, we will look at strategies that can be used to assist the ELL student in higher-order thinking skills related to science.**SESSION 28** (two presentations)*(Middle Level–High School)* *Plaza C, Seaport***How to Create a STEM Program at Your School (Gen)****Jill Ronstadt** (*jill.ronstadt@lhsoc.org*), Orange Lutheran High School, Orange, Calif.

Find out how to easily create a STEM program at your school. Free and cheap resources provided!

**Coming to See What’s Possible: Linking STEM Curricula to the Cultural Communities of Schools (Gen)****Kathleen S. Davis** (*kdavis@educ.umass.edu*), UMass Amherst, Mass.**Angela Ruggeri**, 8th Grade Academy at Greenfield High School, Greenfield, Mass.**Yvonne Hilyard Ordoñez**, Morgan School, Holyoke, Mass.**Keith Wright** (*wrightk@sps.springfield.ma.us*), Springfield Renaissance School, Springfield, Mass.**Uma Palreddy** (*palreddy@sp.sps.springfield.ma.us*), Chestnut Accelerated Middle School, Springfield, Mass.

Presider: Cathy Wilkins, Greenfield High School, Greenfield, Mass.

In this interactive poster session, we'll present how inquiry/problem-based STEM activities linked to the cultural communities of our school settings increased student engagement and achievement.

**SESSION 29****Developing a Toolkit for the Next Generation of Science Leaders (Gen)***(Supervision/Administration)* *Carlton, Westin Waterfront***Gary Nakagiri** (*gnakagiri@gmail.com*), Science Consultant, El Cerrito, Calif.

How does one effectively develop and support new or existing leaders? Discover several leadership “tools” for your leadership toolkit. Take home handouts and an annotated resource list.



**SESSION 30**

**Get to the Point: Techniques for Downhill Writing (Gen)**

(Middle Level–High School) Commonwealth A, Westin Waterfront  
**Taylor Holloway** (*hollowayt@pvpusd.k12.ca.us*), Ridgecrest Intermediate School, Rancho Palos Verdes, Calif.

Teach your students to communicate effectively through downhill writing. Learn how to incorporate it into your classroom and prepare your students for the 21st-century workplace.

**SESSION 31** (two presentations)

(General) Commonwealth Ballroom B, Westin Waterfront  
**Not Just Surviving, But Thriving both Inside and Outside the Classroom (Gen)**

**Catherine Stierman** (*cathy.stierman@clarke.edu*), Clarke University, Dubuque, Iowa

This in-depth investigation identifies the aspects of professional development that help teachers develop the social skills necessary to be successful in education.

**Homegrown Teacher Leaders (Gen)**

**Jon Yoshioka** (*jonyoshi@hawaii.edu*), **Deborah Zuercher**, and **Vail Matsumoto** (*vail@hawaii.edu*), University of Hawaii at Manoa, Honolulu

Leadership needs to start at home. Find out how an internationally successful professional development program provided classroom teachers with the tools to become effective teacher leaders.

**SESSION 32**

**NSELA Session: Implementing the NGSS—Are You Prepared to Lead the Change Process? (Gen)**

(Supervision/Administration) Commonwealth C, Westin Waterfront  
**Deborah L. Tucker** (*deborahlt@aol.com*), Independent Science Education Consultant, Napa, Calif.

As a leader of the NGSS implementation, you may be encountering resistance. Come discuss interventions for dealing with those experiencing difficulty as their paradigms are shifting.

**SESSION 33**

**Career Connections with Industry Partners (Gen)**

(General) Douglass, Westin Waterfront  
**Karen A. Peterson** (*kpeterson@edlabgroup.org*), EdLab Group, Lynnwood, Wash.

Role models play critical roles in creating opportunities for girls to envision STEM careers. Mentors from several corporations share effective ways they work with educators for career connections.

**SESSION 34**

**Science Notebooks for the Next Generation (Gen)**  
(General) Griffin, Westin Waterfront

**Lori A. Fulton** (*fultonl@hawaii.edu*), University of Hawaii at Manoa, Honolulu

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

Science notebooks help students develop scientific understandings. We'll examine how to use them in a student-centered manner to facilitate learning of science content and practices.

**SESSION 35**

**Energy as a Crosscutting Concept (Gen)**  
(General) Harbor Ballroom III, Westin Waterfront

**Arthur Eisenkraft** (*eisenkraft@att.net*), 2000–2001 NSTA President, and UMass Boston, Mass.

Whether it's ATP in biology, activation energy in chemistry, or kinetic energy in physics, this crosscutting concept emerges in all sciences and all grades. Learn how we bring K–12 teachers together to share energy approaches in their respective classes as a means to have vertical articulation of science instruction and to better understand “energy.”

**SESSION 36**

**Ready, Set, STEM! (Gen)**  
(General) Lewis, Westin Waterfront

**Adaliz Gonzalez**, J.H.S. 052 Inwood, New York, N.Y.

Attention will be paid to STEM lessons and units aligned to the CCSS and NGSS. Each lesson has inquiry and/or hands-on activities in life, physical, and Earth science in which students are involved in investigation, research, and writing to report and reflect on their findings.

**SESSION 37** (two presentations)

(General) Stone, Westin Waterfront  
**Collaborative Development of Units Aligned to New Science and Literacy Standards (Gen)**

**Jacob Foster** (*jfoster@doe.mass.edu*), Massachusetts Dept. of Elementary and Secondary Education, Malden

Join me as I share science units developed through the Massachusetts Race to the Top program to prepare for new standards and integrate literacy.

**Considering a Sustainable Curriculum (Gen)**

**Sara B. Sweetman** (*sara\_sweetman@mail.uri.edu*) and **Caroline Stable** (*carolinestabile@uri.edu*), University of Rhode Island, Narragansett

Walk away with a model for curriculum alignment to the NGSS that encompasses research on sustainability, fidelity, and student learning.

**SESSION 38****WHOA! This Changes Everything—From One-Size-Fits-All to Customizable and Differentiated (Gen)***(Middle Level)**Webster, Westin Waterfront*

**David Ristow** ([dristow@glenview34.org](mailto:dristow@glenview34.org)) and **Lisa Nathaus** ([enathaus@glenview34.org](mailto:enathaus@glenview34.org)), Attea Middle School, Glenview, Ill.

See how we put the puzzle pieces together to create an individualized learning environment in our middle school science classrooms.

**12:30–1:30 PM Workshop****Using Web-based GIS to Investigate Rain Forest Conservation Issues in the Brazilian Amazon (Env)***(Middle Level–High School)**157C, BCEC*

**Jim MaKinster** ([makinster@hws.edu](mailto:makinster@hws.edu)), Hobart and William Smith Colleges, Geneva, N.Y.

**Nancy Trautmann** ([nmt2@cornell.edu](mailto:nmt2@cornell.edu)), Cornell Lab of Ornithology, Ithaca, N.Y.

**Carol Burch** ([cburch@hannibalcsd.org](mailto:cburch@hannibalcsd.org)), Hannibal High School, Hannibal, N.Y.

Join us with your laptop/tablet as we address the NGSS and CCSS through a web-based interactive map that enables students to investigate real environmental questions.

**Integrating Practices, Core Disciplinary Ideas, and Crosscutting Concepts in the Elementary School Classroom (Chem)***(Elementary)**160A, BCEC*

**David J. White** ([dwhite1214@comcast.net](mailto:dwhite1214@comcast.net)), Vermont Science Initiative, Berlin

President: Kathy Renfrew ([kathy.renfrew@state.vt.us](mailto:kathy.renfrew@state.vt.us)), Vermont Agency of Education, Montpelier

In this workshop, we will engage in NGSS practices as we construct explanation, argue claims from evidence, and examine strategies that promote productive discourse among students.

**It's Not Just a Phase!****(Earth)***(Elementary)**162B, BCEC*

**Marsha Bednarski** ([bednarskim@ccsu.edu](mailto:bednarskim@ccsu.edu)), Central Connecticut State University, New Britain

Through observations, inferences, online simulations, and research, students go beyond memorization of the phases of the Moon to conceptual understanding of the “why” we see what we see in this 5E (Engage, Explore, Explain, Elaborate, and Evaluate) unit of instruction.

**Simulating Science: “Genetic Testing for Huntington’s Disease” (Bio)***(High School)**205A, BCEC*

**Susan Holt** and **Dina Markowitz** ([dina\\_markowitz@urmc.rochester.edu](mailto:dina_markowitz@urmc.rochester.edu)), University of Rochester, N.Y.

Use inexpensive “wet lab” simulations and models to enhance students’ understanding of the processes and bioethical issues related to genetic testing for Huntington’s disease. Teacher information and student handouts are available for downloading from the University of Rochester’s Life Sciences Learning Center ([lifesciences.envmed.rochester.edu](http://lifesciences.envmed.rochester.edu)).

**Detecting Epigenetic DNA Methylation in *Arabidopsis thaliana* (Bio)***(General)**205B, BCEC*

**Christine Marizzi** ([cmarizzi@cshl.edu](mailto:cmarizzi@cshl.edu)), Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.

Let your students discover epigenetics by measuring DNA methylation in *Arabidopsis* strains.

**Get Wired Using the Simple Circuit Board (Phys)***(Elementary–High School)**205C, BCEC*

**Michael H. Suckley** ([dr.suckley@sciencescene.com](mailto:dr.suckley@sciencescene.com)), Macomb Community College, Warren, Mich.

**Paul A. Klozik**, The MAPs Co., Fraser, Mich.

Using magnets, paper clips, and Christmas tree light bulbs, build your own inexpensive circuit board. Construct series and parallel circuits and collect qualitative and quantitative data. Use your circuit board to learn about conductors, insulators, fuses, and diodes, which can be applied to everyday applications.

**DeSTEMber: 31 Days of Standards-aligned Curriculum (Gen)***(Elementary–Middle Level)**207, BCEC*

**Katelyn Wamsted** ([katelyn@girlstart.org](mailto:katelyn@girlstart.org)) and **Kristi Anderson** ([kristi@girlstart.org](mailto:kristi@girlstart.org)), Girlstart, Austin, Tex.

Spark STEM excitement in your classroom with 31 days of fun, innovative activities in this hands-on workshop.

**Moving from STEM to STEAM (Gen)**  
(Elementary–Middle Level) 211, BCEC

**Denise Harshbarger** (*deniseharshbarger@gmail.com*), North East Florida Educational Consortium, Palatka

**Rodney Harshbarger**, Old Kings Elementary School, Flagler Beach, Fla.

Walk away with the tools to move a classroom focused on STEM instruction to a more interdisciplinary STEAM (STEM + art) approach.

**Renewable Energy: Wind Power vs. Solar Power (Gen)**  
(Elementary) 212, BCEC

**David S. Lisnitzer** (*dlsnitzer@gmail.com*), PS/MS 124Q, South Ozone Park, N.Y.

Design, build, and test wind turbine blades and experiment with solar panels. Take home the entire unit plan, which includes worksheets, rubrics, and writing prompts.

**The Yearlong Field Trip: Informal and Formal Educators Working All Year Long (Gen)**  
(Elementary) 213, BCEC

**Sara T. Pelleteri** (*sarapel@utexas.edu*), The University of Texas Marine Science Institute, Port Aransas

Learn how The University of Texas Marine Science Institute partnered with local elementary schools on an integrated program of field trips and school visits.

**Seeing the Invisible: Making the Electromagnetic Spectrum Concrete (Gen)**  
(Middle Level) 254B, BCEC

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

How do we “see” something that exists but is not visible? This workshop will allow participants to engage in activities that make the EMS a bit more concrete.

**Cleanup in Zero G: Student Learning in Microgravity (Gen)**  
(Elementary–High School) Atlantic 2, Renaissance

**Kaci Heins** (*kheins@northlandprep.org*), Northland Preparatory Academy, Flagstaff, Ariz.

**Janelle Wilson** (*janellewilson@gmail.com*), Lanier Middle School, Sugar Hill, Ga.

**Jennifer L. Cheesman** (*jcheesman@peoriaud.k12.az.us*), Zuni Hills Elementary School, Sun City, Ariz.

What is it like working in space? Discover how students developed an experiment that was accepted to fly as part of NASA’s MicroGravity eXperience.

**A Google Suite Classroom: How to Create a Blended Learning Environment Using the Google Suite...for Free! (Gen)**

(General) Pacific D, Renaissance

**Keith G. Palz** (*kpalz@distinctiveschools.org*), Distinctive Schools, Chicago, Ill.

**Nancy Holincheck** (*nholinch@gmu.edu*), George Mason University, Fairfax, Va.

A BYOD workshop designed for teachers who have a Gmail address and a computer. Leave with a blended learning classroom. Come Tech-Us-Out!

**Getting Your Students to Construct Explanations in Science: Using a Discrepant Event to Explore the Science Practices (Gen)**

(Middle Level–High School/Informal) Seaport Blrm. A, Seaport

**Dawn O’Connor** (*dawnno@acoe.org*) and **Sara Dozier**, Alameda County Office of Education, Hayward, Calif.

This workshop explores how to engage students in the science practices as they construct explanations for the causes of phenomena observed during a discrepant event.

**Science Writing as Argument (Gen)**

(Middle Level–High School) Seaport Ballroom B, Seaport

**Adam LaMee** (*adamlamee@gmail.com*), Florida State University, Tallahassee

Join us for a writing activity for grades 6–12 science classes that uses argumentation as a strategy for students to effectively communicate their findings from investigations or research.

**Don’t Coach from the Sidelines, Get in the Game! (Gen)**

(Middle Level–High School/Supv.) Faneuil, Westin Waterfront

**Michele Detwiler** (*michele.detwiler@sdhc.k12.fl.us*), **Nicole Jacquay** (*nicole.jacquay@sdhc.k12.fl.us*), and **Mindy Pearson** (*mindy.pearson@sdhc.k12.fl.us*), Hillsborough County Public Schools, Tampa, Fla.

Instructional coaches from Hillsborough County Public Schools will facilitate a discussion on how to inspire advocates for students and science education as we implement the NGSS and the CCSS.



**Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 101) (Gen)**

(General) Grand Ballroom C, Westin Waterfront  
**LaMoine L. Motz** (*llmotz@comcast.net*), 1988–1989 NSTA President, and Science Education/Facilities Specialist, White Lake, Mich.

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

Prsider: LaMoine L. 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 *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present the “basics” of science facility planning for safe, ergonomically designed, and sustainable facilities.

**Cold Fusion/Hot Science (Gen)**

(General) Grand Ballroom D, Westin Waterfront

**Robert E. Strong** (*robert@smartcenter.org*) and **Elizabeth A. Strong** (*libby@smartcenter.org*), SMART-Center, Wheeling, W.Va.

How often do ALL your cherished paradigms get shifted? Join us for updates and classroom activities for a transformational, revolutionary, truly disruptive technology—Cold Fusion.

**Formative Assessments for Meaningful Learning in Science (Gen)**

(Elementary–Middle Level) Grand Blrm. E, Westin Waterfront

**Mia Dubosarsky** (*mdubosarsky@wpi.edu*), Worcester Polytechnic Institute, Worcester, Mass.

This workshop provides elementary and middle school teachers with hands-on experience on designing formative assessments that showcase students’ science competencies in a meaningful way.

**DOROTHY K. CULBERT CHAPTER AND ASSOCIATED GROUPS SOCIAL**

Are you a Chapter or Associated Group leader with a proven track record of moving your organization forward?



Or do you struggle with issues like membership, board relations, and conference planning?

Join us for this networking opportunity to share your experience and learn from other leaders who are “in the trenches” just like you. NSTA’s Chapter Relations staff will be available to offer their expertise, and Chapters and Associated Groups celebrating special anniversaries will be recognized.

**Refreshments provided.**

**Thursday, April 3**

**3:30–4:30 PM**

Renaissance Boston Waterfront Hotel  
 Pacific A/B



**12:30–1:30 PM Exhibitor Workshop**

**Bringing Technology into Your STEM Classroom (Gen)**

(Grades 9–College) 156C, BCEC

Sponsor: It's About Time

**Kevin Schroeder**, It's About Time, Mount Kisco, N.Y.

Struggling to incorporate meaningful technology into your science classrooms? Experience an innovative, fully functioning Android tablet—the einstein™ Tablet+, which incorporates probes, apps, activities, and the full Android experience. Explore how to blend meaningful technology into your classroom with *Project-Based Inquiry Science* (PBIS) to create your project-based STEM classroom.

**12:30–2:00 PM Presentation**

**SESSION 1**

**PDI OELA Pathway Session: Designing Science Lessons That Meet the NGSS and Increase EL Students' Language Skills and Science Knowledge (Gen)**

(Elementary–High School) 204 A/B, BCEC

**Emily Miller** ([emilycatherine329@madison.k12.wi.us](mailto:emilycatherine329@madison.k12.wi.us)), Madison (Wis.) Metropolitan School District

Emily Miller, an elementary ESL/BRT science specialist and writer for the NGSS Diversity and Equity Team, presents the overall charges of the team, and the ESL vignette in NGSS Appendix D: All Standards/All Students, which was based on her own classroom. The Earth Science/Life Science unit integrates the three dimensions stressed by the NGSS—science and engineering practices, disciplinary core ideas, and crosscutting concepts—and combines research-based effective teaching strategies to increase language skills for English learners. Participants will be given a sample unit template and learn how to utilize it to create new lessons that increase access of rigorous science for English learners.

**12:30–2:30 PM Presentation**

**SESSION 1**

**PDI AMNH Pathway Session: Analyzing and Interpreting Data to Determine Earthquake Risk (Earth)**

(Middle Level–High School) 208, BCEC

**Dave Randle** ([drandle@amnh.org](mailto:drandle@amnh.org)) and **Dora Kravitz** ([dkravitz@amnh.org](mailto:dkravitz@amnh.org)), American Museum of Natural History, New York, N.Y.

Presider: Jim Short, American Museum of Natural History, New York, N.Y.

This session explores seismic data and how scientists are investigating earthquake risk in Bangladesh.

**12:30–2:30 PM Workshop**

**PDI BSCS Pathway Session: Developing and Using Models in the Classroom (NGSS Practice 2) (Gen)**

(General) 203, BCEC

**Brooke Bourdélat-Parks** ([bbparks@bscs.org](mailto:bbparks@bscs.org)) and **Connie J. Hvidsten** ([chvidsten@bscs.org](mailto:chvidsten@bscs.org)), BSCS, Colorado Springs, Colo.

This session will deepen your understanding of NGSS Practice 2: Developing and Using Models. Experience using and reasoning with models through an inquiry-based activity and then reflect on ways to support students as they engage with models in the classroom. You'll walk away with a better understanding of how using models in classroom instruction can help students deepen their learning of scientific concepts.

**PDI NGSS Pathway Session: Developing Evaluation Tools for STEM Progress at the School and District Levels (Gen)**

(General) 206 A/B, BCEC

**Mariel Milano** ([mariel.milano@ocps.net](mailto:mariel.milano@ocps.net)), Orange County Public Schools, Orlando, Fla.

**Jo Anne Vasquez** ([jvasquez@helios.org](mailto:jvasquez@helios.org)), 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.

How can you help others in your district cross disciplinary boundaries to create a richer, more meaningful environment for students in your school and district? Have you ever wondered how you can tell if all of your STEM efforts are working? If so, then join us as we explore two established tools for monitoring the successful STEM integration at either a building or district level and begin developing locally usable STEM evaluation tools.

**PDI Wheelock Pathway Session: No Hands! Facilitating Meaningful Science Discussions with Elementary Students (Gen)**

(Preschool–Elementary) 209, BCEC

**Christina Ryan**, Independent Consultant, Round Rock, Tex.

Discover how discussions can provide opportunities for even our youngest students to gather ideas and make meaning of content within a collaborative scientific community.

**1:00–3:00 PM Meetings**

**Committee on Preschool–Elementary Science Teaching Meeting**

*Georges, Renaissance*

**Committee on Professional Development in Science Education Meeting**

*Mediterranean, Renaissance*

**Committee on Multicultural/Equity in Science Education Meeting**

*Pacific C, Renaissance*

**Committee on College Science Teaching Meeting**

*Spectacle, Renaissance*

**Committee on Preservice Teacher Preparation Meeting**

*Thompson, Renaissance*

**1:00–3:30 PM Exhibitor Workshop**

**Generate a DNA Barcode and Identify Species (AP Big Ideas 1, 2, 3, 4) (Bio)**

*(Grades 10–College) 157A, BCEC*

Sponsor: Bio-Rad Laboratories

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

Extract genomic DNA, amplify it with PCR, and classify species using sequencing and bioinformatics to determine if that fish you just bought is really what the label says it is. Also learn about the International Barcode of Life initiative that uses this technology, and find out how you can contribute to this global genetic repository for barcodes of all species.

**1:00–6:00 PM Short Course**

**Using GLOBE in the Elementary Classroom (SC-3)**

*(Elementary) Wellesley, Marriott Copley Place*

**Tickets Required; \$28**

**Gary Randolph** (*randolph@globe.gov*), **Julie Malmberg** (*malmberg@globe.gov*), and **Kristin Wegner** (*kwegner@globe.gov*), The GLOBE Program, Boulder, Colo.

For description, see page 52.

**1:30–3:00 PM Meetings**

**Nominations Committee Meeting**

*Bering Boardroom, Renaissance*

**Technology Advisory Board Meeting**

*Hale, Westin Waterfront*



**1:30–3:00 PM Exhibitor Workshop**

**Engineer the Tools for Inquiry of Candy Food Dyes (Bio)**

*(Grades 7–College) 157B, BCEC*

Sponsor: Bio-Rad Laboratories

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

What's in your candy? In this hands-on workshop, extract colorful food dyes from candy, separate and identify them using a STEM-integrated do-it-yourself electrophoresis box. This inquiry-based activity is a great way to introduce pipetting, electrophoresis, and solution-making skills in addition to chemistry, physics, and engineering concepts.

**1:30–3:30 PM Meetings**

**Committee on Informal Science Meeting**

*Bulfinch, Westin Waterfront*

**Committee on Middle Level Science Teaching Meeting**

*Quincy, Westin Waterfront*

**1:30–5:00 PM Short Course**

**The Perfect Storm: Exploring Energy Transformations in Large-Scale Storms (SC-4)**

*(Grades 4–8) Simmons, Marriott Copley Place*

**Tickets Required; \$57**

**April Chancellor** (*april.chancellor@msichicago.org*), Museum of Science and Industry, Chicago, Ill.

For description, see page 53.



**2:00–2:30 PM Presentations**

**SESSION 1**

**Integrating Hands-On STEM Activities with Common Core State Standards, in English Language Arts and Mathematics (Gen)**

(Elementary) 252B, BCEC

**Chih-Che Tai** ([cctai.etsu@gmail.com](mailto:cctai.etsu@gmail.com)), East Tennessee State University, Johnson City

Join me as I present ideas on integrating math, reading, and science to build confidence and understanding about using reading and math as tools to understand STEM literacies.

**SESSION 2**

**Scientific Literacy Through Literature Review: Close Reading of Scientific Journal Articles as Performance Assessment (Gen)**

(Middle Level–High School) Plaza C, Seaport

**Laura Lynne Sheehan** ([laura\\_sheehan@universitylaboratoryschool.org](mailto:laura_sheehan@universitylaboratoryschool.org)), University Laboratory School, Honolulu, Hawaii  
Discussion centers on meeting the CCSS and the NGSS by incorporating literature review assessments of peer-reviewed scientific journal articles into high school science curricula.



**2:00–3:00 PM Featured Presentation**

**Science Standards Through the Years (Gen)**

(General)

Grand Ballroom, BCEC



Stephen L. Pruitt



Rodger W. Bybee

**Stephen L. Pruitt** ([spruitt@achieve.org](mailto:spruitt@achieve.org)), Senior Vice President, Achieve, Inc., Washington, D.C.

@DrSPruitt

**Rodger W. Bybee** ([rodgerwbybee@gmail.com](mailto:rodgerwbybee@gmail.com)), Executive Director Emeritus, BSCS, Colorado Springs, Colo.

President: David L. Evans, NSTA Executive Director, Arlington, Va.

Join Stephen and Rodger as they engage in a dialogue about the central themes of adoption, adaption, and classroom instruction around science education. The *Next Generation Science Standards* (NGSS) will be the primary focus of this discussion but earlier efforts in science education will also be explored. Issues of curriculum, instruction, and assessment will be viewed through the lens of science teachers' concerns, and they will allow significant time for questions from the audience to shape the dialogue.

*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 the 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.*

*Rodger W. Bybee led the Next Generation Science Standards life sciences writing team. A past executive director of the Biological Sciences Curriculum Study (BSCS), he has been active in education for more than 40 years, having taught science at the elementary, junior and senior high school, and college levels.*

*Widely published, Rodger is coauthor of a leading textbook, Teaching Secondary School Science: Strategies for Developing Scientific Literacy. In 2007, he received the Robert H. Carleton Award, NSTA's highest honor for national leadership in science education.*

**2:00–3:00 PM Special Session**

**Mobilizing an Army to Collect Scientific Data**

(Gen)

(General)

210C, BCEC

*Sponsored by National Geographic Learning*



**Gregg Treinish** (*gregg@adventureand-science.org*), Founder/Executive Director, Adventurers and Scientists for Conservation, Bozeman, Mont.  
@AdventurScience

As an avid outdoor adventurer, National Geographic Explorer Gregg Treinish found himself in some of the most remote places in the world. As a scientist he realized that valuable, hard-to-obtain scientific data were all around him. Gregg will discuss his work to connect outdoor enthusiasts traveling to remote areas with scientists who need data from those areas. When ecological and environmentally sound travel is combined with data collection, new discoveries are made and knowledge gained.

*Gregg Treinish founded Adventurers and Scientists for Conservation (ASC), a nonprofit organization connecting outdoor adventurers with scientists in need of data from the field. He also organizes his own expeditions, contributing to research on wildlife-human interaction, fragmented habitats, and threatened species. Treinish has worked with students, teachers, military veterans, and families on vacation to collect samples, photographs, data, and observations in an effort to utilize “citizen science” as a main way that scientific data can be collected and shared.*

**2:00–3:00 PM Meeting**

**Northeast State Association Leader Sharing Session**

*Adams, Westin Waterfront*

The Massachusetts Association of Science Teachers (MAST) would like to invite others who serve on their state leadership groups to join us for a sharing session. During this time, we can share resources, challenges, new focuses, and more.

**2:00–3:00 PM Presentations**

**SESSION 1** (two presentations)

(Middle Level–College)

157C, BCEC

**Groundwater Computer Modeling in the High School Classroom** (Env)

**Amy Kessner** (*akessner@groundwater.org*), The Groundwater Foundation, Lincoln, Neb.

Learn how you can integrate Hydrogeology: Water for the World, a new inquiry-based learning tool, and bring groundwater computer modeling into your classroom.

**Using Geospatial Data to Teach How Scientists and Engineers Study the Environment** (Env)

**Daniel R. Zalles** (*daniel.zalles@sri.com*), SRI International, Menlo Park, Calif.

Two NSF- and NASA-funded web-based educational resources will be introduced for teaching about how scientists and engineers use satellite-derived data to study regional environmental phenomena.

**SESSION 2**

**Everyone Loves the R.E.D.S.O.X.! (Really Easy inquiry-baseD lessons Students Oughta eXperience)**

(Gen)

(Elementary)

158, BCEC

**Sharon R. Anibal**, Saul Mirowitz Jewish Community School, St. Louis, Mo.

Are you striking out with boring lessons that make your students want to switch coaches? Hit a home run with these proven K–5 inquiry-based activities.

**SESSION 3**

**Using Technology to Boost Student Understanding of Science Concepts** (Phys)

(Elementary–Middle Level)

160A, BCEC

**Stacy T. Maynard** (*maynard@idaschools.org*), Ida Elementary School, Ida, Mich.

Engage in sound wave energy concepts according to the NGSS. Technology integration is modeled using essential apps such as Decibel 10 and Clean Energy.

**SESSION 4**

**Bringing the Inside Out—Using Class Trips to Promote Young Learners’ Scientific Literacy** (Gen)

(Preschool–Middle Level/Informal Ed.)

160C, BCEC

**Jane Kloecker** (*jkloecker@amnh.org*), **Bilexis Casado** (*bcasado@amnh.org*), and **Natalie Tahsler** (*ntahsler@amnh.org*), American Museum of Natural History, New York, N.Y.

Find out how to use class trips to museums, nature centers, and other outdoor destinations to reinforce classroom content and enhance elementary science learning.

**SESSION 5**

**Aerospace Adventurers: Launching an After-School Aeronautics and Space Education Program (Earth)**

(Elementary–Middle Level) 162A, BCEC

**Alex Rode** ([arode@ledyard.net](mailto:arode@ledyard.net)), Ledyard Center School, Ledyard, Conn.

**Stuart Sharack** ([sharack@aol.com](mailto:sharack@aol.com)), Waterford, Conn.

Take student learning to new heights. Start your own after-school aerospace program. Find out how to design and create a STEM/NGSS environment to challenge and inspire students.

**SESSION 6**

**Physics at the Philadelphia Museum of Art (Phys)**

(Middle Level–High School/Informal Ed.) 205C, BCEC

**Mary Jo Grdina** ([mfg29@drexel.edu](mailto:mfg29@drexel.edu)) and **Kimberly Ingolt** ([kdi26@drexel.edu](mailto:kdi26@drexel.edu)), Drexel University, Philadelphia, Pa.

Join us as we share the development and evaluation results of a pilot app that supports a physics field trip to an art museum.

**SESSION 7**

**ASTC Session: Leveraging Informal Science Organizations to Address the Next Generation Science Standards (Gen)**

(Informal Education) 251, BCEC

**David Heil** ([dheil@davidheil.com](mailto:dheil@davidheil.com)) and **Mia Jackson** ([mjackson@davidheil.com](mailto:mjackson@davidheil.com)), Foundation for Family Science & Engineering, Portland, Ore.

Discover how the rich resources of informal science institutions can help classroom teachers and school districts meet many of the challenging performance expectations outlined in the *Next Generation Science Standards*.

**SESSION 8**

**An Overview of No Child Left Behind and Federal STEM Education Policy (Gen)**

(General) 252A, BCEC

**Jodi Peterson** ([jpeterson@nsta.org](mailto:jpeterson@nsta.org)), Assistant Executive Director, Legislative Affairs, NSTA, Arlington, Va.

Emphasis will be placed on an examination of the reauthorization of the federal education act, No Child Left Behind, and other key federal legislative and policy initiatives.

**SESSION 9**

**Magical Illusions for Science—It’s Showtime! (Gen)**

(General) 253A, BCEC

**Alan J. McCormack** ([amccorma@mail.sdsu.edu](mailto:amccorma@mail.sdsu.edu)), 2010–2011 NSTA President, and San Diego State University, San Diego, Calif.

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

**SESSION 10**



**NSTA Press® Session: Safer STEM Activities (Gen)**

(General) 254A, BCEC

**Ken R. Roy** ([royk@glastonburyus.org](mailto:royk@glastonburyus.org)), Glastonbury (Conn.) Public Schools

Trading in beakers for hand and power tools while doing STEM activities? Learn how to address the hazards and make it safer before they become liability issues!

**SESSION 11**

**Understanding the Redesigned AP Chemistry Exam: Developing Aligned Formative and Summative Assessments (Chem)**

(High School) 254B, BCEC

**Serena Magrogan** ([smagrogan@collegeboard.org](mailto:smagrogan@collegeboard.org)), The College Board, Duluth, Ga.

Participants will evaluate past AP Chemistry exam questions for alignment to the redesigned curriculum and develop new exam questions in the “AP” style.

**SESSION 12**

**Staking a Claim (Gen)**

(Middle Level) 255, BCEC

**Sarah Davis**, Mario Umana Academy, Boston, Mass.

This session will share our framework and strategies for building middle school students’ argumentation skills in science and across content areas.

**SESSION 13**

**Remotely Operated Vehicles: An Engaging Way to Combine Marine Biology, Engineering, and Physical Science (Gen)**

(Informal Education) 256, BCEC

**Tina Miller-Way** and **Greg Graeber**, Dauphin Island Sea Lab, Dauphin Island, Ala.

Discussion centers on our experience with the design, construction, and operation of remotely operated vehicles as a STEM activity for grades 6–12 teachers and students.

**SESSION 14**

**Zoo Genetics: A Free Conservation Genetics Curriculum (Bio)**

(High School/Informal Ed) 257A, BCEC

**Jason J. Crean** ([jcrean@lths.net](mailto:jcrean@lths.net)), Lyons Township High School, Western Springs, Ill.

This free curriculum includes activities that look at real-world conservation issues and how modern genetics helps to answer questions while simulating actual laboratory methods.

**SESSION 15**

**Powerful and Free Simulations for Biology Teaching (Bio)**

(Elementary–High School) 257B, BCEC

**Chad Dorsey** ([cdorsey@concord.org](mailto:cdorsey@concord.org)), The Concord Consortium, Concord, Mass.

Come discover how free NSF-funded molecular, genetics,

and evolution simulations and curricula from The Concord Consortium can add a new dimension to your biology teaching. All participants will receive free software and resources. Participants are encouraged to bring laptops.

**SESSION 16**



**Closing the Achievement Gap with Constructed Response (Gen)**

(General) 258C, BCEC

**Michael W. Pflug** ([mwpflug@prosper-isd.net](mailto:mwpflug@prosper-isd.net)), Lorene Rogers Middle School, Prosper, Tex.

Discover how to close the achievement gap by using constructed response every day in your classroom. This method helps students struggling with learning on up to advanced students by having them construct a response to a given question stem and then support that response with the appropriate evidence.

**“Life begins at retirement.”**

—Author Unknown

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.

**Before and After Retirement—Practicalities and Possibilities**

**Saturday, April 5  
8:00–9:00 AM**

Boston Convention & Exhibition Center, 252A

For more information on the Retired Members Advisory Board, contact Virginia Baltay, chair, at [virginia.baltay@gmail.com](mailto:virginia.baltay@gmail.com).



SESSION 17



**iPads in Science**

(General)

(Gen)

259B, BCEC

**Ben Smith** ([ben@edtechinnovators.com](mailto:ben@edtechinnovators.com)) and **Jared Mader** ([jared@edtechinnovators.com](mailto:jared@edtechinnovators.com)), York, Pa.

Whether you have one device or a classroom set, you will leave with ideas on how to leverage these tools for finding information, collecting/analyzing data, and communicating learning. Come see how to tap into your students' creative side.

SESSION 18

**Understanding Climate Change and Climate Change Models**

(Earth)

(High School)

261, BCEC

**Ruth L. Hutson** ([ruthhutson@bluevalley.net](mailto:ruthhutson@bluevalley.net)), Blue Valley High School, Randolph, Kans.

By collecting local data and comparing it to long-term databases, satellite data, Google Earth, and computer climate models, my students understand climate change with raised awareness.

SESSION 19

**Discover the Microbes Within: The *Wolbachia* Project**

(Bio)

(High School–College)

Atlantic 3, Renaissance

**Christine Brothers** ([cbrothers@falmouth.k12.ma.us](mailto:cbrothers@falmouth.k12.ma.us)), Falmouth High School, Falmouth, Mass.

Presider: Brian Dempsey, Acton Boxborough High School, Boxborough, Mass.

Learn about a series of biotechnology labs involving DNA extraction, PCR, and electrophoresis to test insects for *Wolbachia*, a bacterial endosymbiont that affects insect evolution.

SESSION 20

**Citizen Scientists: The Future of Science**

(Gen)

(Middle Level–College)

Brewster, Renaissance

**Heidi M. Bjerke** ([bjerkehe@champaignschools.org](mailto:bjerkehe@champaignschools.org)), Champaign (Ill.) Unit 4

Increase your students' literacy skills by making them citizen scientists. Students use technology to share their findings with the growing citizen science community.

SESSION 21 (two presentations)

(High School–College/Supervision)

Caspian, Renaissance

**SCST Session: A Study on the Attitudes of Biology Majors Toward Evolutionary Theory**

(Bio)

**David W. Allard** ([david.allard@tamut.edu](mailto:david.allard@tamut.edu)), Texas A&M University, Texarkana

Students in a senior-level evolutionary biology course were surveyed at the beginning and end of the course to determine their attitudes toward evolutionary theory.

**SCST Session: The Relationship Between Guided Student-Generated Questioning and Chemistry Achievement and Chemistry Self-Efficacy in Elementary Preservice Teachers**

(Chem)

**Marilyn I. Ibey** ([mibey@edmc.edu](mailto:mibey@edmc.edu)), Brown Mackie College, San Antonio, Tex.

Previously shown to improve cognitive ability resulting in higher cognitive test scores, Guided Student-Generated Questioning (GSGQ)—a metacognitive questioning strategy—is used in this investigation as a strategy to increase chemistry achievement and student self-efficacy of elementary preservice teachers.

SESSION 22

**NARST Session: Reconfiguring the Urban Science Experience: The Power of Diversity, Social Context, and the Local Environment**

(Env)

(Informal Education)

Pacific F, Renaissance

**Erin A. Hashimoto-Martell** ([ehashimoto@bostonpublicschools.org](mailto:ehashimoto@bostonpublicschools.org)), Boston (Mass.) Public Schools

**Fiona Bennie** ([fbennie@boston.k12.ma.us](mailto:fbennie@boston.k12.ma.us)), Horace Mann School for the Deaf and Hard of Hearing, Boston, Mass.

**Haven Daniels** ([hdaniels@bostonpublicschools.org](mailto:hdaniels@bostonpublicschools.org)), Perkins Elementary School, South Boston, Mass.

**Michael J. Clinchot** ([mclinchot2@boston.k12.ma.us](mailto:mclinchot2@boston.k12.ma.us)), Edwards Middle School, Charlestown, Mass.

This teacher research study examined the impact of a field-based project with students across grades, schools, and auditory abilities. Discussion includes teacher research.

SESSION 23

**Write Reactions**

(Chem)

(High School–College)

Pacific G/H, Renaissance

**Cindy C. Adams** ([ccadams@lehigh.edu](mailto:ccadams@lehigh.edu)), Lehigh University, Bethlehem, Pa.

A rubric for measuring the critical-thinking level of science writings from chemistry students will be presented along with ideas for enhancing science writing skills.



**SESSION 24**

**AMSE Session: Engineering Through Aquaculture Technology for Women (Env)**

(Middle Level) Constitution, Seaport

**Lovelle Ruggiero**, New Rochelle, N.Y.

Recirculating aquaculture (fish farming) could be an indirect way to introduce engineering to women and underserved populations, while addressing science concepts and engineering practices.

**SESSION 25**

**Enhancing Learning Outcomes Through Media with NOVA (Gen)**

(Middle Level–High School) Flagship A, Seaport

**Rachel Connolly** ([rachel-connolly@wgbh.org](mailto:rachel-connolly@wgbh.org)), WGBH Educational Foundation, Boston, Mass.

Take home strategies for successfully integrating video-based educational media and storytelling resources into your instruction.

**SESSION 26**

**Science Identities in a High School Classroom: A Year of Practitioner Inquiry (Gen)**

(High School) Lighthouse I, Seaport

**Kevin J. Henson** ([khenson@lrhsd.org](mailto:khenson@lrhsd.org)), Lenape High School, Medford, N.J.

Discussion centers on students' beliefs about their ability to do science and the messages they receive, and how these beliefs impact their learning of science.

**SESSION 27**

**Achieving CCSS Through Authentic Integration with Inquiry Science Kit Instruction (Gen)**

(Elementary–Middle Level) Plaza A, Seaport

**Danae' Wirth** ([dwirth@elkhart.k12.in.us](mailto:dwirth@elkhart.k12.in.us)), Elkhart (Ind.) Community Schools

**Ron DeFronzo** ([ronald.defronzo@ebecri.org](mailto:ronald.defronzo@ebecri.org)), East Bay Educational Collaborative, Warren, R.I.

Find out how to create writing resources for science kits through a simple but thorough process that familiarizes teachers with the NGSS, CCSS, and state standards.

**SESSION 28**

**Enhancing Adolescents' Motivation for Science: Research-based Strategies for Teaching Male and Female Students (Gen)**

(Middle Level–High School) Plaza B, Seaport

**Jennifer A. Schmidt** ([jaschmidt@niu.edu](mailto:jaschmidt@niu.edu)), Northern Illinois University, DeKalb

Join us for a demonstration of research-based, practical tools to enhance adolescents' motivation for science. Special attention is paid to gender. Take home a free book.

**SESSION 29** (two presentations)

(General) Burroughs, Westin Waterfront

**Doing Inquiry-oriented Research as a Teacher-Researcher (Gen)**

**Konstantinos Alexakos** ([kalexakos@gmail.com](mailto:kalexakos@gmail.com)), Brooklyn College, CUNY, Brooklyn, N.Y.

Let's explore methodologies and methods of classroom teachers doing inquiry-oriented research on their own practice to guide their teaching and professional growth.

**Nature of Science: The Missing Ingredient (Gen)**

**Gerald Rau** ([gerryrau@hotmail.com](mailto:gerryrau@hotmail.com)), National Chung Cheng University, Chiayi, Taiwan

Carefully distinguishing evidence from inference forms the foundation for inquiry, unifies the curriculum, reduces conflict in controversial issues, and is completely missing from textbooks!

**SESSION 30** (two presentations)

(Elementary/Supervision) Carlton, Westin Waterfront

**Supporting and Developing an Elementary STEM Academy (Gen)**

**Tom J. Wortman** ([twortman@washoeschools.net](mailto:twortman@washoeschools.net)), **Sara Holm** ([sholm@washoeschools.net](mailto:sholm@washoeschools.net)), and **Julie Telfer** ([jtelfer@washoeschools.net](mailto:jtelfer@washoeschools.net)), Smithridge STEM Academy, Reno, Nev.

How did an urban elementary school with 87% English language learners and a 100% Free/Reduced Lunch (FRL) population transform into a successful STEM Academy with rising achievement and student engagement? Join us and find out.

**Building a STEM Elementary Program from the Foundation Up (Gen)**

**Sally K. Catoe** and **Audrey Andrieski** ([aandries@richland2.org](mailto:aandries@richland2.org)), North Springs Elementary School, Columbia, S.C.

Join us as we model how a national award-winning elementary STEM program can be conceptualized and built with minimal purchases.

SESSION 31

**Science and Democracy: How to Bring a Thirst for Scientific Knowledge Beyond Your Classroom and into Your Community (Gen)**

(General) Commonwealth Ballroom B, Westin Waterfront

**Andrew A. Rosenberg** ([arosenberg@ucsusa.org](mailto:arosenberg@ucsusa.org)) and **Danielle Fox** ([dfox@ucsusa.org](mailto:dfox@ucsusa.org)), Union of Concerned Scientists, Cambridge, Mass.

**Michael H. Halpern** ([mhalpern@ucsusa.org](mailto:mhalpern@ucsusa.org)), Union of Concerned Scientists, Washington, D.C.

Explore how teachers can improve public access to science and build support in their communities for using science to tackle health, safety, and environmental challenges.

SESSION 32

**Science Sense-making and Discourse in Support of the NGSS Instructional Practices (Gen)**

(General) Commonwealth Ballroom C, Westin Waterfront

**Anne Tweed** ([atweed@mcrel.org](mailto:atweed@mcrel.org)), 2004–2005 NSTA President, and McREL, Denver, Colo.

**Cynthia J. Long** ([clong@mcrel.org](mailto:clong@mcrel.org)), McREL, Denver, Colo. To learn science concepts, students need to talk about their ideas to clarify their thinking. Learn how to add science discourse and sense-making opportunities into your classroom to facilitate science and engineering practices.

SESSION 33

**Assessing “Science Writing” in Linguistically Diverse Elementary Classrooms (Gen)**

(General) Griffin, Westin Waterfront

**Edward G. Lyon** ([eglyon@asu.edu](mailto:eglyon@asu.edu)), Arizona State University, Tempe

**Preetha Menon** ([pmenon@ucsc.edu](mailto:pmenon@ucsc.edu)) University of California, Santa Cruz

Find out how to assess science writing tasks to support the development of both students’ understanding of science concepts and literacy in science.

SESSION 34

**Job Shadow: Unique and Impactful Professional Development for Science Teachers (Gen)**

(General) Hancock, Westin Waterfront

**Keri E. Randolph** ([krandolph@pefchattanooga.org](mailto:krandolph@pefchattanooga.org)), Southeast Tennessee STEM Innovation Hub, Chattanooga

Presider: Brian Purvis, Ooltewah Middle School, Chattanooga, Tenn.

Job shadow experiences for teachers help create experiences for students that are relevant and connected to college and career. Learn about a model pilot program and its findings.

SESSION 35

**CSSS Session: Assessment of the NGSS: Implementing the Recommendations from the NRC Framework (Gen)**

(Elementary–High School) Harbor Ballroom III, Westin Waterfront

**Peter J. McLaren** ([peter.mclaren@ride.ri.gov](mailto:peter.mclaren@ride.ri.gov)), Rhode Island Dept. of Education, Providence

This session is designed to elaborate upon the recommendations put forward in the NRC Framework and provide examples of assessment at different levels of an assessment system (classroom, school, district, and state). Emphasis will be placed on assessment of the three dimensions inherent to the NGSS at the classroom, school, and large-scale levels.

SESSION 36

**Let the iPad Tell a Science (Digital) Story! (Gen)**

(Elementary–High School) Lewis, Westin Waterfront

**Roger D. Pence** ([rogpence@yahoo.com](mailto:rogpence@yahoo.com)), Benicia Middle School, Benicia, Calif.

Discover how to use the iPad for crafting science digital stories with popular video-editing apps while promoting science writing and visual literacy skills. Samples, a live demonstration, and resources provided.

SESSION 37

**Evaluating Science Instruction Through Observations, Feedback, and Growth (Gen)**

(Supervision/Administration) Otis, Westin Waterfront

**Jewlana D. Smith-Hunter**, iThinkiLearn, Clearwater, Fla.

How effective is my science department? Through the use of observations and feedback, teachers and administrators can gain a clear picture on the current state and future needs of their science department in critical areas such as instructional practices, assessment strategies and uses, differentiation, and the academically challenging environment.

SESSION 38

**CHOICES: The ONLY “Differentiation” That Works (Gen)**

(General) Stone, Westin Waterfront

**Lawrence E. Reams** ([rhoodatjoe@gmail.com](mailto:rhoodatjoe@gmail.com)), Columbus (Ohio) City Schools

CHOICES presents a practical how-to framework with supporting resources that inform teachers how to effectively construct lessons to actively engage all learners.

## SESSION 39

**Teachers on the Tundra: Working and Collaborating with Scientists at Toolik Field Station (Gen)***(General)**Webster, Westin Waterfront*

**Alicia M. Gillean** (*alicia.gillean@jenksps.org*), Jenks West Intermediate School, Jenks, Okla.

**Bruce Taterka** (*btaterka@wmrhd.org*), West Morris Mendham High School, Mendham, N.J.

**Nell Kemp**, Kenwood Academy, Chicago, Ill.

PolarTREC stands for Teachers and Researchers Exploring and Collaborating. PolarTREC teachers describe their experiences as members of science teams conducting Arctic research (ranging from spiders to squirrels to permafrost) and share related classroom resources/lessons.

**2:00–3:00 PM Workshops****NMEA Session: Climate Change on the Ocean Planet (Earth)***(Middle Level–High School/Informal Ed.) 052 A/B, BCEC*

**Pat Harcourt** (*pharcourt@gmail.com*), Woods Hole Science and Technology Education Partnership, Woods Hole, Mass. Learn about the powerful connections between the ocean and climate and try out activities, data, and visualizations for teaching about the ocean and climate change.

**Argumentation, Summative Assessment, and the Theory of Evolution (Bio)***(Middle Level)**160B, BCEC*

**Lee E. Walton** (*leedwinwalton@gmail.com*) and **Adam LaMee** (*adamlamee@gmail.com*), Florida State University, Tallahassee

Focusing on argumentation and the theory of evolution, this Institute of Education Sciences–funded project will present on the use of nontraditional summative assessment methods.

**Communities of Life: Child-centered Life Science Teaching (Env)***(Elementary)**161, BCEC*

**Kim Machnik** (*kim.machnik@heifer.org*), Heifer International, Little Rock, Ark.

You DO have time for science! Deepen engagement and understanding through a communities of life perspective that infuses science into literacy, math, and social studies.

**First-Grade STEM Robotics (Gen)***(Elementary)**162B, BCEC*

**Marilyn Decker** (*mdecker@doe.mass.edu*), Massachusetts Dept. of Elementary and Secondary Education, Malden  
**Lea Campbell** and **Kerry O’Leary**, Collicot Elementary School, Milton, Mass.

**Bernadette Moonan** (*bmoonan@miltonps.org*), Cunningham School, Milton, Mass.

When can you start doing engineering with young children? We have found out that first-graders have an amazing ability to be young engineers. We have given them engineering problems to solve—working together, the children design solutions, test their designs, redesign, and test again. Later in the year, the problems involve building and programming simple robots. Participants will do sample challenges and see students in action through videos.

**Teachers Leading Teachers: Engaging Students with Life Sciences Content Through Inquiry (Bio)***(Middle Level–High School)**205A, BCEC*

**Linda Fitzhugh** (*lfitzhugh@gulfcoast.edu*), Gulf Coast State College, Panama City, Fla.

**Tammy Stundon**, Mosley High School, Lynn Haven, Fla.


**Jill Hansen** (*hansejm@bay.k12.fl.us*), Bay High School, Panama City, Fla.

**Nancy Dow**, Arnold High School, Panama City Beach, Fla. President: Susan Butler, University of Florida, Gainesville Engage in three hands-on, inquiry-based activities in nature of science, genetics, ecology, and evolution. These activities use everyday materials and include real-life applications. Handouts, lesson plans, and prizes distributed.

**Restriction Digest Computer Simulation (Bio)**  
(High School–College) 205B, BCEC

**Amanda Cherry Grimes**, Mesa Biotech Academy, Mesa High School, Mesa, Ariz.

Already running restrictions with your biotech or AP biology students? Can't afford the time and expensive equipment but want your students to do more than "just draw it"? This computer simulation using Microsoft Word is a great pre-lab activity to make sure students can explain why various enzymes show different results on a gel. Bring your laptop and receive the sequence file!

 **NSTA Press® Session: Everyday Engineering (Gen)**  
(Elementary–Middle Level) 207, BCEC

**Richard H. Moyer** and **Susan A. Everett** ([everetts@umich.edu](mailto:everetts@umich.edu)), University of Michigan–Dearborn

Engage in activities from *Everyday Engineering*—investigate life preservers and ballpoint pens to find out how they work and how they were designed.

**Strategies for Success in Science (Gen)**  
(Elementary–Middle Level) 211, BCEC

**Aimee Ayers**, O.I. Sanna Middle School, Lubbock, Tex. Discover a research-based management system that can be adapted for any learning environment. Strategies provided will encourage intrinsic student motivation in a rigorous classroom environment.

**Child-friendly Classification: Organizing the Natural World from the Perspective of Elementary School Learners (Gen)**

(Elementary) 212, BCEC

**Demetrius M. Lutz** ([dlutz@nysci.org](mailto:dlutz@nysci.org)), New York Hall of Science, Corona

Using simple biological and geological materials that are easily accessible to most early childhood educators, engage in mini-activities to gain insight into how young learners classify and organize materials from the natural world. The mini-activities provide tools useful for instruction as well as insight into how inquiry-based learning and pedagogical techniques can be promoted in the elementary classroom. Participants will be encouraged to collaboratively share their ideas and reflections on how similar activities and techniques can be adopted for use in both formal and informal instructional environments.

**Integrating Science, Technology, Engineering, and Math in an Early Elementary Classroom (Gen)**  
(Elementary) 213, BCEC

**Annmargareth Marousky**, Nova Eisenhower Elementary School, Davie, Fla.

Join me as I share models that effectively bridge the gap between doing science and understanding science through the integration of STEM activities that align with the NGSS.



**NSTA Press® Session: Uncovering Students' Ideas in Astronomy and the NGSS (Earth)**

(Elementary–Middle Level) 253C, BCEC

**Cary I. Sneider** ([csneider@pdx.edu](mailto:csneider@pdx.edu)), Portland State University, Portland, Ore.

**Page Keeley** ([pagekeeley@gmail.com](mailto:pagekeeley@gmail.com)), 2008–2009 NSTA President, Jefferson, Maine

Astronomy is prominent in grades 1, 5, and middle school in the NGSS. Classroom probes can help your students grapple with the truly big ideas.



**How Can I Change It and What Will Happen? Identifying Variables with Wind-ups (Phys)**

(Elementary) 259A, BCEC

**Jody Hilton** ([jomihill@aim.com](mailto:jomihill@aim.com)), Christopher Avenue Community School, Brooklyn, N.Y.

**James L. Neujahr** ([jneujahr@ccny.cuny.edu](mailto:jneujahr@ccny.cuny.edu)), City College of New York, N.Y.

**Donna Johnson** ([djohnson11@schools.nyc.gov](mailto:djohnson11@schools.nyc.gov)), P.S. 021 Crispus Attucks School, Brooklyn, N.Y.

**Angula P. Bumbury-Camacho**, P.S. 005 Dr. Ronald McNair, Brooklyn, N.Y.

The key to planning an investigation is identifying variables. Learn to find variables in the construction and operation of wind-up toys—homemade from recycled materials.

**Infusing Technology into a Project Based Learning Environment in an Alternative High School (Gen)**

(High School) Atlantic 1, Renaissance

**Joya H. Clark** ([joya9900@gmail.com](mailto:joya9900@gmail.com)), **Bruce G. Bukiet** ([bukiet@njit.edu](mailto:bukiet@njit.edu)), **Matthew Manlangit** ([mfm28@njit.edu](mailto:mfm28@njit.edu)), and **Noelle Corbin** ([nc63@njit.edu](mailto:nc63@njit.edu)), New Jersey Institute of Technology, Newark

Come learn how STEM majors designed projects carried out in an alternative school for grades 9–12 students with behavioral disabilities using assessment technology, probeware labs, and engineering-focused labs.

**Talk Like a Scientist!**

(Gen)

(General)

*Atlantic 2, Renaissance*

**Frieda Lamprecht** (*flamprec@austinisd.org*), Austin (Tex.) ISD

**Pamela Kling** (*pkling@austinisd.org*), Cowan Elementary School, Austin, Tex.

Come engage in this fast-paced vocabulary workshop that is guaranteed to keep you moving and learning new ways to keep your students engaged with scientific vocabulary.

**How's a Picture Worth 1,000 Words in Math and Science?**

(Gen)

(Middle Level–High School)

*Seaport Ballroom A, Seaport*

**Paula Martin Johnson** (*paula.johnson@idra.org*) and **Veronica D. Betancourt** (*veronica.betancourt@idra.org*), Intercultural Development Research Association, San Antonio, Tex.

Discover how to use substantive conversations to build and balance visual literacy to promote higher-order thinking skills in math and science for English language learners.

**Strengthening the Flipped Classroom Model by Integrating the Common Core State Standards**

(Gen)

(Middle Level–High School)

*Seaport Ballroom B, Seaport*

**MaryEllen Felter** and **Amy L.K. Gilbert** (*amy\_gilbert@eastiron.monroe.edu*), East Irondequoit Middle School, Rochester, N.Y.

Experience hands-on learning by building an interactive notebook to support inquiry and literacy (CCSS) as a means to strengthen the flipped classroom model.

**Training High School Students to Be Facilitators of Science Learning: A High School/Science Museum Partnership**

(Gen)

(High School/Informal Ed.) *Commonwealth A, Westin Waterfront*

**Emily L. Flaherty** (*eflaherty@mos.org*) and **Lucy E. Green** (*lgreen@mos.org*), Museum of Science, Boston, Mass.

**George Papayannis** (*gpapayannis@fenwayhs.org*), Fenway High School, Boston, Mass.

Discover a model for high school and science museum partnerships to train students to be interpreters and facilitators of science learning.



**NSTA  
STUDENT CHAPTER  
AND  
STUDENT MEMBERS  
RECEPTION**

An excellent networking opportunity for preservice and new teachers alike. Also, learn how you can establish (or improve) an NSTA student chapter on your campus and the benefits of doing so.

**Refreshments included.**

**Friday, April 4  
5:30–7:30 PM**  
Renaissance Boston Waterfront Hotel  
Atlantic 2/3

**NSTA** National Science Teachers Association

**Using the “E” in STEM to Integrate STEM Silos (Gen)**

(Middle Level/Supervision) Faneuil, Westin Waterfront  
**Melissa Dean** ([mdean@maef.net](mailto:mdean@maef.net)) and **Suzan Morris**, Mobile Area Education Foundation, Mobile, Ala.

Presider: Carolyn DeCristofano, Blue Heron STEM Education, Plympton, Mass.

Find out how a set of instructional guides—that are NSF funded and “Change the Equation” endorsed—bring integrated STEM to middle grade students and their math and science teachers.

**Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102) (Gen)**

(General) Grand Ballroom C, Westin Waterfront  
**LaMoine L. Motz** ([llmotz@comcast.net](mailto:llmotz@comcast.net)), 1988–1989 NSTA President, and Science Education/Facilities Specialist, White Lake, Mich.

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

Presider: LaMoine L. Motz

Is your district planning for new science facilities? Are you involved? If not, you need to get involved before it is too late. In an advanced course (an extension of Science Facilities 101, page 131), the NSTA author team of *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 agencies will also be presented. Handouts!

**Teaching Common Core State Standards, ELA Through Digital Science Interactive Notebooks (Gen)**

(Elementary–High School) Grand Ballroom D, Westin Waterfront  
**Brenda Surber** ([surberscience@gmail.com](mailto:surberscience@gmail.com)) and **Liz Brose**, Keller Middle School, Las Vegas, Nev.

The NGSS and CCSS, ELA come together through the use of digital interactive notebooks. Bring your iPad!

**What Makes an Effective Engineering Curriculum? (Gen)**

(Elementary) Grand Ballroom E, Westin Waterfront  
**Kristin Sargianis** ([ksargianis@mos.org](mailto:ksargianis@mos.org)), Museum of Science, Boston, Mass.

What pieces are necessary to build a successful integrated engineering curriculum for elementary students? Experience an engineering challenge and then discuss and evaluate the “critical components” of effective, integrated engineering curricula.

**2:00–3:00 PM Exhibitor Workshop**  
**Inquiry-based College Science Texts for the Next Generation of Students and Teachers (Phys)**

(College) 156C, BCEC

Sponsor: It’s About Time

**Presenter to be announced**

Let us introduce you to our college science programs—Physics and Everyday Thinking, Physical Science and Everyday Thinking, and Learning Physical Science—designed for a general education college science course or an inservice program for practicing elementary or middle school teachers, and focused on the theme of interactions in physical science.

**2:00–3:30 PM Exhibitor Workshops**  
**Hands-On Science with Classroom Critters (Bio)**

(Grades K–12) 102A, BCEC

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.

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

(Grades 6–12) 102B, BCEC

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!

**STEM and Common Core State Standards K–5 (Gen)**

(Grades K–5/Administrators) 103, BCEC

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Provide your STEM instructors with engaging, innovative ideas for integrative teaching. Experience the power of inquiry-based instruction infused with *Common Core State Standards* that leads to an optimal learning environment. Learn about these important components: essential questioning, *Common Core State Standards*, and assessment.

**SPARKvue: Sensor-based Science with Data Sharing for Your iPad—Free Sensor Set for Five Attendees!****(Gen)***(Grades K–12)**104A, BCEC*

Sponsor: PASCO scientific

**Andy Spoone**, PASCO scientific, Roseville, Calif.

Explore SPARKvue—data collection and analysis software for iPad, Android, Chromebook, Mac, and PC environments. SPARKvue is an integrated learning environment that combines sensor-based data collection with an intuitive set of display and analytical tools and now supports real-time data and file sharing. Experience the ideal environment for incorporating NGSS science and engineering practices. Five lucky attendees will win a 50th Anniversary Sensor Pack—a \$600 value!

**Biology for NGSS: A New Approach for a New Program****(Bio)***(Grades 9–12)**104B, BCEC*

Sponsor: BIOZONE International

**Richard Allan** ([richard@biozone.co.nz](mailto:richard@biozone.co.nz)), BIOZONE International, Hamilton, New Zealand

BIOZONE's newest student workbook has been written from first principles to engage young biology students while addressing the specific requirements of the NGSS. A highly visual, concept-based approach around the four life science disciplinary core ideas provides a thematic framework and addresses crosscutting concepts. Attendees receive FREE books.

**Explore NGSS Practices of Science and Engineering and Problem Solving Through Racing****(Phys)***(Grades 9–12)**104C, BCEC*

Sponsor: LAB-AIDS, Inc.

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

Problem solving and modeling are learned skills. Join us to explore them with activities from Ten80's Student Racing Challenge: STEM Program from LAB-AIDS. You'll maximize the power of electric radio-controlled vehicles through data collection and graphing. You'll then apply this content to maximize torque through gearing, apply Newton's laws of motion, and use battery chemistry to increase useful life and drive time...and you'll take away samples of NGSS-focused curriculum materials.

**Economical, Efficient, and Effective STEM Inquiry in Chemistry****(Chem)***(Grades 9–12)**105, BCEC*

Sponsor: Pearson

**Ed Waterman**, Retired Educator, Fort Collins, Colo.

Begin transformation to a student-centered STEM chemistry classroom. Implement safe, simple, easy-to-use, material-conserving, time-efficient, and effective inquiry activities in chemistry with safety and differentiation built in. Teach core content while fostering problem solving, creativity, and invention. Students design original experiments not possible with traditional methods.

**MakerScience and Arduino****(Gen)***(Grades 6–College)**106, BCEC*

Sponsor: SparkFun Electronics

**Brian Huang** ([brian.huang@sparkfun.com](mailto:brian.huang@sparkfun.com)), SparkFun Electronics, Boulder, Colo.

In this hands-on workshop hosted by SparkFun Electronics, learn to program a microcontroller and integrate making, building, and inventing into your classroom. Using simple electronics and programming tools, we will demonstrate how to integrate “play” with science and engineering to create authentic and lasting learning experiences.

**From DNA Structure to the Genomic Era****(Bio)***(Grades 6–College)**107A, BCEC*

Sponsor: Howard Hughes Medical Institute

**Karen Lucci**, Hopewell Valley Central High School, Pennington, N.J.**Eriko Clements**, Howard Hughes Medical Institute, Chevy Chase, Md.

Follow the trail of evidence that led James Watson and Francis Crick to discover the structure of the DNA molecule with an exciting new short film from HHMI. Jump forward 60 years to the present day to learn how genomic technologies are revolutionizing the study of complex diseases like autism and cancer. Participants will receive free classroom-ready lesson plans, DVDs, and our new poster “Genetic Mutations and Disease.”

**Stream Ecology: Slimy Leaves for Clean Streams****(Env)***(Grades 5–College)**107B, BCEC*

Sponsor: LaMotte Co.

**Christina Medved**, Stroud Water Research Center, Avondale, Pa.

Observe aquatic macroinvertebrate specimens, conduct experiments, learn classification skills, and calculate a biotic index in this hands-on introduction to stream ecology. Learn from Stroud Water Research Center scientists and receive takeaways. Door Prize!

**Do Your Students Like to Argue? Meet the NGSS and CCSS Using Argumentation (Gen)**

(Grades 5–8) 107C, BCEC

Sponsor: Sangari Active Science

**LeeAnn Sutherland**, The University of Michigan, Ann Arbor

Research reveals the importance of engagement in student learning. Middle schoolers engage when they actively investigate questions they care about, and then must marshal evidence to support their explanations and arguments. Come do a representative activity from the IQWST 6–8 curriculum that engages students in explanation and argumentation, is adaptable to your students, and addresses both NGSS and CCSS effectively.

**Building Human Anatomy in Clay—One Body System at a Time (Bio)**

(Grades 6–College) 108, BCEC

Sponsor: ANATOMY IN CLAY® Learning System

**Charles Roney**, Retired Educator, Haddonfield, N.J.

Learn comprehensive human anatomy by applying body systems built in clay onto an accurate, realistic-scale human model. The act of building from the inside out enhances traditional methods of learning anatomy. This approach provides a unique alternative—an active hands-on experience that reinforces learning and empowers participants with a strong sense of accomplishment—perfect for anatomy, biology, and health science educators.

**Introduction to Simple Machines (Phys)**

(Grades 3–6) 109A, BCEC

Sponsor: K’NEX Education

**Presenter to be announced**

Explore that common expression “simple machines make work easier” and investigate hands-on strategies to help students understand simple machine technologies. Build and use K’NEX® simple machine models and discover that simple machines make work easier by multiplying force and distance as well as changing the direction of force. STEM concepts related to simple machines that support the standards will be stressed.

**Perimeter Institute: Hands-On Wave-Particle Duality (Phys)**

(Grades 9–College) 109B, BCEC

Sponsor: Perimeter Institute

**Damian Pope** ([dpope@perimeterinstitute.ca](mailto:dpope@perimeterinstitute.ca)) and **Kevin Donkers** ([kdonkers@perimeterinstitute.ca](mailto:kdonkers@perimeterinstitute.ca)), Perimeter Institute, Waterloo,

The wave-particle duality is one of the deepest mysteries of quantum mechanics. Come explore hands-on activities that

introduce students to this vitally important concept in the quantum world. The Challenge of Quantum Reality educational resource was designed by experienced educators in collaboration with Perimeter Institute researchers.

**Wait! Were the Chips I Ate Genetically Modified? (Bio)**

(Grades 10–College) 150, BCEC

Sponsor: Edvotek Inc.

**Danielle Snowflack**, **Jack Chirikjian** ([info@edvotek.com](mailto:info@edvotek.com)), and **Tom Cynkar**, Edvotek Inc., Washington, D.C.

It is difficult to determine which products in your grocery store contain genetically modified ingredients because the FDA does not require this information on the label. In this workshop, participants extract DNA from common snack foods like Fritos™ and soy chips. Using the Polymerase Chain Reaction and agarose gel electrophoresis, we will determine which snacks contain genetically modified ingredients. Receive a free 4GB flash drive and entry into a T-shirt drawing at the end of the workshop.

**Science Gnus for Teachers—Famous Scientists, STEM, and the NGSS (Gen)**

(Grades K–8) 151A, BCEC

Sponsor: Delta Education/School Specialty Science

**John Cafarella**, Consultant, Canadensis, Pa.

The NGSS and STEM are there in the fascinating stories of scientists, their discoveries, and the science and engineering practices used. We’ll make connections through FOSS 3rd edition activities and a bit of Delta Science. These are science stories you can use “on Monday.” Liberal doses of Science Gnus humor, too.

**Wind Turbine: A STEM Approach to Science Concepts (Phys)**

(Grades 5–12) 151B, BCEC

Sponsor: CPO Science/School Specialty Science

**Scott Eddleman** and **Nathan Olsson**, CPO Science/School Specialty Science, Nashua, N.H.

Explore energy transformations, electricity, and magnetism through hands-on experiences. Use the engineering cycle to design a working model of a wind turbine. Build, test, and revise your model so that it generates as much power as possible. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.



**Asteroid! Will Earth Be Hit Again? (Gen)**

(Grades 5–8) 152, BCEC

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

Earth has been hit in the past, but what lies ahead? Using data from the Moon, we will calculate the frequency of impacts and consider implications for Earth. We'll discuss how these questions guide students' exploration, and overview strategies, content, materials, and NGSS connections in the revised FOSS Planetary Science Course.

**Investigating Renewable Energy with KidWind and Vernier (Phys)**

(Grades 7–College) 153A, BCEC

Sponsor: Vernier Software & Technology  
**David Carter** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Learn how you can incorporate the principles of the NGSS science and engineering practices into lessons focusing on renewable energy using KidWind Wind Experiment Kits and Vernier data-collection technology. These hands-on activities, appropriate for middle school and high school students, embody the spirit of STEM education through this highly relevant topic.

**iPad and Wireless Sensors with Vernier (Gen)**

(Grades 3–College) 153B, BCEC

Sponsor: Vernier Software & Technology  
**Verle Walters** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how you can use Vernier sensors, including our new Go Wireless Temp, to support science inquiry in classrooms using iPads. This technology empowers students to collaboratively collect and independently analyze their data.

**Immersive Digital Environments for a Deeper Understanding of Disciplinary Core Ideas (Gen)**

(Grades 6–8) 153C, BCEC

Sponsor: Amplify Education, Inc.  
**Jennie Kristoffersen** ([jkristoffersen@amplify.com](mailto:jkristoffersen@amplify.com)), Amplify Education, Inc, Brooklyn, N.Y.

Learn ways to transition to a model that uses dynamic digital assets for 21st-century science learning that meet you where you are and help optimize your digital classroom experi-

ence. This workshop will showcase several digital assets that motivate students to explore, investigate, and master the fascinating world of the cell.

**Top FREE STEM Resources for Your Classroom (Gen)**

(Grades K–12) 154, BCEC

Sponsor: Siemens We Can Change the World Challenge  
**Kyle Schutt**, Discovery Education, Silver Spring, Md.

Brought to you in coordination with Discovery Education and the Siemens Foundation, this session targets K–12 educators looking to expand their opportunities and increase their knowledge of STEM integration strategies. We will explore 10 dynamic websites that can help you make STEM a part of your class every day, including the Siemens STEM Academy ([www.siemensstemacademy.com](http://www.siemensstemacademy.com)) and We Can Change the World Challenge ([www.wecanchange.com](http://www.wecanchange.com)). You will walk away with a wealth of free tools and resources for your classroom. And best of all, you'll learn how to connect to our community of like-minded, STEM-focused educators. This is a workshop not to be missed!

**STEM Engineering for Middle School and High School with TeacherGeek Rubber Band Racer (Phys)**

(Grades 6–12) 156A, BCEC

Sponsor: Ward's Science  
**Kelly Smith**, Ward's Science, Rochester, N.Y.

Discover a new way to teach engineering in a friendly competition with other teachers. In this "make and take" workshop, you'll design, build, test, and modify a machine, then compete in a race to the finish line. Bring your completed product back to your classroom and continue the fun!

**Bring the World of Digital Learning to Your Classroom with WeDo (Gen)**

(Grades 2–5) 156B, BCEC

Sponsor: LEGO® Education  
**Kelly Reddin**, LEGO Education, Pittsburg, Kans.

LEGO Education WeDo is a motivational hands-on tool that enhances learning in literacy, math, engineering, and science and demonstrates how digital technology plays an active role in students' everyday lives. Experience how this differentiated and substantial solution stimulates both the teaching and learning process, and can be applied to everyday lessons.



**Flinn Scientific Presents “How to Design a Safe and Efficient Science Laboratory” (Gen)**

(Grades 5–College) 258A, BCEC

Sponsor: Flinn Scientific, Inc.

**Greg Chyson** (*gchyson@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Get answers to all your laboratory design questions! We will share design priority tips and safety information gathered from years of experience helping science teachers plan their laboratory construction and remodeling projects! You’ll learn what features to include in your laboratories and what common mistakes to avoid.

**2:00–5:00 PM Short Course**

**Ocean Plastic Pollution: Issues and Solutions (SC-5)**

(Middle Level) Tremont, Marriott Copley Place

**Tickets Required; \$37**

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

For description, see page 53.

**2:00–6:00 PM Short Course**



**Pathways to STEM: Putting Roots in Literature to Enhance Science Instruction (SC-6)**

(Preschool–Middle Level) St. Botolph, Marriott Copley Place

**Tickets Required; \$85**

**Susannah Richards** (*richardss@easternct.edu*) and **Janelle B. Day** (*dayj@easternct.edu*), Eastern Connecticut State University, Willimantic

**Jennifer M. Brown** (*jbrown@bankstreet.edu*), Bank Street College Center for Children’s Literature, New York, N.Y.

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

**Melissa Stewart** (*melissa@melissa-stewart.com*), Children’s Book Author, Acton, Mass.

**Bob “Science Bob” Pflugfelder**, Author/Science Entertainer, *www.sciencebob.com*, Watertown, Mass.

For description, see page 53.

**2:30–4:00 PM Presentation**

**SESSION 1**

**PDI OELA Pathway Session: Using Parent-Student-Teacher Relationships to Enhance ELLs’ Science and Language Learning (Gen)**

(General) 204 A/B, BCEC

**Cory Buxton** (*buxton@uga.edu*), The University of Georgia, Athens

Engage in interactive science and language activities from the “Steps to College Through Science” bilingual family workshops that were developed as part of the NSF-funded Language-Rich Inquiry Science with English Language Learners (LISELL) project. Emphasis will be placed on how parent-student-teacher relationships can be nurtured and developed in ways that can enhance science learning, language learning, and college and career readiness for middle school and high school English language learners. Join us to learn about and plan your own “Steps to College Through Science” family workshop.

**3:00–5:00 PM Workshop**

**PDI NGSS Pathway Session: Developing Performance Assessments Linking the NGSS and the CCSS (Gen)**

(General) 206 A/B, BCEC

**Mariel Milano** (*mariel.milano@ocps.net*), Orange County Public Schools, Orlando, Fla.

**Vanessa Westbrook** (*vanedani\_61@yahoo.com*), Westbrook Consulting, Austin, Tex.

**Betsy O’Day** (*boday@hallsville.org*), Hallsville Intermediate School, Hallsville, Mo.

Come join members of the *Next Generation Science Standards* Writing team in exploring exemplar performance tasks that integrate the *Next Generation Science Standards* and *Common Core State Standards*, in English language arts and mathematics. Then, develop sample tasks that are instantly usable.

**3:00–6:00 PM Meeting**

**Council for Elementary Science International (CESI) Board Meeting**

(By Invitation Only) *Alcott, Westin Waterfront*  
 Visit [www.cesiscience.org](http://www.cesiscience.org) for more information.

**3:00–6:00 PM Short Course**

**Engaging Children Ages 3 to 5 in Science (SC-7)**

(Preschool–Kindergarten) *Boylston, Marriott Copley Place*  
**Tickets Required; \$51**

**Jeff Winokur** ([jwinokur@wheelock.edu](mailto:jwinokur@wheelock.edu)) and **Karen Worth** ([kworth@wheelock.edu](mailto:kworth@wheelock.edu)), Wheelock College, Boston, Mass.  
 For description, see page 53.

**3:00–6:00 PM Workshop**

**PDI BSCS Pathway Session: Analyzing and Interpreting Data in the Classroom (NGSS Practice 4) (Gen)**

(General) *203, BCEC*  
**Betty Stennett** and **Brooke Bourdélat-Parks** ([bbparks@bscs.org](mailto:bbparks@bscs.org)), BSCS, Colorado Springs, Colo.

This session will deepen your understanding of NGSS Practice 4: Analyzing and Interpreting Data in the Classroom. Engage in an inquiry-based activity that requires you to use data to make sense of science ideas. The session will also focus on what the use of this practice looks like in the classroom and how the use of this practice can help students learn science concepts.



*B*y invitation only, join your fellow NSTA Life Members for a breakfast filled with memories as well as meaning. Catch up with old friends, make new ones, trade war stories, and discuss ways to share your talents and vitality with the science education community.

*NSTA Life Members' Buffet Breakfast*

Sunday, April 6

7:00–8:00 AM

*The Westin Boston Waterfront, Douglass*

Tickets are required (M-10: \$50) and, if still available, must be purchased at the NSTA Registration Area by 3:00 PM on **Saturday, April 5**.

*Participation is limited to NSTA life members only.*



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



**Engineering and Science: Strengthening the Partnership (Gen)**

(General)

210C, BCEC

*Sponsored by Shell*



**Yvonne M. Spicer** (*yspicer@mos.org*), Vice President for Advocacy and Educational Partnerships, National Center for Technological Literacy, Museum of Science, Boston, Mass. @DrYvie

Presider: Shawna Young, Massachusetts Institute of Technology, Cambridge

The synergy of science and engineering is becoming increasingly important in supporting teachers in the classroom as well as building effective project- and problem-based learning environments. The inclusion of Engineering Design in the *Next Generation Science Standards* is indicative of this need. Join Yvonne Spicer as she offers practical applications and strategies to reinforce this connection for K–12 educators and administrators.

*Yvonne Spicer is a national and international speaker and advocate for precollege STEM education. She was honored in 2009 by Mass High Tech, the journal of New England technology, as one of 10 “Women to Watch.”*

*In her role at the Museum of Science, Boston, she advocates for the museum’s K–12 curricula—Engineering is Elementary®, Building Math, and Engineering the Future®, and she directs the Gateway Project, which originated in Massachusetts and is being replicated across the U.S. as a model to build leadership capacity for technological literacy.*

*With expertise in technology and engineering education standards development, assessment, and strategic school leadership, Yvonne served on the technology and engineering steering committee for the frontrunner of the first national assessment for technology and engineering in the 2014 National Assessment of Educational Progress (NAEP). She is also an advisor to the National Governors Association and served on the technology and engineering design team for the NRC Framework. In January 2010, she was appointed to the Massachusetts Governor’s STEM Advisory Council as cochair of the council’s teacher development committee.*

**3:30–4:30 PM Reception**

**Dorothy K. Culbert Chapter and Associated Groups Social**

*Pacific A/B, Renaissance*

Are you a volunteer leader or staff of an NSTA Chapter or associated group? Attend this networking session to learn more about what NSTA is doing to support your organization, share information, and network with other stakeholders. Refreshments provided.

**3:30–4:30 PM Special Session**

**Building a Collaborative Effort Between Corporate Entities and Educators: How Problem-Based Learning Can Increase Awareness of STEM Careers (Gen)**

(General)

*Pacific D/E, Renaissance*

Please join us as invited representatives from the Bayer USA Foundation, Dow Chemical Company, Honda Foundation, and Lockheed Martin Corporation participate in a discussion focusing on ways science educators can effectively collaborate with corporate entities on problem-based learning topics to increase awareness of STEM careers.

David L. Evans, NSTA Executive Director, will serve as moderator for this panel. He will ask questions that will stimulate discussion and foster thought around the role corporate scientists/engineers play in the teaching and learning of K–16 STEM content.



**3:30–4:30 PM Presentations****SESSION 1****Enhance, Engage, Engineer! (Gen)***(Elementary–Middle Level)* 158, BCEC**Barbara Mammen** (*bmammen@rider.edu*), Rider University, Lawrenceville, N.J.

Enhance students' science content knowledge and utilization of science practices through engineering design activities that engage them in model-making, constructing scientific explanations, and designing solutions.

**SESSION 2 (two presentations)***(General)* 160A, BCEC**Using e-Books (Lab Safety E-book), Other Tools, and Apps in the Science Classroom (Chem)****Christine Pfaffinger** (*cpfaffinger@d125.org*) and **Jin Kyung Hwang** (*jhwang@d125.org*), Adlai E. Stevenson High School, Lincolnshire, Ill.

E-books can be developed for any lesson in any curricular area. Using e-books in the science classroom creates an atmosphere of student engagement with technology integration. The lessons allow students to use technology to learn science in new and more interactive ways.

**Making the Leap to a Digital Course (Chem)****Mary H. Chuboff** (*mchuboff@athensacademy.org*), Athens Academy, Athens, Ga.

Join me for a demonstration on how to gather resources into a single, easily updated electronic space that can make students, teachers, and parents willing to toss the textbook!

**SESSION 3****Transition from Text to Inquiry (Gen)***(Elementary–Middle Level)* 160C, BCEC**Erin Eckholt**, College View Elementary School, Council Bluffs, Iowa**Jessica Rosenberg** (*jrosenberg@cbcsd.org*), Wilson Middle School, Council Bluffs, Iowa**Kristi Kenny** (*kkenny@cbcsd.org*), Edison Elementary School, Council Bluffs, Iowa

During this session, participants will learn how to make the transition from textbook-driven instruction to inquiry and Problem-Based Learning.

**SESSION 4****Community-based Problem Solving: Bringing the Community into the Classroom (Gen)***(Middle Level)* 252A, BCEC**Brian P. Short** (*bshort@nsta.org*), Director, Science Education Competitions, NSTA, Arlington, Va.

Many ideas and concepts that are taught in the middle school science classroom are quickly forgotten because students don't have a context into which they can put them. Using community-based problems to give students that context not only increases the chances of students retaining the information, it also gives them a sense of civic duty and civic pride. We will discuss how to use community-based problems to strengthen student understanding and retention and give you some examples of success stories from other middle school science classes around the country. In addition, we will provide you with information about the free STEM competition eCYBERMISSION, and explain how it can help you integrate community-based problem solving into your classroom.

**SESSION 5****Use Crickets to Introduce Scientific Investigations to Elementary Students (Gen)***(Elementary)* 252B, BCEC**Jennifer J. Sirockman** (*jsirock1@mix.wvu.edu*) and **Kyle L. Greenleaf**, West Virginia University, Morgantown

Presider: **Brooke Harvey** (*baharvey@mix.wvu.edu*), West Virginia University, Morgantown

Hear how elementary students develop scientific investigations using live crickets to collect data in order to decide if generalizations can be made.

**SESSION 6** **NSTA Press® Session: Uncovering Students' (and Teachers') Ideas About Stars and the Universe (Earth)***(Elementary–High School)* 254A, BCEC**Page Keeley** (*pagekeeley@gmail.com*), 2008–2009 NSTA President, Jefferson, Maine**Donna L. Young** (*donna@aavso.org*), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Experience how a variety of assessment probes and techniques can be used to uncover students' and teachers' ideas about stars and the universe and discuss instructional implications for the Earth and space NGSS disciplinary core ideas related to stars and the universe.

SESSION 7

**Project-based Science (Gen)**  
(Middle Level) 255, BCEC

**Debra Guyette** (*debra.guyette@meridenk12.org*) and **Marc A. Cellini** (*marc.cellini@meridenk12.org*), Lincoln Middle School, Meriden, Conn.

Using projects to teach science shows real-world connection and allows for creativity and inquiry-based learning, all while taking advantage of available technology.

SESSION 8

**Teaching Climate and Energy: The CLEAN Collection of Peer-reviewed Climate and Energy Learning Resources (Earth)**

(Middle Level–High School) 256, BCEC

**Tamara Ledley** (*tamara\_ledley@terc.edu*) and **Marian Grogan** (*marian\_grogan@terc.edu*), TERC, Cambridge, Mass.

Presider: Tamara Ledley

CLEAN stands for Climate Literacy and Energy Awareness Network. The CLEAN collection of climate and energy learning resources helps you teach with confidence. See materials, teaching tips, and standard alignments at *cleanet.org*. Find out more!

SESSION 9

**Using Student-generated Paper Slide Videos to Promote Science Literacy and Argumentation (Bio)**

(High School) 257A, BCEC

**Rachel A. Beattie** (*rcreative8@gmail.com*), Lincoln-Way East High School, Frankfort, Ill.

Attention will be paid to examples of student paper slide videos showing science concepts and data-driven arguments as well as how to engage and lead students through the process.

SESSION 10

**iPads and Literacy—Where Technology Meets the Textbook (Bio)**

(Elementary–High School) 257B, BCEC

**Andrew J. Smith**, East Rowan High School, Salisbury, N.C.

Discover how iPads foster literacy through engagement and research-supported strategies. This session will demonstrate apps and student examples that increase literacy and scientific knowledge.

SESSION 11

**Compost: The “Rot” Thing for Our Earth (Gen)**  
(Preschool–Elementary) 259A, BCEC



**Fred Estes** (*festes@nuevaschool.org*), The Nueva School, Hillsborough, Calif.

Build Earth awareness and activism in early childhood students through the use of classroom composting and gardening to integrate science, math, and social studies.

SESSION 12



**The World of Google in Science (Gen)**  
(General) 259B, BCEC

**Ben Smith** (*ben@edtechinnovators.com*) and **Jared Mader** (*jared@edtechinnovators.com*), York, Pa.

Just when you thought you knew everything about Google... come learn the hidden gems that are found using Google to improve science education.

SESSION 13



**Becoming Teacher Leaders Through Curriculum Development: Collaborating to Design and Implement the Science Youth Action Research Curriculum (Bio)**

(General) 260, BCEC

**Megan M. Leider** (*meganleider@gmail.com*), St. Rita of Cascia High School/Loyola University Chicago, Ill.

A secondary science teacher and elementary teacher educator outline their curriculum—Science Youth Action Research—and discuss how its development promoted their growth as teacher leaders.

SESSION 14

**Science, Social Justice, and Social Media: The Perfect Combination (Earth)**

(General) 261, BCEC

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

Find out how students used social media to tell stories on topics such as Superstorm Sandy and equal access to water.

SESSION 15

**Comic Strip Science (Gen)**  
(General) Brewster, Renaissance

**Phyllis Katz** (*pkatz15@gmail.com*), Retired Educator, Silver Spring, Md.

Gary Larson put the “Far Side” of science in many of his strips. We can bring science closer as we figure out what’s so funny.

**SESSION 16** (two presentations)*(High School–College)**Caspian, Renaissance***SCST Session: Using the Primary Scientific Literature in Your Science Class (Bio)****Lynn M. Diener** (*dienerl@mtmary.edu*), Mount Mary College, Milwaukee, Wis.

Join me as I highlight different methods for effectively using the primary scientific literature in your classroom from introductory level up to senior college level.

**SCST Session: Teaching and Learning the Language of Chemistry and Biology (Gen)****Karen Huffman** (*kshuffmankelly@genesee.edu*), Genesee Community College, Batavia, N.Y.

Many of the students taking biology and chemistry have difficulty transferring information and vocabulary from one course to the other.

**SESSION 17** (two presentations)*(General)**Pacific F, Renaissance***NARST Session: Role-Playing STEM Professionals: A Game-like Approach Based on Video Game Research (Gen)****Carol A.B. Rees** (*crees@tru.ca*), Thompson Rivers University, Kamloops, B.C., Canada

Let me introduce you to a game-like approach to STEM curricula for the classroom. The design is based on research of learning principles in video games.

**NARST Session: Creating School Scientific Communities Among Urban Refugee ELL Populations (Gen)****Joseph A. Johnson** (*jjohnson@edinboro.edu*), Edinboro University of Pennsylvania, Edinboro

This study examined aspects of multimodal science inquiry teaching strategies using technology with a specific group of students learning English as their second language.

**SESSION 18****Make a Difference! Start an NSTA Student Chapter (Gen)***(College)**Pacific G/H, Renaissance***Mary E. Hatton** (*mhatton@comcast.net*) and **Melanie Melanson**, Endicott College, Beverly, Mass.

Our NSTA Student Chapter supports the professional growth of preservice teachers. Come learn about what we do and our impact on communities, families, and future teachers.

**SESSION 19****Failing at Poetry: The Best Staff Development for Science Teachers (Gen)***(Middle Level–High School)**Constitution, Seaport***Lawrence C. McAfoos** (*mcafoosl@lmsd.org*) and **Leslie Pratt** (*prattl@lmsd.org*), Lower Merion High School, Ardmore, Pa.

Discussion centers on a “course swap” in which a chemistry teacher took a poetry class and the English teacher studied gas laws. Hear the lessons learned and how all teachers could benefit from this approach to staff development.

**SESSION 20****A Prescription for Project Based Learning: A New Health-centered Charter School (Gen)***(High School)**Flagship A, Seaport***Tomas Atencio-Pacheco** (*taplu1@gmail.com*), Health Leadership High School, Albuquerque, N.Mex.

Our whole school is based on PBL! Most PBL trainings you go to give you big ideas—now come see how to put it into practice.

**SESSION 21** (two presentations)*(Middle Level–High School)**Lighthouse I, Seaport***Practical iPads: A Workflow Model (Gen)****Stacia Perry-Eaton** (*seaton@tampaprep.org*), Tampa Preparatory School, Tampa, Fla.

Understanding how to assign, collect, and grade assignments on iPads can be a daunting task. Let me show you a workflow model that actually works.

**Increase Online Student Collaboration with Google Docs and Apps for Education (Gen)****Michael J.V. Lazaroff** (*mjvlazaroff@gmail.com*), Staples High School, Westport, Conn.

No more small sample sizes! Google Docs can compile and share class data, help students collaborate online on labs and projects, and so much more!

**SESSION 22**

**The DuPont Challenge<sup>©</sup> as a Research Curriculum (Gen)**

(High School) Plaza A, Seaport

**Joyce T. Barry** ([jbarry@pobschools.org](mailto:jbarry@pobschools.org)), **Francine Moustakalis** ([fmoustakalis@pobschools.org](mailto:fmoustakalis@pobschools.org)), and **MaryLou O'Donnell** ([modonnell@pob.k12.ny.us](mailto:modonnell@pob.k12.ny.us)), Plainview-Old Bethpage John F. Kennedy High School, Plainview, N.Y.

Prisider: MaryLou O'Donnell

The Plainview-Old Bethpage John F. Kennedy High School Independent Research program has been very successful in using The DuPont Challenge as the main focus for their grade 9 course curricula. Using The DuPont Challenge as the guide, students learn how to choose a topic of personal interest, research the web, find resources, communicate with scientists, and write an essay to communicate their findings. We will share how our year progresses and how we have found the skills to help our students succeed in the future.

**SESSION 23**

**Introducing the New Exploratorium (Gen)**

(Middle Level–High School) Plaza B, Seaport

**Linda S. Shore** ([lshore@exploratorium.edu](mailto:lshore@exploratorium.edu)) and **Lori Lambertson** ([loril@exploratorium.edu](mailto:loril@exploratorium.edu)), Exploratorium, San Francisco, Calif.

Get a peek inside the new Exploratorium, see the new exhibits, and try out some activities based on the new collections that reflect the spirit of the NGSS.



**SESSION 24** (two presentations)

(General) Burroughs, Westin Waterfront  
**Polar Educators International (PEI): A Network of Teacher Leaders in Polar Science (Gen)**

**Sarah Bartholow** ([sbartholow@arcus.org](mailto:sbartholow@arcus.org)), Arctic Research Consortium of the United States, Fairbanks, Alaska  
Professional networks of teachers and scientists catalyze the leaders and sustain their success. Join the PEI network; excel in polar science and climate change education.

**Using Classroom Observation Protocols for Data-driven Feedback and Professional Development (Gen)**

**Michelle K. Smith** and **Susan McKay** ([susan\\_mckay@umit.maine.edu](mailto:susan_mckay@umit.maine.edu)), University of Maine, Orono

**Andrew Ford**, Ellsworth Elementary and Middle School, Ellsworth, Maine

**Elizabeth A. Haynes** ([bhaynes@rsu20.org](mailto:bhaynes@rsu20.org)), Troy Howard Middle School, Belfast, Maine

Discover this unique professional development of teachers observing university courses through a team-based, protocol-guided process that fosters rich discussion of classroom practice, teaching, and learning.

**SESSION 25**

**Meeting the Challenge of Change: Integrating the NGSS and CCSS Mathematics in Middle Schools for All Students (Gen)**

(Middle Level/Supervision) Carlton, Westin Waterfront

**Melissa Dean** and **Suzan E. Morris**, Mobile Area Education Foundation, Mobile, Ala.

How does one urban, high-needs district tackle universal curriculum, instruction, and systemic issues? Explore insights and results from an NSF-funded integrated STEM program for middle schools.

**SESSION 26**

**CSSS Session: Unique NGSS-focused Webinars from a Collaborative Partnership Model for State Science Teachers and Principals Associations (Gen)**

(Supervision/Administration) Commonwealth C, Westin Waterfront

**Gwen Pollock** ([gpollock@casscomm.com](mailto:gpollock@casscomm.com)), Illinois Science Teachers Association, Sherman

**Jean Smith** ([jean@ilprincipals.org](mailto:jean@ilprincipals.org)), Illinois Principals Association, Springfield

An innovative collaboration of colleagues from the Illinois Science Teachers Association and Illinois Principals Association is sharing insights, short clips, and mechanics for a series of NGSS-connected webinars (for a 10-state consortium) for teachers and administrators. Twenty-plus short webinar segments focus on NGSS connections to innovative Danielson Rubrics and more...plus discussion and Q&A.



**SESSION 27****Infusing Practices into Lesson Sequences (Gen)***(Supervision/Administration) Griffin, Westin Waterfront***Diane Johnson** (*diane.johnson@uky.edu*) and **Susan Mayo***(susan.mayo1961@att.net)*, University of Kentucky, Lexington

How can we assess current lessons to determine how they might meet the NGSS and where they might fall short? How can we systematically infuse practices to support student learning of science content, while deepening understanding of the practices? Join us and experience a process that can be applied to a range of resources that can assist you in infusing practices effectively into a lesson sequence.

**SESSION 28****Connecting Research Institutions to K–12 Educators (Gen)***(General) Hancock, Westin Waterfront***Michael J. Zeman** (*mjz120@psu.edu*), Penn State, University Park, Pa.

Let's explore what universities and teachers can do to build a bridge between academic and K–12 faculty/students using STEM programs and assessments that can effectively produce critical-thinking skills in the next generation of scientists. The programs at Penn State will be used as an example to open further discussion and ideas.

**SESSION 29****Conference Tips for First-Timers (Gen)***(General) Harbor Ballroom I/II, Westin Waterfront***NSTA Board and Council**

Feeling overwhelmed by all there is see and do at an NSTA conference on science education? Join us for an interactive and participatory (fun!) walk through the conference program book. By the end of the session, we guarantee you'll know just how to get the most from your conference experience.

**SESSION 30****Better Assessment Through Four Essential Questions (Gen)***(General) Harbor Ballroom III, Westin Waterfront***Arthur Eisenkraft** (*eisenkraft@att.net*), 2000–2001 NSTA President, and UMass Boston, Mass.

The NGSS addresses the coordination of science and engineering practices, disciplinary core ideas, and crosscutting concepts. By focusing on four essential questions: What does it mean? How do we know? Why do we believe? Why should I care?—we can ensure that science is not seen as a body of facts to be memorized, just as the NGSS requires.

**SESSION 31****Enhancing the Wonder of Science with Children's Literature (Gen)***(General) Lewis, Westin Waterfront***Sally C. Mayberry**, Florida Gulf Coast University, Fort Myers

This session was created to enhance science understanding using effective samples of children's literature. This integration promotes teaching science with confidence to ensure success in science for the next generation.

**SESSION 32****Great Science Lesson = Presidential Award + \$10,000 (Gen)***(General) Stone, Westin Waterfront***Marilyn Suiter**, National Science Foundation, Arlington, Va.

Presidential Awardees (PAEMST) share how they each took a quality science lesson and turned it into a meeting with the President, \$10,000, and leadership opportunities.

**SESSION 33****Start an Academy That Integrates Real-World Engineering and Manufacturing (Gen)***(General) Webster, Westin Waterfront***Lara L. Sharp** (*larasharp2002@yahoo.com*), Lake Wales High School, Lake Wales, Fla.

Find out how a high school partnered with a local orange juice producer to develop an engineering/manufacturing academy.

### 3:30–4:30 PM Workshops

#### **NMEA Session: Schooling with Whales (Bio)**

(Elementary–Middle Level/Informal Ed.) 052 A/B, BCEC

**Robert Rocha** ([trocha@whalingmuseum.org](mailto:trocha@whalingmuseum.org)), New Bedford Whaling Museum, New Bedford, Mass.

Use whales and their kin to teach science, math, geography, plotting, and comprehension without having to be a cetacean expert. Activities and resources aplenty!

#### **Where to Start in Teaching Climate Science: The CLEAN Collection of Resources (Env)**

(General) 157C, BCEC

**Deb Morrison** ([2debmorrison@gmail.com](mailto:2debmorrison@gmail.com)) and **Anne U. Gold**, University of Colorado, Boulder

The CLEAN collection of a climate science–related lesson, video, and other educational resources was developed to provide free, easy-to-access resources for teachers.

#### **Teaching Common Core State Standards, ELA Using Project–Based Inquiry Science (Phys)**

(Middle Level) 159, BCEC

**David McKinney** ([mckinneyscience@gmail.com](mailto:mckinneyscience@gmail.com)), Isaac Newton Middle School, New York, N.Y.

Encounter techniques to seamlessly incorporate CCSS ELA into an inquiry-based science curriculum.

#### **Crickets, Wolves, and Whales—How Young Children Can Understand Natural Selection (Bio)**

(Elementary) 160B, BCEC

**Stephanie Sisk-Hilton** ([stephsh@sfsu.edu](mailto:stephsh@sfsu.edu)), San Francisco State University, San Francisco, Calif.

Experience hands-on activities and thought experiments that promote understanding of natural selection for early elementary school students (K–4).

#### **Survivor: Kenzo Isle (Env)**

(Middle Level) 161, BCEC

**Kirsten Matsumoto** ([kmatsumoto@stevensonschool.org](mailto:kmatsumoto@stevensonschool.org)), Stevenson School, Carmel, Calif.

Students apply STEM skills to save the inhabitants of a fictional volcanic island in the Ring of Fire.

#### **Take a CosmoQuest Adventure in Geology! (Earth)**

(Elementary–Middle Level) 162A, BCEC

**Kathy Costello**, Southern Illinois University, Edwardsville  
Take your class on inquiry adventures in geology. NASA space probe data and hands-on activities based on the NGSS will focus your students on doing real science!

#### **Starting Out with STEM (Gen)**

(Preschool–Elementary) 162B, BCEC

**Johannes Strobel**, Texas A&M University, College Station  
**Sara Delano Moore** ([smoore@hand2mind.com](mailto:smoore@hand2mind.com)), ETA hand-2mind, Vernon Hills, Ill.

Experience a hands-on STEM lesson for young learners in this interactive workshop. Leave with practical tools for beginning implementation of STEM.

#### **The Use of Literacy Instructional Tools to Promote Deep Understanding of Complex Scientific Texts (Bio)**

(High School) 205A, BCEC

**Gwynn Crittenden** ([gcrittenden@knights.ucf.edu](mailto:gcrittenden@knights.ucf.edu)), University of Central Florida, Orlando

**Carmen Woodhall** ([woodhallc@ecu.edu](mailto:woodhallc@ecu.edu)), East Carolina University, Greenville, N.C.

Presenter: Carmen Woodhall

Close reading will be used as a means of enhancing students' ability to identify, understand, and use key subject vocabulary in a complex high school anatomy text.

#### **Middle School Medicine (Bio)**

(Middle Level–High School) 205B, BCEC

**Julie Boyk** ([julie.boyk@msichicago.org](mailto:julie.boyk@msichicago.org)), **Leslie M. Sadowski-Fugitt** ([leslie.sadowski-fugitt@msichicago.org](mailto:leslie.sadowski-fugitt@msichicago.org)), and **Jason Dupuis** ([jason.dupuis@msichicago.org](mailto:jason.dupuis@msichicago.org)), Museum of Science and Industry, Chicago, Ill.

Ever wonder how to incorporate the health sciences into your middle/high school curriculum? Join us as we take a step into the world of an ER resident and learn how to assess vital signs, diagnose patients, and use medical procedures and technology. Free lesson plans and prizes will be given away!

#### **Engineering Education with NOVA's "Making Stuff" Series (Phys)**

(Middle Level–High School) 205C, BCEC

**Maiken C. Lilley** and **Scott C. Asakawa** ([scott\\_asakawa@wgbh.org](mailto:scott_asakawa@wgbh.org)), WGBH Educational Foundation, Boston, Mass.

Discover how to teach engineering practices through stories of innovation from NOVA.

**Through My Window: Using Narrative as a Digital Learning Environment to Engage Youth in Engineering** (Gen)

(Elementary–Middle Level/Informal Ed.) 207, BCEC

**Beth McGinnis-Cavanaugh** (*bmcginnis-cavanaugh@stcc.edu*), Springfield Technical Community College, Springfield, Mass.

Informal educators—explore innovative engineering education for youth, especially girls. Join me for a hands-on demo of multimedia activities and a teacher’s guide. Complement existing STEM programs with new ideas!

**Literacy Strategies That Empower Student Scientists** (Gen)

(Elementary–Middle Level) 211, BCEC

**Wendy DeMers** (*zydnew2@gmail.com*), E. Hynes Charter School, New Orleans, La.

Experience strategies that aid students in explaining their understanding of informational text by describing their observations and ideas and enhancing their science communication skills.

**Knowing What to Do When You Don’t Have the Answer: Modeling Science Practices** (Gen)

(Elementary) 212, BCEC

**Donald A. DeRosa** (*donder@bu.edu*), Boston University, Boston, Mass.

**Brenda Richardson** (*brichardson2@boston.k12.ma.us*), William Monroe Trotter Elementary School, Dorchester, Mass. Explore a framework to think with, discover with, and do science with your children.

**Bringing Fairy Tales to Life by Integrating Science Concepts** (Gen)

(Preschool–Elementary) 213, BCEC

**Angela L. Shorter** (*angela.shorter@trussvillecityschools.com*) and **Marcia N. Segers** (*marcia.segers@trussvillecityschools.com*), Paine Primary School, Trussville, Ala.

Through inquiry and exploration, immerse your students in hands-on/minds-on science activities connecting familiar fairy tales to their daily lives.

 **NSTA Press® Session: Science for All: Adapting Labs for Students with Learning Disabilities** (Phys)

(Middle Level) 253C, BCEC

**Ed Linz** (*erlinz@fjps.edu*), Retired Educator, Springfield, Va. Find out how a couple of physical science labs can be easily adapted to help students with learning disabilities succeed!

**The Mathematics of Bridging Design in STEM** (Gen)

(Elementary–Middle Level) 254B, BCEC

**Nicole Weber**, Lesley University, Cambridge, Mass.

The proposed project is a combined effort by Lesley University and local partners to break down the silos among mathematics, science, and engineering.



**The 4Cs and Science: Incorporating 21st-Century Learning and Innovation Skills into K–12 Curricula** (Gen)

(Elementary–High School) 258C, BCEC

**Linda L. Cronin-Jones** (*lcjones@coe.ufl.edu*), University of Florida, Gainesville

Experience how to incorporate key 21st-century learning and innovation skills (critical thinking, communication, collaboration, and creativity) into real-world humanitarian design science challenges.

**But I Teach High School Science, Not English Language!** (Gen)

(Middle Level–High School) Seaport Ballroom A, Seaport

**Susan E. Hartley** (*semumford-hartley@aps.k12.co.us*), Hinkley High School, Aurora, Colo.

Take part in a “cool” lesson and learn easy ways to incorporate writing and speaking practice into your science content lessons PAINLESSLY, so that your English language learner students become more proficient in English and science.

**Using Food in Science Education** (Gen)

(Middle Level–High School) Seaport Ballroom B, Seaport

**Mika J. Hunter** (*mikajhunter@gmail.com*) and **Emma Refvem** (*emma.refvem@dpsnc.net*), Riverside High School, Durham, N.C.

A delicious and hands-on approach to learning! This workshop will focus on engaging (and edible!) activities for use in biology and Earth science classes. Join us and make your own models.

**Effective Science Instruction for English Language Learners** (Gen)

(General) Commonwealth Ballroom A, Westin Waterfront

**Adrienne B. Somera** (*adrienne.somera@gmail.com*), Northwest Educational Service District 189, Anacortes, Wash.

Learn effective strategies that allow students with limited English proficiency to access grade-level science content. Examples from lessons in popular curricula will be shared.

**CSSS Session: Teaching Engineering Concepts and Skills—Beyond Activitymania (Gen)**

(General) Grand Ballroom D, Westin Waterfront

**John C. Olson** ([john.c.olson@state.mn.us](mailto:john.c.olson@state.mn.us)) and **Doug Paulson** ([doug.paulson@state.mn.us](mailto:doug.paulson@state.mn.us)), Minnesota Dept. of Education, Roseville

There are many engineering activities, but what are students actually learning? Explore instructional methods that combine the learning of science concepts and engineering skills. This session will support *Next Generation Science Standards* learning.

**Hands-On Education and Science Standards (Gen)**

(General) Grand Ballroom E, Westin Waterfront

**Nick Martinez** ([nmartinez@amnh.org](mailto:nmartinez@amnh.org)), American Museum of Natural History, New York, N.Y.

Experience fossil skull lab activities that meet the CCSS and the *Next Generation Science Standards*.

**3:30–4:30 PM Exhibitor Workshop**

**Project-based Science CyberPD for the 21st Century: A Panel Discussion of 24/7, Just-in-Time Professional Development (Gen)**

(Grades 6–8) 156C, BCEC

Sponsor: It's About Time

**Barbara Zahm** and **Ruta Demery**, It's About Time, Mount Kisco, N.Y.

**Susan Holveck**, Beaverton (Ore.) School District

Face-to-face professional development is not always possible or cost-effective, yet consistent and well-developed professional development is key to implementing a research-based curriculum. Experience and learn how you can effectively implement *Project-Based Inquiry Science* (PBIS), our innovative, cutting-edge Next Generation middle school science curriculum using PBIS CyberPD and an online learning community.

**3:30–5:00 PM Meetings**

**Science Matters Advisory Board Meeting**

Bering Boardroom, Renaissance

**The Science Teacher Advisory Board Meeting**

Georges, Renaissance

**Journal of College Science Teaching Advisory Board Meeting**

Mediterranean, Renaissance

**3:30–5:00 PM Presentations**

**SESSION 1**

**PDI AMNH Pathway Session: Using a Web-based Graphing Tool to Analyze and Interpret Ecology Data and the Long-Term Impact of the Zebra Mussel Invasion on the Hudson River Ecosystem (Bio)**

(Middle Level) 208, BCEC

**Jay Holmes** ([jholmes@amnh.org](mailto:jholmes@amnh.org)) and **Hudson Roditi** ([hroditi@amnh.org](mailto:hroditi@amnh.org)), American Museum of Natural History, New York, N.Y.

President: Dave Randle, American Museum of Natural History, New York, N.Y.

This session explores a 20-year ecological data set through an online graphing tool that simplifies data visualization so students can focus on analysis and interpretation.

**SESSION 2**

**NSTA Press® Session: Tools to Deepen Students' Understanding of Hard-to-Teach Biology Concepts (Bio)**

(High School/Supervision) 253A, BCEC

**Susan B. Koba** ([skoba@cox.net](mailto:skoba@cox.net)), NSELA Interim Executive Director, Omaha, Neb.

**Anne Tweed** ([atweed@mcrel.org](mailto:atweed@mcrel.org)), 2004–2005 NSTA President, and McREL, Denver, Colo.

Learn to use the framework and tools from *Hard-to-Teach Biology Concepts*, our NSTA Press book, enhancing lessons on difficult topics and deepening students' biological understandings.

**3:30–5:00 PM Exhibitor Workshop**

**Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, 4) (Bio)**

(Grades 9–College) 157B, BCEC

Sponsor: Bio-Rad Laboratories

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

How do genes influence behavior? Use the model organism *C. elegans* (a nematode) to answer this question in an engaging activity that compares normal and mutant worm behavior.

We will explore worm taste preferences in a simple and fast chemotaxis assay, and examine the connection of our worm mutant to human diseases. Come see this great alternative to AP fruit fly behavior lab!

**3:30–5:30 PM The Planetary Society Lecture**  
**Dancing with Mars, Debating Dinosaurs (Earth)**  
*(General)* *Grand Ballroom, BCEC*



**Bill Nye**, Executive Director, The Planetary Society, Pasadena, Calif.  
 @TheScienceGuy

*Scientist, engineer, comedian, author, and inventor, Bill Nye is a man with a mission: to help foster a scientifically literate society and to help people everywhere understand and appreciate the science that makes our world work.*

*Making science entertaining and accessible is something Bill has been doing most of his life.*

*Bill is currently executive director of The Planetary Society. As part of the sundial design team, Bill takes great pride in the photometric calibration MarsDials. Placed on the Spirit and Opportunity rovers on Mars, they are inscribed with the words “To those who visit here, we wish a safe journey and the joy of discovery.” Bill says, “This is the essence of the scientific enterprise, the Joy of Discovery. That’s what the process of science is all about.”*

*Best known for his Emmy Award–winning show Bill Nye the Science Guy®, he is also host of the series The 100 Greatest Discoveries and his latest project Stuff Happens, which is about environmentally responsible choices that consumers can make as they go about their day and their shopping.*

*In between creating shows, he has written five children’s books about science, including his latest title, Bill Nye’s Great Big Book of Tiny Germs.*

*Bill’s next project is “Solving for X,” where he’ll show us how to do algebra along with the P, B, & J—the Passion, Beauty, and Joy—of math. Bill, the inventor, has two patents on educational products—a magnifier made of water and an abacus that does arithmetic like a computer. An occasional athlete, Bill has a patent pending on a device to help people learn to throw a baseball better. His next patent is an improved toe shoe for ballerinas.*

**3:30–5:30 PM Meeting**  
**Association for Multicultural Science Education (AMSE) Board Meeting**  
*(By Invitation Only)* *Seaport Ballroom C, Seaport*

**4:00–5:00 PM Meeting**  
**Outstanding Science Trade Books Committee Meeting**  
*(By Invitation Only)* *Spectacle, Renaissance*

**4:00–5:30 PM Exhibitor Workshops**  
**SPARKscience: Sensor-based Science for High School—Free Sensor Set for Five Attendees! (Gen)**  
*(Grades 9–12)* *104A, BCEC*

Sponsor: PASCO scientific

**Mike Blasberg**, PASCO scientific, Roseville, Calif.

Through an interactive iPad demonstration, you’ll experience how SPARKscience engages students in science and engineering practices, affording a deeper understanding of scientific concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue software. Five lucky attendees will win a 50th Anniversary Sensor Pack—a \$600 value!

**Solar One CleanTech** **(Env)**  
*(Grades 4–12)* *104B, BCEC*

Sponsor: Solar One

**Sarah Pidgeon** ([education@solar1.org](mailto:education@solar1.org)) and **Alex Smith**, Solar One, New York, N.Y.

Explore Solar One’s CleanTech curriculum that supports STEM learning through hands-on interactive labs. Through four units—Energy, Materials, Water, and Food—students explore topics such as renewable energy, biomimicry, storm-water management, and hydroponics. Workshop attendees will engage in activities and receive curricular resources they can take back to their classrooms.



**Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (Chem)**

(Grades 9–12) 104C, BCEC

Sponsor: LAB-AIDS, Inc.

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

We distill water to purify it, or so we think. So why does the clear distillate from apple cider smell like apples? Join us for this signature activity from LAB-AIDS' *A Natural Approach to Chemistry*. Using a clever test tube distillation apparatus, distill the essence of vanilla and the scent of mint. Distillation is a crucial process in chemical engineering and technology, yet few students ever get to explore the process.

**Teaching Evolution in a Climate of Controversy—Even with NGSS, the Battles Continue (Bio)**

(Grades 9–12) 105, BCEC

Sponsor: Pearson

**Kenneth R. Miller**, Brown University, Providence, R.I.

Recent struggles over the content of science textbooks in Texas highlight the fact that 89 years after the Scopes trial, evolution remains a controversial topic. I will discuss how educators can deal with it successfully, and I'll identify a series of resources to respond to challenges faced when teaching evolution.

**MakerScience and Arduino (Gen)**

(Grades 6–College) 106, BCEC

Sponsor: SparkFun Electronics

**Brian Huang** ([brian.huang@sparkfun.com](mailto:brian.huang@sparkfun.com)), SparkFun Electronics, Boulder, Colo.

In this hands-on workshop hosted by SparkFun Electronics, learn to program a microcontroller and integrate making, building, and inventing into your classroom. Using simple electronics and programming tools, we will demonstrate how to integrate “play” with science and engineering to create authentic and lasting learning experiences.

**Biology on Geologic Timescales (Earth)**

(Grades 6–College) 107A, BCEC

Sponsor: Howard Hughes Medical Institute

**Heather Olins**, Harvard University, Boston, Mass.

**Jeremy Conn**, Mason (Ohio) City Schools

The history of life on Earth extends back more than 3 billion years. This workshop will highlight free classroom resources developed by HHMI's BioInteractive to help teach the long history of life on Earth. We will demonstrate our popular Earth history app and other interactive resources that highlight the ebb and flow of life over billions of years.

**Take a Swipe at Microbes!**

(Grades 7–12)

Sponsor: LaMotte Co.

**Ken Rainis**, Fairport, N.Y.

Excite students with fun and safe ways to become scientific explorers of microbes in air, water, and food...and on surfaces. As scientists, they will use technology to identify the microbes that they find. As engineers, they will design methods to collect data using BioPaddles®. As mathematicians, they will quantify microbes in CFU/cm<sup>2</sup> units. Engage students to ponder real-world connections of microbes and life. Come microbe hunting with us and pick up takeaways!

**Participate in National Geographic's Engineering Exploration Challenge (Gen)**

(Grades 1–12)

107C, BCEC

Sponsor: National Geographic

**Sean O'Connor**, National Geographic, Washington, D.C.

You're on assignment for National Geographic. How would you animal-proof a camera? Test your skills in this fun hands-on session, and learn how to participate in a new student (ages 6–18) program, the Engineering Exploration Challenge. Inspired by challenges faced by National Geographic Explorers in the field, this program places students at the helm of their own exploration. Students who submit solutions to National Geographic by May 1, 2014, will have the chance to have their solution tested, live, on-air, by National Geographic Engineers during a publicly accessible Google Hangout. All students who participate will be invited to watch the Hangout.

**Bats, iPads, and Citizen Science in the Classroom**

(Bio)

(General)

108, BCEC

Sponsor: Wildlife Acoustics, Inc.

**Sherwood Snyder** ([sherwood@wildlifeacoustics.com](mailto:sherwood@wildlifeacoustics.com)), Wildlife Acoustics, Inc., Concord, Mass.

Learn how to turn your iPad, iPhone, and iPod into a bat detector/recorder/analyzer for bioacoustics and Citizen Science bat classroom projects. Wildlife Acoustics will introduce the Echo Meter Touch—ultrasonic is now ultracool.

**DNA Replication and Transcription (Phys)**

(Grades 5–12) 109A, BCEC

Sponsor: K’NEX Education

**Presenter to be announced**

No more gumdrops and toothpicks! Use K’NEX® to build and explore functional DNA models that actually stay together. Twist DNA ladders to make a helix, replicate the helix, and transcribe the model to form mRNA. Color-coded nucleotides enable quick changes of the C, G, A, T, and U bases to produce new sequences. STEM concepts that support the standards will be emphasized.

**The Drunken Worms: Exploring Gene Function with *C. elegans* (Bio)**

(Grades 10–College) 150, BCEC

Sponsor: Edvotek Inc.

**Danielle Snowflack, Jack Chirikjian** ([info@edvotek.com](mailto:info@edvotek.com)), and **Tom Cynkar**, Edvotek Inc., Washington, D.C. Model organisms allow us to study fundamental questions in developmental cellular and neurological functions that may be difficult to study in humans. Join us for an exciting experience exploring alcohol metabolism using *C. elegans* as a model organism. Learn how to grow and feed *C. elegans* and how to test the effects of alcohol on the locomotion of normal and mutant worms. Receive a free 4GB flash drive and entry into a T-shirt drawing at the end of the workshop.

**Science, the Literacy Connection, and the Common Core State Standards, ELA (Gen)**

(Grades K–6) 151A, BCEC

Sponsor: Delta Education/School Specialty Science

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

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

**Light and Optics: A Series of EnLIGHTening Experiments! (Phys)**

(Grades 5–12) 151B, BCEC

Sponsor: CPO Science/School Specialty Science

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

Experience CPO’s Optics with Light and Color kit with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine dif-

ferent spectra. We make studying light exciting! Take away applications of the concept of light and other electromagnetic waves in technology (STEM and the NGSS).

**Evidence for Plate Movement (Gen)**

(Grades 5–8) 152, BCEC

Sponsor: Delta Education/School Specialty Science–FOSS **Jessica Penchos** and **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. Be among the first to preview the revised FOSS Earth History Course, including new features, strategies, content, and materials.

**Get Results with Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)**

(Grades 2–5) 153C, BCEC

Sponsor: Amplify Education, Inc.

**Traci Wierman** ([twierman@berkeley.edu](mailto:twierman@berkeley.edu)) and **Rebecca Abbott** ([rebabbott@berkeley.edu](mailto:rebabbott@berkeley.edu)), The Lawrence Hall of Science, University of California, Berkeley

Experience Seeds of Science/Roots of Reading’s approach with the *Next Generation Science Standards* using content-rich science books, scientific discourse, and writing activities. Together these provide rich and varied opportunities to learn core science ideas and vocabulary. Free samples provided.

**Rush to Get Smashed Then “Busted” (Gen)**

(General) 154, BCEC

Sponsor: Discovery Education

**Duane Waber**, Discovery Education, Silver Spring, Md. *Head Rush*, *Smash Labs*, and *Mythbusters* are collections of video resources in Discovery Education Science Techbook. Join us as we explore these video resources as well as replicate and elaborate some of the activities to start building a collection of hands-on opportunities for your students.

**Animal Study and the NGSS (Bio)**

(Grades K–7) 156A, BCEC

Sponsor: Ward’s Science

**Patty Muscatello**, Ward’s Science, Rochester, N.Y.

Looking for ways to connect your favorite science activities to the *Next Generation Science Standards*? We’ll show you how with this all-new Ward’s NGSS Activity Kit that explores adaptation and classification while aligning with K-LS1 and 1-LS1 Molecules to Organisms: Structures and Processes and 2-LS4 Biological Evolution: Unity and Diversity.

**MINDSTORMS® EV3 Robotics in the Middle School Classroom: Space Activity (Earth)**

(Grades 6–8) 156B, BCEC

Sponsor: LEGO® Education

**William J. Church**, Littleton High School, Littleton, N.H.  
Mission: Mars! Enable instant success with STEM through robotics—blast off with the new LEGO® MINDSTORMS Education EV3 Space Challenge Set and Activity Pack! Get your hands on the new mission models and explore how these 30+ hours of classroom lessons can set your students up for STEM learning.

**New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (Chem)**

(Grades 9–12) 258A, BCEC

Sponsor: Flinn Scientific, Inc.

**Mike Marvel** ([mMarvel@flinnsci.com](mailto:mMarvel@flinnsci.com)) and **Joan Berry** ([jberry@flinnsci.com](mailto:jberry@flinnsci.com)), Flinn Scientific, Inc., Batavia, Ill.

This hands-on, interactive workshop can help you implement the revised laboratory investigations and curriculum framework for AP Chemistry! 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 provided for all activities!

**4:30–6:00 PM Networking Opportunities**

**Board/Council Meet and Greet**

(By Invitation Only) Faneuil, Westin Waterfront

**5:00–5:30 PM Presentations**

**SESSION 1**

**Doing and Talking Science: Teaching Strategies for Expanding English Language Learners' Language Skills (Phys)**

(Elementary) 159, BCEC

**Enrique A. Suarez** ([enrique.suarez@colorado.edu](mailto:enrique.suarez@colorado.edu)), University of Colorado, Boulder

Science is an ideal environment for ELLs to develop language skills, through engaging students in discussions about their life experiences, observations, and ideas.

**SESSION 2**

**The Development of a STEM Certificate Opportunity for Preservice Elementary Education Majors (Gen)**

(Elementary/College) Pacific G/H, Renaissance

**Marsha Traynor** ([marsha.traynor@mnsu.edu](mailto:marsha.traynor@mnsu.edu)), Minnesota State University, Mankato

Discussion centers on the collaborative development of a STEM Certificate for undergraduate elementary teacher candidates.





**5:00–6:00 PM Special Session**

**Climate: A Fascinating Scientific Topic with Challenges and Opportunities for Science Educators**

**(Earth)**

*(General)*

252A, BCEC



**Paul A. O’Gorman**, Associate Professor of Atmospheric Science, Massachusetts Institute of Technology, Cambridge

This session will discuss some key things we know about the climate system from observations and basic principles, how scientists worldwide give periodic updates on their understanding of climate change in the Intergovernmental Panel on Climate Change (IPCC) report, and some of the challenges and opportunities for science educators in teaching about climate.

*Paul A. O’Gorman is an associate professor of Atmospheric Science at MIT. His research interests are in the large-scale dynamics of the atmosphere and the role of water vapor in the climate system. He is particularly interested in the effect of climate change on atmospheric circulations and on the distribution of precipitation.*

*He earned a BA in Theoretical Physics and an MSc in High-Performance Computing from Trinity College Dublin. He earned a PhD in Aeronautics with a minor in Applied Mathematics from the California Institute of Technology.*



**5:00–6:00 PM Presentations**

**SESSION 1** (two presentations)

*(High School)*

157C, BCEC

**Integrating Common Core State Standards, ELA and NGSS Practices in Environmental Science (Env)**

**Susan Kelly**, NOAA Living Marine Resources Cooperative Science Center, Princess Anne, Md.

Learn about activities, materials, and instructional approaches to efficiently and effectively address CCSS ELA and NGSS practices in environmental science using NOAA resources.

**Stories, Songs, and Comedy to Guide the AP Environmental Science Curriculum (Env)**

**Naomi Volain** (*volainn@sps.springfield.ma.us*), Springfield Central High School, Springfield, Mass.

Collect stories, songs, cartoons, and comedy bits to guide student understanding in areas of pollution, natural resources, and population in the AP Environmental Science curriculum.

**SESSION 2**

**The Maker Movement and STEM**

**(Gen)**

*(Elementary–Middle Level)*

158, BCEC

**Wendy Smith** (*wsmith@hkis.edu.hk*), Hong Kong International School–Upper Primary, Repulse Bay, Hong Kong

Learn how starting a Maker Club at your school supports STEM as kids learn by “making” in both the digital and physical world. In this DIY (do-it-yourself) environment, students learn new skills, make real-world projects, and share their work online to inspire and learn from each other.

**SESSION 3**

**Earth Science in Our Mailbox: How First-Graders Traveled America Through Soil Samples (Earth)**

*(Elementary)*

160C, BCEC

**Linda S. Gutensohn** (*lguten@umary.edu*), University of Mary, Bismarck, N.Dak.

**Vonda L. Dahl** (*dahl6@bektel.com*), Wing Public School, Wing, N.Dak.

Participants will be involved in discovery science, literacy, and geography lessons that can enliven an appreciation for our country’s soils, physical features, and habitats.

SESSION 4

**Young Meteorologist Program (Earth)**

(Middle Level) 162A, BCEC

**Ron Gird** (*ron.gird@noaa.gov*), NOAA National Weather Service, Silver Spring, Md.

The Young Meteorologist Program is a free, interactive online game taking students on an adventure where they encounter hurricanes, tornadoes, lightning, floods, winter storms, and hurricanes.

SESSION 5

**Corn Belt STEM Alliance: Implementing the NGSS with Emphasis on Engineering and Technology (Gen)**

(Middle Level–High School) 204 A/B, BCEC

**Chris Embry Mohr** (*chrisebry.mohr@olympia.org*), Olympia High School, Stanford, Ill.

Presider: Nate Nollen, Pontiac Township High School, Pontiac, Ill.

Teams of cross-curricular teachers in several districts are working to implement the NRC *Framework* and the NGSS as they strive to cohesively analyze curricula, instruction, and assessments.

SESSION 6

**Attitudes About High School Physics in Relationship to Gender and Ethnicity: Research-based Strategies to Increase Participation and Performance (Phys)**

(General) 205C, BCEC

**Rabieh J. Hafza** (*jamalhafza@att.net*), Westlake High School, Atlanta, Ga.

Attention will be paid to research-based strategies that focus on increasing the diversity of STEM-related science classes. My research will provide a foundation for the session.

SESSION 7

**Raindrops Keep Falling in My Gauge: School Partnerships with a Citizen Science Network to Increase Climate Literacy (Env)**

(Elementary–High School) 251, BCEC

**Kelly A. Riedinger** (*kriedinger@davidheill.com*), David Heil & Associates, Inc., Portland, Ore.

CoCoRaHS stands for Community Collaborative Rain, Hail & Snow Network. Join us as we present research on CoCoRaHS' K–12 program. Engage in hands-on exploration of the processes of measuring, reporting, and interpreting precipitation data.

SESSION 8

**Research Is Elementary! Student-directed Science Research in the Elementary Classroom (Gen)**


(Elementary) 252B, BCEC

**Roberta Hunter** (*roberta.hunter@gse.rutgers.edu*), Acorn to Oak Environmental Education, Lawrenceville, N.J.

**Cherry K. Sprague** (*cherry\_sprague@princetonk12.org*), Princeton High School, Princeton, N.J.

Hear about the Student Investigative Program, which provides elementary teachers with the resources and support they need to engage their K–5 classrooms in student-directed science research.

SESSION 9

 **NSTA Press® Session: Whole Class Inquiry—How to Improve Participation (Gen)**

(General) 254A, BCEC

**Joan Gallagher-Bolos** (*jjgallagher-bolos@glenbrook225.org*), Glenbrook North High School, Northbrook, Ill.

**Dennis W. Smithenry** (*smithenryd@elmhurst.edu*), Elmhurst College, Elmhurst, Ill.

Come hear the results of a classroom research study showing how self-assessment and meaningful feedback affect students' participation and improve Whole Class Inquiry. Video included.

SESSION 10

**Assessment of Science, Engineering, and Literacy Practices (Gen)**

(Middle Level) 255, BCEC

**Anne Farley Schoeffler** (*schoefflera@setoncatholicschool.org*), Seton Catholic School, Hudson, Ohio

Using a checklist-style formative assessment—coupled with targeted lab activities—lets a teacher easily direct and document individual student development of literacy, science, and engineering practices.

SESSION 11

**The NGSS and a Research-based STEM Lesson for the High School Biology Classroom (Bio)**

(High School) 257A, BCEC

**Rachel A. Beattie**, Lincoln-Way East High School, Frankfort, Ill.

Attention will be paid to the NGSS and a research-based lesson designed to confront high school student misconceptions about the relationships among heritable phenotypes, protein, DNA, and chromosomes.

## SESSION 12

**A Plain English Map of the Human Chromosomes and a Universal Phylogenetic Tree (Bio)***(General)* 257B, BCEC**Susan Offner** (*soffner@ix.netcom.com*), Lexington High School, Lexington, Mass.

Come learn how to use a plain English map of the human chromosomes and many phylogenetic trees to make evolution a central theme of your course.

## SESSION 13

**Using Evernote, Wikis, and Blogs to Create a Science Diary (Gen)***(General)* 259B, BCEC**Ben Smith** (*ben@edtechinnovators.com*) and **Jared Mader** (*jared@edtechinnovators.com*), York, Pa.

Science journals are key in the experimental process. Come take a look at how technology can help students create a rich, creative diary of experiences.

## SESSION 14

**Teachers and STEM Education Policy (Gen)***(Supervision/Administration)* 260, BCEC**Julianne R. Opperman** (*jopperm1@maine.rr.com*), Greely High School, Cumberland, Maine

**Avi Ornstein**, Classical Magnet School, Hartford, Conn. Come learn how the Massachusetts Institute of Technology and George Washington University are collaborating to bring together K–12 STEM teachers with national policy-makers in Washington, D.C.

## SESSION 15

**Rub-A-Dub-Dub—Science in a Tub! (Earth)***(Middle Level–High School)* 261, BCEC**Maribeth A. Lowe** (*mkalowe@comcast.net*) and **Leah Talbert**, William Monroe High School, Stanardsville, Va.

Looking for hands-on ways to review, assess, and engage your Earth science students? Come find out how a simple storage bin can become your best assessment tool.

## SESSION 16

**Visual Tools for Accelerated/Inclusive Learning (Gen)***(General)* Brewster, Renaissance**Roger Essley** (*rogessley@gmail.com*), Newmarket, N.H.**Jonathan B. Moss** (*jmoss@portsmouth.k12.nh.us*), Portsmouth High School, Portsmouth, N.H.

See groundbreaking hands-on visual tools that amplify science learning and build amazing bridges to literacy skills while making reading, writing, content integration, and assessment easier.

## SESSION 17 (two presentations)

*(High School–College)* Caspian, Renaissance**SCST Session: Helping Students Assess the Science Implicating MMR Vaccine as a Cause of Autism (Bio)****Thayne L. Sweeten**, Utah State University, Brigham City

Join me as I describe evidence for and against the role of the MMR vaccine in causing autism. Resources will be provided to help students assess this science.

**SCST Session: Bringing Evolution Alive Through Skull Analysis (Bio)****Joseph Trackey** (*joseph.l.trackey@lonestar.edu*) and **Linda W. Crow**, Lone Star College–Montgomery, Conroe, Tex.

Attention will be paid to assessments with different student engagement approaches using a set of skulls to engage students in introductory biology courses.

## SESSION 18

**NARST Session: Continuous Learning Through Classroom Observation Cycles (Gen)***(Elementary/College/Supervision)* Pacific F, Renaissance**Jennifer Ceven McNally** (*jen.ceven.mcnally@gmail.com*), Curry College, Milton, Mass.

Classroom observation cycles are low-risk opportunities to gain feedback about your teaching practice. Inquire into your own classroom—and enhance your instruction—today!

## SESSION 19

**Conducting Long-Term Independent Inquiry Projects in an Urban High School (Gen)***(High School)* Constitution, Seaport**Timothy W. Reid** (*reid.tw@easthartford.org*) and **Tyler Hoxley** (*hoxley.tj@easthartford.org*), East Hartford High School, East Hartford, Conn.

Walk away with a complete plan for leading students through their own independent investigations—from choosing a topic through writing the final report.

## SESSION 20

**“Nuclear”ification: A Smorgasbord of Classroom Applications and Resources (Gen)***(High School)* Flagship A, Seaport**Jenelle D. Hopkins** (*jhopkins@interact.ccsd.net*), Centennial High School, Las Vegas, Nev.

Join us for nuclear science content (physical, Earth, and biological sciences) with cross-curricular ties to social studies and history, political science, literature, and the arts.

**SESSION 21** (two presentations)

(Middle Level–High School) *Lighthouse I, Seaport*

**Scientists in the Classroom** (Gen)

**Jillian B. Worsam** ([jworsam@fusd1.org](mailto:jworsam@fusd1.org)), Sinagua Middle School, Flagstaff, Ariz.

Join me for interactive instruction on developing a mentor program among local, polar, national, and international scientists—one on one with all students for an entire academic school year.

**Joint Science Education Project** (Gen)

**Lynn Foshee Reed** ([lynn.foshee.reed@gmail.com](mailto:lynn.foshee.reed@gmail.com)), Einstein Fellow, National Science Foundation, Arlington, Va.

Learn about a successful project that brings U.S., Danish, and Greenlandic students together to explore polar science.

**SESSION 22**

**Implementing Standards-based Practices in a Points-based Science Classroom** (Gen)

(Middle Level–High School) *Plaza A, Seaport*

**Dave P. Eddy** ([deddy@d125.org](mailto:deddy@d125.org)), Adlai E. Stevenson High School, Lincolnshire, Ill.

In this session, I will share how I implemented self-reflection and formative strategies to move students away from point accumulation and toward science learning.



**SESSION 23**

**Practicing at STEM** (Gen)

(Middle Level–High School/Informal Ed.) *Plaza B, Seaport*

**Kristen Scopinich** ([kscopinich@massaudubon.org](mailto:kscopinich@massaudubon.org)) and **Robin Stuart** ([rstuart@massaudubon.org](mailto:rstuart@massaudubon.org)), Mass Audubon's Drumlin Farm Wildlife Sanctuary, Lincoln, Mass.

Let's look at computer games, simulations, and other digital tools that provide rich opportunities for students to think about and practice the work of STEM professionals.

**SESSION 24** (two presentations)

(Middle Level–High School) *Plaza C, Seaport*

Presenter: Cesar Gutierrez, Austin (Tex.) ISD

**Core Literacy = Good Science** (Gen)

**Jayne Jones** ([jjones@usd404.org](mailto:jjones@usd404.org)), **Cynita R. Jones** ([cjones@usd404.org](mailto:cjones@usd404.org)), and **Delaina Brown** ([dbrown@usd404.org](mailto:dbrown@usd404.org)), Riverton High School, Riverton, Kans.

*Reading science and doing science require the same skills.*

Join us for an assortment of fun research-based activities that address literacy standards.

**Science Glossaries as Teaching Tools** (Gen)

**Raegan Witt-Malandruccolo** ([rwitt@austinisd.org](mailto:rwitt@austinisd.org)),

**Christopher M. Martell** ([christopher.martell@austinisd.org](mailto:christopher.martell@austinisd.org)), and **Adrienne Fan-Arroyo** ([afan@austinisd.org](mailto:afan@austinisd.org)), Austin (Tex.) ISD

Science glossaries can serve as excellent teaching tools. Find out how to create a classroom glossary and use it with all students in engaging learning opportunities.

**SESSION 25**

**Differentiating Assessment in the Science Classroom** (Gen)

(General) *Burroughs, Westin Waterfront*

**Brooke A. Harvey** ([baharvey@mix.wvu.edu](mailto:baharvey@mix.wvu.edu)), **Sara Aronin** ([saronin8@hotmail.com](mailto:saronin8@hotmail.com)), and **Emily Hake** ([ehake@mix.wvu.edu](mailto:ehake@mix.wvu.edu)), West Virginia University, Morgantown

**Michell Witt**, Mountainview Elementary School, Morgantown, W.Va.

Presenter: Kyle L. Greenleaf, West Virginia University, Morgantown

Join us for a demonstration on the development and use of choice boards to differentiate assessments by content, process, and product in the science classroom.

**SESSION 26**

**I-IMPACT: The Initiative to Inspire and Mentor Physics and Chemistry Teachers (Chem)**

(High School–College/Supervision) Griffin, Westin Waterfront  
**Tom J. Brown** (*thomas.brown@cobbk12.org*), Cobb County Schools, Marietta, Ga.

**Shelley Howerton** (*shelley.howerton@cobbk12.org*), Harrison High School, Kennesaw, Ga.

**Berkil Alexander** (*berkil.alexander@cobbk12.org*), Pebblebrook High School, Mableton, Ga.

**Philip Matthews** (*philip.matthews@cobbk12.org*), Kennesaw Mountain High School, Kennesaw, Ga.

By providing intentional professional development and a supportive professional learning community, you can empower teachers to become science education leaders and agents of positive change.

**SESSION 27**

**Science Specialists or Classroom Teachers—What Model of Science Teaching Serves Students Best? (Gen)**

(General) Hancock, Westin Waterfront

**Abigail Jurist Levy** and **Marian M. Pasquale**, Education Development Center, Inc., Waltham, Mass.

Are there differences in the quality, quantity, or cost of science when it's provided by a science specialist or classroom teacher? Find out the answer!

**SESSION 28**

**Science Literacy Through Science Journalism: A Variety of Implementation Strategies (Gen)**

(General) Harbor Ballroom III, Westin Waterfront

**Wendy Saul** (*saulw@umsl.edu*) and **Nicolle C. von der Heyde** (*nicollevdh3@gmail.com*), University of Missouri–St. Louis

Explore what teachers have learned from professional jour-

nalists about finding and questioning big ideas and connecting schools to the real-world science that engages students.

**SESSION 29**

**Pen in Hand: Notebooking with Young Scientists (Gen)**

(General) Lewis, Westin Waterfront

**Lindsay Barton** (*lindsay.barton@readingandwritingproject.com*), Teachers College Reading and Writing Project, New York, N.Y.

Thoughtfully designed templates can motivate emerging writers as well as scaffold science notebooking as a meaningful tool for young children to record their observations and thinking.

**SESSION 30**

**Creating a STEM School District (Gen)**

(General) Stone, Westin Waterfront

**Bob Sotak** (*bsotak@mac.com*), Washington Alliance for Better Schools, Edmonds

**Brian Day**, Everett (Wash.) Public Schools

Join us as we share strategies and tools used to design a STEM school district, impacting all K–12 students and articulating with higher education and industry.

**SESSION 31**

**NOAA in Your Backyard: Professional Development Opportunities and Local Educator Resources (Gen)**

(General) Webster, Westin Waterfront

**Britta Culbertson** (*brittaculbertson@gmail.com*), Einstein Fellow, NOAA Office of Education, Washington, D.C.

NOAA has hundreds of facilities and professional communicators across the nation. Get connected to guest speakers, field trips, and local and national professional development opportunities.

**5:00–6:00 PM Workshops**

**Sounds Like Fun: Ideas for the Science of Sound**

(Phys)

(Elementary–Middle Level)

160A, BCEC

**Todd Brown** (*ltbrown@pitt.edu*), **Vickilyn Barnot**, and **Katrina Brown** (*kwb@pitt.edu*), University of Pittsburgh at Greensburg, Pa.

Presider: Todd Brown

In this workshop, we'll investigate easy, inexpensive, and fun ways to teach sound and create noise.

**Kitchen Science**

(Bio)

(Elementary–Middle Level)

160B, BCEC

**Laurie A. Hayes** (*lhayes@cart.org*), Center for Advanced Research and Technology, Clovis, Calif.

**Susan E. Hartley** (*semumford-hartley@aps.k12.co.us*), Hinkley High School, Aurora, Colo.

Explore the FDA's free hands-on curriculum to integrate science, math, and the *Common Core State Standards* while teaching about the importance of nutrition and food safety.

**Teaching Earth’s System Science Outdoors (Env)**  
(Elementary) 161, BCEC

**Dorian Janney** (*dorian.w.janney@nasa.gov*), NASA Goddard Space Flight Center, Greenbelt, Md.

Take elementary students outdoors to teach them about Earth’s four systems! We will study the hydrosphere, atmosphere, biosphere, and geosphere as we collect data.

**An Integrated Science and Literacy 5E Learning Cycle About Classification (Gen)**  
(Elementary) 162B, BCEC

**Brenda Turgeon**, Purdue University Calumet, Hammond, Ind.

Take part in an integrated science and literacy (CCSS) 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning cycle for elementary students using inexpensive and readily available materials to teach students about classification.

**Develop Students’ Scientific Literacy Using a Project-based High School Unit on Honeybee Behavior (Bio)**

(High School) 205A, BCEC

**Claudia Lutz, Barbara Hug** (*bhug@illinois.edu*), and **Robert Wallon** (*rwallon2@illinois.edu*), University of Illinois at Urbana-Champaign, Champaign

Learn more about the biological basis for complex social behaviors in bees. Explore materials from a project-based unit that builds scientific literacy with various genres of scientific literature, including periodicals and adapted primary literature. Also, find out how to access free materials.

**More Than Dragon Genetics—BYOL (Bring Your Own Laptop) (Bio)**

(Middle Level—College) 205B, BCEC

**Lisa Marchi** (*lmarchi@mmsa.org*), Maine Mathematics and Science Alliance, Augusta

Immerse yourself in Geniverse! Explore game-like genetics software and learning strategies for engaging students in science practices such as arguing from evidence.

**Integrating Math and Science Practices—It’s SO Predictable (Gen)**

(Elementary—Middle Level) 207, BCEC

**Katie McDilda** (*kmcdilda@wvstateu.edu*), West Virginia State University, Institute

**Edna M. Meisel** (*meisele@marshall.edu*), Marshall University Graduate College, South Charleston, W.Va.

Let’s build strong, self-confident math and science teachers and learners! In this workshop, participants will integrate math and science to address the *Common Core State Standards*.

**Do Penguins Have Knees? Vocabulary and Literacy Strategies for the Science Classroom (Gen)**

(Elementary—Middle Level) 211, BCEC

**Louise T. Huffman** (*lhuffman24@gmail.com*), Rotonda West, Fla.

**Jean Pennycook** (*jean.pennycook@gmail.com*), Central Valley Science Project, Fresno, Calif.

Using exciting science concepts, participants gain engaging vocabulary and literacy strategies that meet reading, writing, communication, and science objectives from the CCSS and the NGSS.

**Size Matters! Teaching Science with Gummy Bears and More! (Gen)**

(Elementary) 212, BCEC

**Tracey K. Graham** (*indiansprings18@yahoo.com*), Westgate Elementary School, Columbus, Ohio

Find out how to use gummy bears and other types of gummy candy to engage students in science!

**Science Olympiad, CCSS, and the NGSS—What a Team! (Gen)**

(Elementary) 213, BCEC

**Kelly Price** (*price\_kel@yahoo.com*), Forsyth County Schools, Cumming, Ga.

Promote student engagement and understanding with Science Olympiad events that integrate the *Common Core State Standards*, in English language arts and mathematics and the NGSS science practices. Come learn how!



**NSTA Press® Session: Using iPads for Lab Notebooks with Earth Science Success! (Earth)**

(Middle Level) 253C, BCEC

**Cathy Oates-Bockenstedt** (*cbockenstedt@edenpr.k12.mn.us*), Central Middle School, Eden Prairie, Minn.

Learn how to use iPads for lab notebooks with this ready-to-use, lab-focused curriculum. Start using iPads for Earth science success! Great handouts!

**Food and Environmental Toxicants—Good, Bad, and Complicated (Chem)**

(Middle Level—High School) 254B, BCEC

**Susan A. Hershberger** (*hershbss@miamioh.edu*), Miami University, Oxford, Ohio

Properties of matter and chemical reactions are illustrated through properties and reactions of beneficial food components. These foods reduce effects of environmental toxicants and disease.



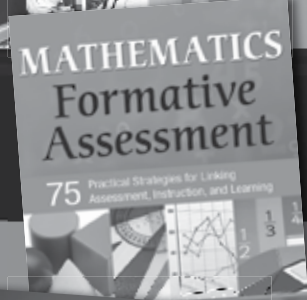
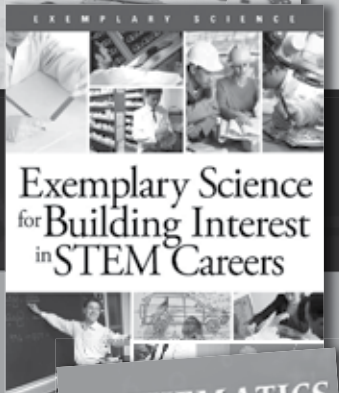
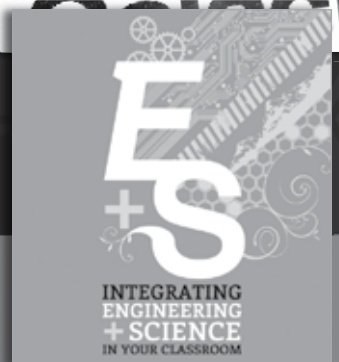
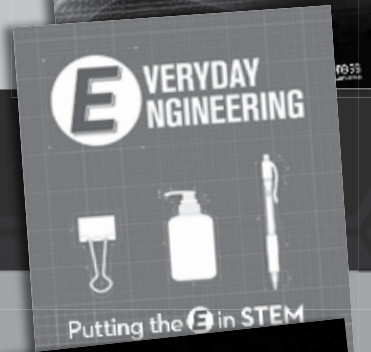
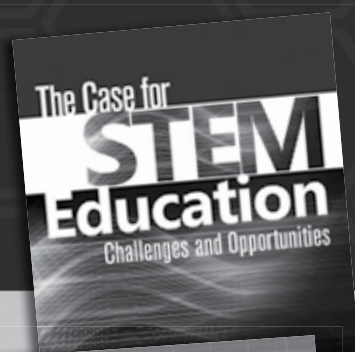
# IT'S ALL ABOUT STEM

Looking for exciting STEM design challenges and activities to engage students?

Hoping to steer students toward STEM-related career fields?

Get ideas, inspiration, and much more from these books in NSTA's STEM collection.

To order or learn more, visit  
[www.nsta.org/store](http://www.nsta.org/store)



**Forensic Entomology: A Unique Way to Study Insects**  
(Bio)

(Middle Level–High School)

256, BCEC

**Carol Ann Ross** ([cross@astate.edu](mailto:cross@astate.edu)), **Karen Yanowitz** ([kyanowit@astate.edu](mailto:kyanowit@astate.edu)), and **Tanja McKay** ([tmckay@astate.edu](mailto:tmckay@astate.edu)), Arkansas State University, State University, Ark.

**Deborah K. Teems** ([dteems@mtnhome.k12.ar.us](mailto:dteems@mtnhome.k12.ar.us)), Mountain Home High School, Mountain Home, Ark.

Presider: Carol Ann Ross

Engage your classroom in a “sting” operation. Participants will work together to solve three “crimes” involving insects. Tips for using insects in the classroom will be shared by an entomologist and teachers.

**Using Case Studies in the Classroom to Scaffold Literacy and Science Practices**  
(Gen)

(High School)

Seaport Ballroom A, Seaport

**Amanda Whitener** ([awhitener@envisionemi.com](mailto:awhitener@envisionemi.com)), Envision EMI, Vienna, Va.

We will use health-based patient case studies to share strategies for developing science practices in tandem with literacy practices in a high school classroom.

**CPALMS Perspectives: STEM Video Resources for Teacher Professional Development**  
(Gen)

(Middle Level–High School/Informal) Seaport Blrm. B, Seaport

**Adam L. Santone** ([asantone@lsi.fsu.edu](mailto:asantone@lsi.fsu.edu)), **Tabinda Syed** ([tsyed@lsi.fsu.edu](mailto:tsyed@lsi.fsu.edu)), and **Rabieh Razzouk** ([rrazzouk@lsi.fsu.edu](mailto:rrazzouk@lsi.fsu.edu)), Florida State University, Tallahassee

CPALMS stands for Collaborate Plan Align Learn Motivate Share. As Florida’s official source for K–12 standards information, CPALMS offers examples and training for standards-based videos showcasing experts, teachers, and professionals. For more information, visit [www.cpalms.org/cpalms/perspectives.aspx](http://www.cpalms.org/cpalms/perspectives.aspx).

**The ELL Experience: Understanding ELLs to Improve Science Instruction**  
(Gen)

(General) Commonwealth Ballroom A, Westin Waterfront

**Andrew Wallace** ([awallace1@gmail.com](mailto:awallace1@gmail.com)) and **Jonathan Lessuck** ([jlessuck@gmail.com](mailto:jlessuck@gmail.com)), ELLIS Preparatory Academy, Bronx, N.Y.

Experience what it’s really like to be an English language learner. We’ll discuss ways that you can help ELLs to succeed in your classroom.



**Using News Media Resources in the Classroom—Addressing the Science, Avoiding the Issues**  
(Gen)

(General)

Grand Ballroom D, Westin Waterfront

**G. Michael Bowen** ([gmrwood@hotmail.com](mailto:gmrwood@hotmail.com)), Mount Saint Vincent University, Halifax, N.S., Canada

**Anthony W. Bartley** ([abartley@lakeheadu.ca](mailto:abartley@lakeheadu.ca)), Lakehead University, Thunder Bay, Ont., Canada

The NRC *Framework* calls for increased use of news media. Join us as we examine issues with the presentation of science in the news media and provide solutions on how to use it as a learning tool.

**Questioning in the Garden: Living, Growing Resources as a Means for Engaging with Science Practices/Skills**  
(Gen)

(Elementary–High School) Grand Blrm. E, Westin Waterfront

**Dawn Wiseman**, University of Alberta, Edmonton, Canada

Inquiry requires questions, but developing questions isn’t easy. Come explore ways to support student questioning with the support of a school-based garden.



**5:00–6:30 PM Reception**

**Dow Reception**

(By Invitation Only)

*Atlantic 1/2, Renaissance*

**5:30–6:30 PM Social**

**Online Advisers Social**

(By Invitation Only)

*Adams, Westin Waterfront*

**5:30–8:00 PM Reception**

**EDC Reception**

(By Invitation Only)

*Grand Ballroom C, Westin Waterfront*

**6:00–7:30 PM Special Event**

**HHMI Night at the Movies**

(Gen)

(General)

*Grand Ballroom A/B, Westin Waterfront*

**Sean B. Carroll**, Howard Hughes Medical Institute, Chevy Chase, Md.

See description below.

**6:00–8:00 PM Meeting**

**APAST Board of Directors Meeting**

(By Invitation Only)

*Seaport Ballroom C, Seaport*

This annual Board of Directors meeting of the Association of Presidential Awardees in Science Teaching is for the purpose of conducting APAST business. For details, visit *apast.org*.

**6:00–8:00 PM Reception**

**Teach for America Networking Reception**

*Otis, Westin Waterfront*

Please join Teach for America for a networking reception to meet fellow corps members and alumni from across the country or to learn more about our program.

**6:30–8:00 PM Presentation**

**SESSION 1**

**Young Voices for the Planet Film Festival**

(Env)

(General)

*Harbor Ballroom I/II, Westin Waterfront*

**Lynne Cherry** (*lncherry@aol.com*), Author/Illustrator/Producer, Thurmont, Md.

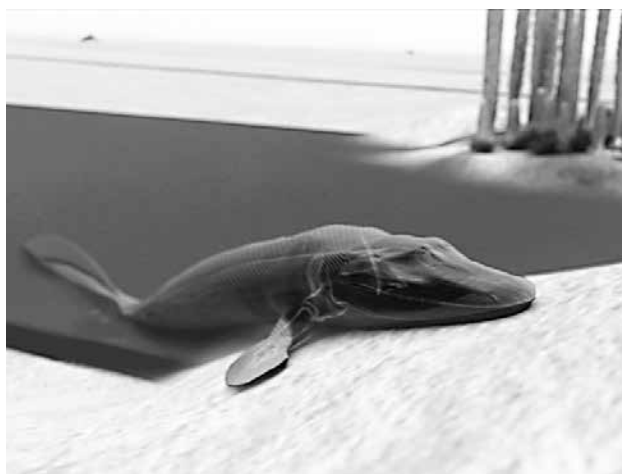
**Don Duggan-Haas** (*dad55@cornell.edu*), PRI and Its Museum of the Earth, Ithaca, N.Y.

Join us for an entertaining and inspirational festival of mostly short films about how young people are protecting the planet. This will make your week!

**SPECIAL EVENT: HHMI's GREAT TRANSITIONS—ON THE BIG SCREEN!**

**THURSDAY, 6:00–7:30 PM • GRAND BALLROOM A/B, WESTIN WATERFRONT**

**J**oin award-winning scientist, author, and educator **Sean B. Carroll** for the premiere of a new short film for the classroom that explores key evolutionary transitions in the history of life on Earth and what fossil evidence reveals about our past. Meet transitional fossils in the human lineage and ones that mark the transition from dinosaurs to birds, and travel to the Arctic with paleontologist **Neil Shubin** to relive his dramatic discovery of *Tiktaalik*—an organism with features intermediate between those of fish and four-legged animals.



—Image of a Tiktaalik, courtesy of Howard Hughes Medical Institute

\*Watch the film and enjoy popcorn and a drink, compliments of the Howard Hughes Medical Institute.

## A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC Framework, and the NGSS, Part I

6:00 PM–12 Midnight • Pacific A/B, Renaissance

Mitchell E. Batoff ([mbatoff@aol.com](mailto:mbatoff@aol.com)), Professor Emeritus, New Jersey City University, Jersey City  
Gordon D. Clark, Retired Educator, Manalapan, N.J.



This session and those that follow tomorrow night and Saturday night will help you develop a firm and accurate understanding of the elements of STEM that are intertwined in a way that needs clarification and disentangling. This three-part program features cinematic jewels, electrifying teachers, and the creative use of video technology to inform, inspire, motivate, entertain, and provoke thought. The screenings will be interspersed with commentary, discussion, and some live demonstrations. There will be humor, wonder, and perplexity mixed with a lot of information on a wide range of topics. Pick up ideas and content that will broaden your knowledge and that you can use in your teaching. The audience will help select from this extensive and enticing menu of course excerpts:



**Bill Nye** on Structures • **Alan McCormack** on *Imagineering, Invention, and Design* • **Bob Becker's** *Chemistry Demonstrations Guaranteed to Knock Your Socks Off!* • *Glass* (Academy Award, 1959) • **Harry Wong** on the *Aqua Vase, Engineering, and Design* • **James Burke** on *Connections* • **Bill Hammack** on *How Engineers Create the World* • *What is Technology?* •



Dozens of door prizes directly related to this session will be raffled off throughout the entire evening right up to 12 Midnight. Come and go, stay as long as you wish. Bring your dinner. Also, pick up a comprehensive Resource Guide relevant to the three Special Evening Sessions.



**Paul Hewitt** on some physics behind the engineering

• **Richard Feynman** on his visit to the dentist •

**Monica Neagoy** on *Modeling Real-World Data* • **E.E.**

**Lewis** on *Masterworks of Technology: The Story of Creative Engineering, Architecture, and Design* • **Verne Rockcastle**

on *Quantitative, Meaningful Investigations and Reasoning for*

*Pre-High Schoolers* • **Sherwin B. Nuland** on the invention

of the stethoscope, surgical anesthesia, and many examples of technology and biomedical engineering

in medicine • **Charles and Ray Eames' An**

*Introduction to Feedback* • **Woodie Flowers** on

the famous 2.007 at MIT • **Steve Spangler**

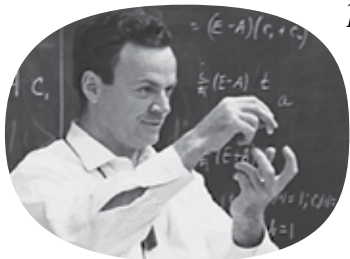
on science and engineering • **Gary Benenson** and

**James Neujahr**, *City Technology at CCNY on Stuff That Works!—a Technology Curriculum for Elementary Grades* •

**Stephen Ressler's** course: *Understanding the World's Greatest Structures: Science and Innovation* •

**Robert G. Fovell** on *Meteorology: An Introduction to the Wonders of Weather* • more than a 100 choice

internet sites for great video segments related to STEM



## Index of Exhibitor Workshops

### 3D Molecular Designs, LLC (Booth #309)

Thursday, April 3	10:00–11:30 AM	107C, BCEC	Telling Molecular Stories with the Cellular Landscapes of David Goodsell (p. 110)
Thursday, April 3	12 Noon–1:30 PM	107C, BCEC	Practice Makes Perfect: Modeling as an NGSS Authentic Practice of Science (p. 120)

### Amplify (Booth #1309)

Thursday, April 3	10:00–11:30 AM	153C, BCEC	33 Strategies for Integrating Disciplinary Literacy (p. 112)
Thursday, April 3	12 Noon–1:30 PM	153C, BCEC	Integration of the NGSS and the <i>Common Core State Standards</i> in the Elementary Classroom (p. 121)
Thursday, April 3	4:00–5:30 PM	153C, BCEC	Get Results with Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 161)

### ANATOMY IN CLAY® Learning System (Booth #625)

Thursday, April 3	2:00–3:30 PM	108, BCEC	Building Human Anatomy in Clay—One Body System at a Time (p. 146)
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### Arbor Scientific (Booth #209)

Thursday, April 3	10:00–11:30 AM	104B, BCEC	Light and Color: Engaging Classroom Activities (p. 109)
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### Bio-Rad Laboratories (Booth #315)

Thursday, April 3	8:00–9:30 AM	157B, BCEC	Identify Patient Zero of a Zombie Apocalypse! (p. 103)
Thursday, April 3	9:00–11:30 AM	157A, BCEC	Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4) (p. 106)
Thursday, April 3	10:00–11:30 AM	157B, BCEC	How to Use Pop Culture Science in Your Science Classes (p. 113)
Thursday, April 3	1:00–3:30 PM	157A, BCEC	Generate a DNA Barcode and Identify Species (AP Big Ideas 1, 2, 3, 4) (p. 133)
Thursday, April 3	1:30–3:00 PM	157B, BCEC	Engineer the Tools for Inquiry of Candy Food Dyes (p. 133)
Thursday, April 3	3:30–5:00 PM	157B, BCEC	Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, 4) (p. 158)

### BIOZONE International, Ltd. (Booth #1120)

Thursday, April 3	2:00–3:30 PM	104B, BCEC	Biology for NGSS: A New Approach for a New Program (p. 145)
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### Carolina Biological Supply (Booth #137)

Thursday, April 3	8:00–9:30 AM	102B, BCEC	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 98)
Thursday, April 3	8:00–9:30 AM	103, BCEC	Integrative STEM Learning K–2 (p. 98)
Thursday, April 3	8:00–9:30 AM	102A, BCEC	AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 98)
Thursday, April 3	10:00–11:30 AM	102B, BCEC	Bring Visual Science into Grades K–5 Classrooms—It's a Game Changer! (p. 109)
Thursday, April 3	10:00–11:30 AM	103, BCEC	STEM—Early Childhood Style! (p. 109)
Thursday, April 3	10:00–11:30 AM	102A, BCEC	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 109)
Thursday, April 3	12 Noon–1:30 PM	103, BCEC	Guiding Questions for the Next Generation K–8 (p. 118)
Thursday, April 3	12 Noon–1:30 PM	102A, BCEC	Introduction to Wisconsin Fast Plants® (p. 118)
Thursday, April 3	2:00–3:30 PM	102B, BCEC	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 144)
Thursday, April 3	2:00–3:30 PM	102A, BCEC	Hands-On Science with Classroom Critters (p. 144)
Thursday, April 3	2:00–3:30 PM	103, BCEC	STEM and <i>Common Core State Standards</i> K–5 (p. 144)

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### CPO Science/School Specialty Science (Booth #514)

Thursday, April 3	8:00–9:30 AM	151B, BCEC	Chemistry and the Atom: Fun with Atom Building Games! (p. 102)
Thursday, April 3	10:00–11:30 AM	151B, BCEC	Genetics: Crazy Traits (p. 112)
Thursday, April 3	12 Noon–1:30 PM	151B, BCEC	Building an Electronic Motor the STEM Way with CPO Science (p. 120)
Thursday, April 3	2:00–3:30 PM	151B, BCEC	Wind Turbine: A STEM Approach to Science Concepts (p. 146)
Thursday, April 3	4:00–5:30 PM	151B, BCEC	Light and Optics: A Series of EnLIGHTening Experiments! (p. 161)

### Delta Education/School Specialty Science (Booth #415)

Thursday, April 3	8:00–9:30 AM	151A, BCEC	DSM and STEM: Challenges for the Elementary Student (p. 102)
Thursday, April 3	10:00–11:30 AM	151A, BCEC	What’s Going on in There? NGSS and STEM for Administrators, Trainers, and University Faculty (p. 112)
Thursday, April 3	12 Noon–1:30 PM	151A, BCEC	Teaching Argumentation for Our Next Generation (p. 120)
Thursday, April 3	2:00–3:30 PM	151A, BCEC	Science Gurus for Teachers—Famous Scientists, STEM, and the NGSS (p. 146)
Thursday, April 3	4:00–5:30 PM	151A, BCEC	Science, the Literacy Connection, and the <i>Common Core State Standards, ELA</i> (p. 161)

### Delta Education/School Specialty Science–FOSS (Booth #415)

Thursday, April 3	8:00–9:30 AM	152, BCEC	FOSStering the <i>Common Core</i> : Science-centered Language Development (p. 102)
Thursday, April 3	10:00–11:30 AM	152, BCEC	Science Practices: What Does Argumentation Look Like in an Elementary Classroom? (p. 112)
Thursday, April 3	12 Noon–1:30 PM	152, BCEC	Online Assessment That Informs Instruction! (p. 121)
Thursday, April 3	2:00–3:30 PM	152, BCEC	Asteroid! Will Earth Be Hit Again? (p. 147)
Thursday, April 3	4:00–5:30 PM	152, BCEC	Evidence for Plate Movement (p. 161)

### Discovery Education (Booth #1137)

Thursday, April 3	8:00–9:30 AM	154, BCEC	COMMON Practices That Get to the CORE of Great Instruction Using Discovery Education Science Techbook (p. 102)
Thursday, April 3	10:00–11:30 AM	154, BCEC	The Digital Classroom with Discovery Education Science Techbook—What Does It Look Like? (p. 113)
Thursday, April 3	12 Noon–1:30 PM	154, BCEC	STEMtastic Strategies (p. 121)
Thursday, April 3	4:00–5:30 PM	154, BCEC	Rush to Get Smashed Then “Busted” (p. 161)

### eCYBERMISSION (Booth #1214)

Thursday, April 3	10:00–11:30 AM	107B, BCEC	Modeling and Engineering Design—From Ideas to Reality (p. 110)
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### Edvotek Inc. (Booth #743)

Thursday, April 3	8:00–9:30 AM	150, BCEC	Diagnosing the Silent Killer: A Simulation of the Clinical Detection of Diabetes (p. 102)
Thursday, April 3	10:00–11:30 AM	150, BCEC	Is This Your First Biotechnology Workshop? Welcome to the Basics! (p. 112)
Thursday, April 3	12 Noon–1:30 PM	150, BCEC	Solving the Case of the Missing Records Using DNA Fingerprinting (p. 120)
Thursday, April 3	2:00–3:30 PM	150, BCEC	Wait! Were the Chips I Ate Genetically Modified? (p. 146)
Thursday, April 3	4:00–5:30 PM	150, BCEC	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 161)

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### Flinn Scientific, Inc. (Booth #109)

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Thursday, April 3	8:00–9:30 AM	258A, BCEC	New Advanced Inquiry Labs for AP Biology from Flinn Scientific (p. 104)
Thursday, April 3	10:00–11:30 AM	258A, BCEC	Flinn Scientific Presents Best Practices for Teaching Chemistry: Experiments and Demonstrations (p. 113)
Thursday, April 3	12 Noon–1:30 PM	258A, BCEC	Hands-On Integrated Science Activities for Middle School from Flinn Scientific (p. 121)
Thursday, April 3	2:00–3:30 PM	258A, BCEC	Flinn Scientific Presents “How to Design a Safe and Efficient Science Laboratory” (p. 148)
Thursday, April 3	4:00–5:30 PM	258A, BCEC	New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 162)

### Fourier Education (Booth #1015)

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Thursday, April 3	9:00 AM–5:30 PM	258B, BCEC	einstein™ STEMathon (program changes)
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### Howard Hughes Medical Institute (Booth #843)

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Thursday, April 3	8:00–9:30 AM	107A, BCEC	Genotype to Phenotype—Mapping Genes to Traits in Dogs (p. 100)
Thursday, April 3	10:00–11:30 AM	107A, BCEC	Fossil and Genetic Evidence of Human Evolution (p. 110)
Thursday, April 3	12 Noon–1:30 PM	107A, BCEC	Genomic Neuroscience—From Synapse to Autism (p. 119)
Thursday, April 3	2:00–3:30 PM	107A, BCEC	From DNA Structure to the Genomic Era (p. 145)
Thursday, April 3	4:00–5:30 PM	107A, BCEC	Biology on Geologic Timescales (p. 160)

### It’s About Time (Booth #121)

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Thursday, April 3	8:00–9:00 AM	156C, BCEC	Effortlessly Integrate CCSS ELA into Your Middle School Science Curriculum (p. 97)
Thursday, April 3	9:30–10:30 AM	156C, BCEC	Active Chemistry: A Project-based Program Capturing the Essence of the NGSS and STEM (p. 108)
Thursday, April 3	11:00 AM–12 Noon	156C, BCEC	Merging the Three Dimensions of the <i>Next Generation Science Standards</i> (p. 116)
Thursday, April 3	12:30–1:30 PM	156C, BCEC	Bringing Technology into Your STEM Classroom (p. 132)
Thursday, April 3	2:00–3:00 PM	156C, BCEC	Inquiry-based College Science Texts for the Next Generation of Students and Teachers (p. 144)
Thursday, April 3	3:30–4:30 PM	156C, BCEC	Project-based Science CyberPD for the 21st Century: A Panel Discussion of 24/7, Just-in-Time Professional Development (p. 158)

### K’NEX Education (Booth #1730)

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Thursday, April 3	8:00–9:30 AM	109A, BCEC	Forces, Energy, and Motion (p. 100)
Thursday, April 3	10:00–11:30 AM	109A, BCEC	Exploring Machines (p. 110)
Thursday, April 3	12 Noon–1:30 PM	109A, BCEC	Renewable Energy (p. 120)
Thursday, April 3	2:00–3:30 PM	109A, BCEC	Introduction to Simple Machines (p. 146)
Thursday, April 3	4:00–5:30 PM	109A, BCEC	DNA Replication and Transcription (p. 161)

### LAB-AIDS, Inc. (Booth #1245)

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Thursday, April 3	8:00–9:30 AM	104C, BCEC	Investigating Chemical Batteries (p. 100)
Thursday, April 3	10:00–11:30 AM	104C, BCEC	Explore NGSS Science and Engineering Practices and Problem Solving Through Racing (p. 109)
Thursday, April 3	12 Noon–1:30 PM	104C, BCEC	Color, Spectrophotometry, and Teaching the Structure of the Atom (p. 118)
Thursday, April 3	2:00–3:30 PM	104C, BCEC	Explore NGSS Science and Engineering Practices and Problem Solving Through Racing (p. 145)
Thursday, April 3	4:00–5:30 PM	104C, BCEC	Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (p. 160)

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### LaMotte Co. (Booth #526)

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### LEGO Education (Booth #644)

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### Perimeter Institute (Booth #358)

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### Sangari Active Science (Booth #351)

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## **Simulation Curriculum Corp. (Booth #1451)**

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Thursday, April 3      8:00–9:30 AM      106, BCEC      Comets: Visitors from the Past (p. 100)  
Thursday, April 3      10:00–11:30 AM      106, BCEC      Stellar Evolution Made Easy (p. 110)  
Thursday, April 3      12 Noon–1:30 PM      106, BCEC      Plate Tectonics: Continents on the Move (p. 119)

## **Solar One (Booth #803)**

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## **SparkFun Electronics (Booth #1029)**

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## **U.S. Dept. of Energy, Office of Nuclear Energy (Booth #1357)**

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Thursday, April 3      10:00–11:30 AM      108, BCEC      The Harnessed Atom—New Ideas, Tools, and Resources:  
Nuclear Science and Energy (p. 110)

## **Vernier Software & Technology (Booth #129)**

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Thursday, April 3      8:00–9:30 AM      153B, BCEC      Inquiry-based Biology with Vernier (p. 102)  
Thursday, April 3      10:00–11:30 AM      153B, BCEC      iPad and Wireless Sensors with Vernier (p. 112)  
Thursday, April 3      10:00–11:30 AM      153A, BCEC      Chemistry with Vernier (p. 112)  
Thursday, April 3      12 Noon–1:30 PM      153B, BCEC      Wireless Sensor Exploration with Vernier (p. 121)  
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Thursday, April 3      2:00–3:30 PM      153B, BCEC      iPad and Wireless Sensors with Vernier (p. 147)  
Thursday, April 3      2:00–3:30 PM      153A, BCEC      Investigating Renewable Energy with KidWind and Vernier (p. 147)

## **Ward's Science (Booth #632)**

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Thursday, April 3      12 Noon–1:30 PM      156A, BCEC      Grant Writing: Designing for Dollars (p. 121)  
Thursday, April 3      2:00–3:30 PM      156A, BCEC      STEM Engineering for Middle School and High School with  
TeacherGeek Rubber Band Racer (p. 147)  
Thursday, April 3      4:00–5:30 PM      156A, BCEC      Animal Study and the NGSS (p. 161)

## **Wavefunction, Inc. (Booth #1344)**

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Thursday, April 3      8:00–9:30 AM      109B, BCEC      Molecular-Level Visualization and Simulation: Getting Ready  
for the *Next Generation Science Standards* (p. 100)  
Thursday, April 3      10:00–11:30 AM      109B, BCEC      Molecular Modeling and the Revised AP Chemistry  
Curriculum: Challenges and Opportunities (p. 112)

## **Wildlife Acoustics, Inc. (Booth #425)**

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Thursday, April 3      4:00–5:30 PM      108, BCEC      Bats, iPads, and Citizen Science in the Classroom (p. 160)



## Schedule at a Glance

G = General  
P = Preschool  
E = Elementary

M = Middle School  
H = High School  
C = College

S = Supervision/Administration  
I = Informal Education  
R = Research

T = Teacher Preparation

### Biology/Life Science

8:00–9:00 AM	M–H	257A, BCEC	Inland Fish and Warming Waters (p. 88)
8:00–9:00 AM	H–C	Caspian, Renaissance	SCST Session: Using POGIL to Promote Student Learning in a High School/University Dual Enrollment Anatomy and Physiology Class (p. 90)
8:00–9:00 AM	H	Constitution, Seaport	AMSE Session: Scientific Concepts Made “Ridiculously” Simple Using Case Studies (p. 90)
8:00–9:00 AM	E–M	251, BCEC	ASTC Session: Teaching with Collections: Bringing the <i>Next Generation Science Standards</i> to Life (p. 95)
8:00–9:00 AM	M–H	205A, BCEC	Integrating Bioethical Case Studies into the Science Curriculum (p. 94)
8:00–9:00 AM	M–H	257A, BCEC	Aquarium Design: Biological Engineering (p. 88)
8:00–9:00 AM	G	257B, BCEC	Fourth Down and Inches: Concussions and Football’s Make-or-Break Moment (p. 88)
8:00–9:00 AM	E–H	205B, BCEC	Citizen Science for All Seasons: Project BudBurst in Your Classroom (p. 94)
8:00–9:00 AM	H–C	Atlantic 3, Renaissance	Teaching Fruit Fly Genetics with Cards (p. 89)
8:00–9:00 AM	H–C	Atlantic 1, Renaissance	Genetics Education in the Age of Genomics (p. 89)
8:00–9:30 AM	9–C	107A, BCEC	Genotype to Phenotype—Mapping Genes to Traits in Dogs (p. 100)
8:00–9:30 AM	10–C	150, BCEC	Diagnosing the Silent Killer: A Simulation of the Clinical Detection of Diabetes (p. 102)
8:00–9:30 AM	9–12	105, BCEC	Ecology and Evolution of Infectious Disease: How Dangerous Pathogens Emerge, Spread, and Evade Our Defenses (p. 100)
8:00–9:30 AM	7–C	157B, BCEC	Identify Patient Zero of a Zombie Apocalypse! (p. 103)
8:00–9:30 AM	9–12	258A, BCEC	New Advanced Inquiry Labs for AP Biology from Flinn Scientific (p. 104)
8:00–9:30 AM	6–12	102A, BCEC	AUTOPSY: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs (p. 98)
8:00–9:30 AM	9–C	153B, BCEC	Inquiry-based Biology with Vernier (p. 102)
8:00–10:00 AM	M–H	208, BCEC	AMNH Pathway Session: Constructing Explanations Based on Evidence About the Evolution of Antibiotic-resistant Bacteria (p. 104)
9:00–11:30 AM	9–C	157A, BCEC	Explore Molecular Evolution Using Protein Electrophoresis (AP Big Ideas 1, 3, 4) (p. 106)
9:15–10:30 AM	G	Grand Blrm., BCEC	The Power of One Teacher (p. 106)
9:30–10:30 AM	H–C	Caspian, Renaissance	SCST Session: Perceived Values of Instructional Components in a Science Methods Course Involving a College Teaching Experience (p. 108)
10:00–11:30 AM	5	151B, BCEC	Genetics: Crazy Traits (p. 112)
10:00–11:30 AM	7–C	157B, BCEC	How to Use Pop Culture Science in Your Science Classes (p. 113)
10:00–11:30 AM	6–12	102A, BCEC	Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (p. 109)
10:00–11:30 AM	10–C	150, BCEC	Is This Your First Biotechnology Workshop? Welcome to the Basics! (p. 112)
10:00–11:30 AM	6–C	107A, BCEC	Fossil and Genetic Evidence of Human Evolution (p. 110)
10:00–11:30 AM	9–C	107C, BCEC	Telling Molecular Stories with the Cellular Landscapes of David Goodsell (p. 110)
12 Noon–1:30 PM	9–C	107C, BCEC	Practice Makes Perfect: Modeling as an NGSS Authentic Practice of Science (p. 120)
12 Noon–1:30 PM	10–C	150, BCEC	Solving the Case of the Missing Records Using DNA Fingerprinting (p. 120)
12 Noon–1:30 PM	9–C	107A, BCEC	Genomic Neuroscience—From Synapse to Autism (p. 119)
12 Noon–1:30 PM	9–C	153A, BCEC	Biology with Vernier (p. 121)
12 Noon–1:30 PM	K1	102A, BCEC	Introduction to Wisconsin Fast Plants® (p. 118)
12:30–1:00 PM	E	160B, BCEC	How Elementary Teachers Can Use Concept Mapping for Meaningful Learning (p. 122)
12:30–1:30 PM	G	205B, BCEC	Detecting Epigenetic DNA Methylation in <i>Arabidopsis Thaliana</i> (p. 129)

## Schedule at a Glance Biology/Life Science

12:30–1:30 PM	H–C	Pacific E, Renaissance	Genetically Modified Organisms and You! (p. 126)
12:30–1:30 PM	H–C	Atlantic 3, Renaissance	DNA Subway: Bringing Cutting-Edge Bioinformatics into the Classroom (p. 125)
12:30–1:30 PM	H	257A, BCEC	When Students Challenge Evolution: A Historical Approach (p. 124)
12:30–1:30 PM	M–H	257A, BCEC	An E-book Can Serve as the Center of an Interactive, Inquiry-based Exploration of the Hominid Fossil Record (p. 124)
12:30–1:30 PM	H	205A, BCEC	Simulating Science: “Genetic Testing for Huntington’s Disease” (p. 129)
12:30–1:30 PM	M	160C, BCEC	Integrating Writing Standards and Project Based Learning in Life Science (p. 123)
12:30–1:30 PM	G	257B, BCEC	Instruction for the Revised AP Biology Course: Curriculum, Science Practices, and Instructional Design (p. 124)
12:30–1:30 PM	H–C	Caspian, Renaissance	SCST Session: Introductory Laboratory Activities for Biology Students (p. 126)
12:30–1:30 PM	H–C	Caspian, Renaissance	SCST Session: An Adventure in Flipping an Inquiry-based Introductory Biology Course to Increase Active Learning (p. 126)
1:00–3:30 PM	10–C	157A, BCEC	Generate a DNA Barcode and Identify Species (AP Big Ideas 1, 2, 3, 4) (p. 133)
1:30–3:00 PM	7–C	157B, BCEC	Engineer the Tools for Inquiry of Candy Food Dyes (p. 133)
2:00–3:00 PM	C	Caspian, Renaissance	SCST Session: A Study on the Attitudes of Biology Majors Toward Evolutionary Theory (p. 138)
2:00–3:00 PM	E–H	257B, BCEC	Powerful and Free Simulations for Biology Teaching (p. 137)
2:00–3:00 PM	G	205A, BCEC	Teachers Leading Teachers: Engaging Students with Life Sciences Content Through Inquiry (p. 141)
2:00–3:00 PM	HI	257A, BCEC	Zoo Genetics: A Free Conservation Genetics Curriculum (p. 137)
2:00–3:00 PM	H–C	Atlantic 3, Renaissance	Discover the Microbes Within: The Wolbachia Project (p. 138)
2:00–3:00 PM	M	160B, BCEC	Argumentation, Summative Assessment, and the Theory of Evolution (p. 141)
2:00–3:00 PM	H–C	205B, BCEC	Restriction Digest Computer Simulation (p. 142)
2:00–3:30 PM	6–C	108, BCEC	Building Human Anatomy in Clay—One Body System at a Time (p. 146)
2:00–3:30 PM	9–12	104B, BCEC	Biology for NGSS: A New Approach for a New Program (p. 145)
2:00–3:30 PM	K1	102A, BCEC	Hands-On Science with Classroom Critters (p. 144)
2:00–3:30 PM	6–C	107A, BCEC	From DNA Structure to the Genomic Era (p. 145)
2:00–3:30 PM	10–C	150, BCEC	Wait! Were the Chips I Ate Genetically Modified? (p. 146)
3:30–4:30 PM	H–C	Caspian, Renaissance	SCST Session: Using the Primary Scientific Literature in Your Science Class (p. 153)
3:30–4:30 PM	E–H	205B, BCEC	Middle School Medicine (p. 156)
3:30–4:30 PM	G	260, BCEC	Becoming Teacher Leaders Through Curriculum Development: Collaborating to Design and Implement the Science Youth Action Research Curriculum (p. 152)
3:30–4:30 PM	E	160B, BCEC	Crickets, Wolves, and Whales: How Young Children Can Understand Natural Selection (p. 156)
3:30–4:30 PM	H	205A, BCEC	The Use of Literacy Instructional Tools to Promote Deep Understanding of Complex Scientific Texts (p. 156)
3:30–4:30 PM	ei	052 A/B, BCEC	NMEA Session: Schooling with Whales (p. 156)
3:30–4:30 PM	H	257A, BCEC	Using Student-generated Paper Slide Videos to Promote Science Literacy and Argumentation (p. 152)
3:30–4:30 PM	E–H	257B, BCEC	iPads and Literacy—Where Technology Meets the Textbook (p. 152)
3:30–5:00 PM	HV	253A, BCEC	NSTA Press® Session: Tools to Deepen Students’ Understanding of Hard-to-Teach Biology Concepts (p. 158)
3:30–5:00 PM	M	208, BCEC	AMNH Pathway Session: Using a Web-based Graphing Tool to Analyze and Interpret Ecology Data and the Long-Term Impact of the Zebra Mussel Invasion on the Hudson River Ecosystem (p. 158)
3:30–5:00 PM	9–C	157B, BCEC	Worm and Squirm Your Way into Behavior Labs (AP Big Ideas 1, 2, 3, 4) (p. 158)

## Schedule at a Glance Biology/Life Science, cont.

4:00–5:30 PM	9–12	105, BCEC	Teaching Evolution in a Climate of Controversy—Even with NGSS, the Battles Continue (p. 160)
4:00–5:30 PM	7–12	107B, BCEC	Take a Swipe at Microbes! (p. 160)
4:00–5:30 PM	10–C	150, BCEC	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 161)
4:00–5:30 PM	K–7	156A, BCEC	Animal Study and the NGSS (p. 161)
4:00–5:30 PM	G	108, BCEC	Bats, iPads, and Citizen Science in the Classroom (p. 160)
5:00–6:00 PM	H–C	Caspian, Renaissance	SCST Session: Helping Students Assess the Science Implicating MMR Vaccine as a Cause of Autism (p. 165)
5:00–6:00 PM	C	Caspian, Renaissance	SCST Session: Bringing Evolution Alive Through Skull Analysis (p. 165)
5:00–6:00 PM	E–M	160B, BCEC	Kitchen Science (p. 167)
5:00–6:00 PM	H	205A, BCEC	Develop Students' Scientific Literacy Using a Project-based High School Unit on Honeybee Behavior (p. 168)
5:00–6:00 PM	H	257A, BCEC	The NGSS and a Research-based STEM Lesson for the High School Biology Classroom (p. 164)
5:00–6:00 PM	G	257B, BCEC	A Plain English Map of the Human Chromosomes and a Universal Phylogenetic Tree (p. 165)
5:00–6:00 PM	M–H	256, BCEC	Forensic Entomology: A Unique Way to Study Insects (p. 170)
5:00–6:00 PM	M–C	205B, BCEC	More Than Dragon Genetics—BYOL (Bring Your Own Laptop) (p. 168)

## Chemistry/Physical Science

8:00–9:00 AM	H–C	Atlantic 2, Renaissance	A PBL Involving Coffee Temperature (p. 96)
8:00–9:00 AM	E–H	Pacific F, Renaissance	NARST Session: Zydeco: A New iPad Application to Enhance Scientific Explanations (p. 96)
8:00–9:00 AM	E	160A, BCEC	Second-Grade Science Collaborations: Exploring States of Matter, Forces, Motion, and Energy (p. 86)
8:00–9:00 AM	M–H	252A, BCEC	Do You Need a New Science Lab? (p. 87)
8:00–9:30 AM	7–C	109B, BCEC	Molecular-Level Visualization and Simulation: Getting Ready for the <i>Next Generation Science Standards</i> (p. 100)
8:00–9:30 AM	6–8	104C, BCEC	Investigating Chemical Batteries (p. 100)
8:00–9:30 AM	9–12	102B, BCEC	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 98)
9:30–10:30 AM	9–C	156C, BCEC	Active Chemistry: A Project-based Program Capturing the Essence of the NGSS and STEM (p. 108)
10:00–11:30 AM	9–C	153A, BCEC	Chemistry with Vernier (p. 112)
10:00–11:30 AM	9–12	258A, BCEC	Flinn Scientific Presents Best Practices for Teaching Chemistry: Experiments and Demonstrations (p. 113)
10:00–11:30 AM	9–C	109B, BCEC	Molecular Modeling and the Revised AP Chemistry Curriculum: Challenges and Opportunities (p. 112)
10:00–11:30 AM	6–12	105, BCEC	The Next Generation of Science Virtual Labs That Support STEM and NGSS (p. 109)
10:00–11:30 AM	5–9	108, BCEC	The Harnessed Atom—New Ideas, Tools, and Resources: Nuclear Science and Energy (p. 110)
12 Noon–1:30 PM	9–12	104C, BCEC	Color, Spectrophotometry, and Teaching the Structure of the Atom (p. 118)
12:30–1:30 PM	E	160A, BCEC	Integrating Practices, Core Disciplinary Ideas, and Crosscutting Concepts In the Elementary School Classroom (p. 129)
12:30–1:30 PM	H–C	Pacific G/H, Renaissance	Using the Inverted Classroom in Chemistry to Teach the Abstract Concepts of Atomic Structure and the Interaction of Light with Matter (p. 126)
2:00–3:00 PM	H	254B, BCEC	Understanding the Redesigned AP Chemistry Exam: Developing Aligned Formative and Summative Assessments (p. 136)
2:00–3:00 PM	H–C	Pacific G/H, Renaissance	Write Reactions (p. 138)
2:00–3:00 PM	HU	Caspian, Renaissance	SCST Session: The Relationship Between Guided Student-Generated Questioning and Chemistry Achievement and Chemistry Self-Efficacy in Elementary Preservice Teachers (p. 138)

## Schedule at a Glance Chemistry/Physical Science, cont.

2:00–3:30 PM	9–12	105, BCEC	Economical, Efficient, and Effective STEM Inquiry in Chemistry (p. 145)
3:30–4:30 PM	M–C	160A, BCEC	Making the Leap to a Digital Course (p. 151)
3:30–4:30 PM	G	160A, BCEC	Using e-Books (Lab Safety E-book), Other Tools, and Apps in the Science Classroom (p. 151)
4:00–5:30 PM	9–12	258A, BCEC	New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 162)
4:00–5:30 PM	9–12	104C, BCEC	Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (p. 160)
5:00–6:00 PM	M–H	254B, BCEC	Food and Environmental Toxicants—Good, Bad, and Complicated (p. 168)
5:00–6:00 PM	HU	Griffin, Westin	I-IMPACT: The Initiative to Inspire and Mentor Physics and Chemistry Teachers (p. 167)

## Earth/Space Science

8:00–9:00 AM	HI	261, BCEC	Science, Technology, and Culture (p. 89)
8:00–9:00 AM	E–M	162A, BCEC	WeatherBlur: Climate Change, Community, and Kids (p. 86)
8:00–9:30 AM	5	106, BCEC	Comets: Visitors from the Past (p. 100)
9:30–10:30 AM	MN	052 A/B, BCEC	NMEA Session: Navigating Oceans of Data (p. 108)
10:00–11:30 AM	5	106, BCEC	Stellar Evolution Made Easy (p. 110)
10:00–11:30 AM	K–5	156A, BCEC	Building Readiness in Earth Science and the NGSS (p. 113)
12 Noon–1:30 PM	5	106, BCEC	Plate Tectonics: Continents on the Move (p. 119)
12:30–1:30 PM	G	210C, BCEC	Who Are You Calling an ALIEN? (p. 122)
12:30–1:30 PM	E–M	259A, BCEC	Helping Young Learners Explore Their Universe with PBS Learning Media (p. 124)
12:30–1:30 PM	E	162B, BCEC	It's Not Just a Phase! (p. 129)
12:30–1:30 PM	M–H	Pacific F, Renaissance	NARST Session: Exploring Student Reasoning Using Models in Earth Science (p. 126)
12:30–2:30 PM	M–H	208, BCEC	AMNH Pathway Session: Analyzing and Interpreting Data to Determine Earthquake Risk (p. 132)
2:00–3:00 PM	H	261, BCEC	Understanding Climate Change and Climate Change Models (p. 138)
2:00–3:00 PM	MN	052 A/B, BCEC	NMEA Session: Climate Change on the Ocean Planet (p. 141)
2:00–3:00 PM	E–M	162A, BCEC	Aerospace Adventurers: Launching an After-School Aeronautics and Space Education Program (p. 136)
2:00–3:00 PM	E–M	253C, BCEC	NSTA Press® Session: Uncovering Students' Ideas in Astronomy and the NGSS (p. 142)
3:30–4:30 PM	E–M	162A, BCEC	Take a CosmoQuest Adventure in Geology! (p. 156)
3:30–4:30 PM	E–H	254A, BCEC	NSTA Press® Session: Uncovering Students' (and Teachers') Ideas About Stars and the Universe (p. 151)
3:30–4:30 PM	M–H	256, BCEC	Teaching Climate and Energy: The CLEAN Collection of Peer-reviewed Climate and Energy Learning Resources (p. 152)
3:30–4:30 PM	G	261, BCEC	Science, Social Justice, and Social Media: The Perfect Combination (p. 152)
3:30–5:30 PM	G	Gr. Blrm., BCEC	Dancing with Mars, Debating Dinosaurs (p. 159)
4:00–5:30 PM	6–8	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Space Activity (p. 162)
4:00–5:30 PM	6–C	107A, BCEC	Biology on Geologic Timescales (p. 160)
5:00–6:00 PM	G	252A, BCEC	Climate: A Fascinating Scientific Topic with Challenges and Opportunities for Science Educators (p. 163)
5:00–6:00 PM	M	253C, BCEC	NSTA Press® Session: Using iPads for Lab Notebooks with Earth Science Success! (p. 168)
5:00–6:00 PM	M–H	261, BCEC	Rub-A-Dub-Dub—Science in a Tub! (p. 165)
5:00–6:00 PM	M	162A, BCEC	Young Meteorologist Program (p. 164)
5:00–6:00 PM	E	160C, BCEC	Earth Science in Our Mailbox: How First-Graders Traveled America Through Soil Samples (p. 163)

# Schedule at a Glance Environmental Science

## Environmental Science

8:00–9:00 AM	I	256, BCEC	ecosySTEMs: Using Ecology as an Integrating Context for STEM Education (p. 96)
8:00–9:00 AM	H–C	Pacific A/B, Renaissance	Food: A Unifying Subject Area for Environmental Science (p. 90)
8:00–9:00 AM	MN	157C, BCEC	The Tagging and Tracking of Marine Animals (p. 94)
8:00–9:00 AM	E	161, BCEC	The Sun, the Soil, and the Tomato: Gardening as a Vehicle to Teach Earth and Space Concepts and Bridge the Summer Hiatus with Scientific Exploration (p. 86)
8:00–9:00 AM	I	052 A/B, BCEC	NMEA Session: Whale-of-a-Tale Share-a-Thon (p. 86)
12:30–1:30 PM	E–M	161, BCEC	Collaborative Conservation Through Birds and Citizen Science (p. 123)
12:30–1:30 PM	M–H	157C, BCEC	Using Web-based GIS to Investigate Rain Forest Conservation Issues in the Brazilian Amazon (p. 129)
12:30–1:30 PM	E–M	161, BCEC	Bringing the Outdoors In for Science Classrooms (p. 123)
12:30–1:30 PM	E–M	Constitution, Seaport	AMSE Session: Helping Students Make Sense of Climate Change (p. 126)
2:00–3:00 PM	M	Constitution, Seaport	AMSE Session: Engineering Through Aquaculture Technology for Women (p. 139)
2:00–3:00 PM	I	Pacific F, Renaissance	NARST Session: Reconfiguring the Urban Science Experience: The Power of Diversity, Social Context, and the Local Environment (p. 138)
2:00–3:00 PM	M–C	157C, BCEC	Using Geospatial Data to Teach How Scientists and Engineers Study the Environment (p. 135)
2:00–3:00 PM	E	161, BCEC	Communities of Life: Child-centered Life Science Teaching (p. 141)
2:00–3:00 PM	M–H	157C, BCEC	Groundwater Computer Modeling in the High School Classroom (p. 135)
2:00–3:30 PM	5–C	107B, BCEC	Stream Ecology: Slimy Leaves for Clean Streams (p. 145)
3:30–4:30 PM	M	161, BCEC	Survivor: Kenzo Isle (p. 156)
3:30–4:30 PM	G	157C, BCEC	Where to Start in Teaching Climate Science: The CLEAN Collection of Resources (p. 156)
4:00–5:30 PM	4	104B, BCEC	Solar One CleanTech (p. 159)
5:00–6:00 PM	H	157C, BCEC	Stories, Songs, and Comedy to Guide the AP Environmental Science Curriculum (p. 163)
5:00–6:00 PM	E	161, BCEC	Teaching Earth's System Science Outdoors (p. 168)
5:00–6:00 PM	H	157C, BCEC	Integrating <i>Common Core State Standards</i> , <i>ELA</i> and <i>NGSS</i> Practices in Environmental Science (p. 163)
5:00–6:00 PM	G	251, BCEC	Raindrops Keep Falling in My Gauge: School Partnerships with a Citizen Science Network to Increase Climate Literacy (p. 164)
6:30–8:00 PM	G	Harbor Ballroom I/II, Westin	<i>Young Voices for the Planet</i> Film Festival (p. 171)

## General Science

8:00–8:30 AM	P	158, BCEC	Science + Literacy in PreK Science Instruction (p. 85)
8:00–9:00 AM	G	Pacific G/H, Renaissance	Moving from STEM to STEAM in the 21st Century (p. 90)
8:00–9:00 AM	G	Brewster, Renaissance	Preparing Tomorrow's Leaders (p. 89)
8:00–9:00 AM	G	259B, BCEC	sTem: Merging Technology with Engineering (p. 88)
8:00–9:00 AM	E	252B, BCEC	Collaboration Is Key (p. 87)
8:00–9:00 AM	H	Flagship A, Seaport	Catalyzing STEM Education via the National Academy of Engineering Grand Challenges—From Philadelphia to Kenya (p. 90)
8:00–9:00 AM	G	Commonwealth Blrm. C, Westin	Inquiry, Science and Engineering Practices, and the <i>Next Generation Science Standards</i> (p. 92)
8:00–9:00 AM	G	Griffin, Westin	FAST: Formative Assessment for Science Teachers (p. 92)
8:00–9:00 AM	G	Grand Ballroom E, Westin	Woodles: The Case for Embedded Vocabulary (p. 96)
8:00–9:00 AM	E–M	259A, BCEC	Doing Problem-based Science Challenges and Managing Your Classroom—How to Do Both Successfully! (p. 96)
8:00–9:00 AM	G	Lewis, Westin	Building Effective STEM Partnerships (p. 93)

## Schedule at a Glance General Science

8:00–9:00 AM	M–H	Lighthouse I, Seaport	Flipping for Science and Engineering! (p. 90)
8:00–9:00 AM	E–M	160C, BCEC	Using Popular Children’s Films to Teach Science (p. 86)
8:00–9:00 AM	G	260, BCEC	Preparing for the Future: Developing Science Teacher Leaders (p. 88)
8:00–9:00 AM	M–C	Griffin, Westin	Teaching Scientific Literacy Through Writing Arguments (p. 92)
8:00–9:00 AM	G	Webster, Westin	Mirror, Mirror, on the Wall: Using Reflection to Improve Professional Development (p. 94)
8:00–9:00 AM	H	Lighthouse I, Seaport	Using Communication Technology to Facilitate Scientific Literacy (p. 90)
8:00–9:00 AM	H	Flagship A, Seaport	Transitions: Student to Teaching Assistant (p. 90)
8:00–9:00 AM	E	162B, BCEC	STEM Integration—Don’t Leave a Letter Out! (p. 94)
8:00–9:00 AM	M–H	Plaza C, Seaport	Integrating Probes in the Interactive Notebook (p. 92)
8:00–9:00 AM	E–H	Pacific G/H, Renaissance	Science for Artists of All Ages (p. 90)
8:00–9:00 AM	M	254B, BCEC	Hands-On Project Based Learning (p. 95)
8:00–9:00 AM	E	213, BCEC	Connecting Science and Math Through Story Problems (p. 95)
8:00–9:00 AM	M–H	Seaport Ballroom A, Seaport	Dissecting Formative Assessment (p. 96)
8:00–9:00 AM	M–H	Plaza A, Seaport	Science Teacher Leadership to Strengthen a Learning Environment (p. 92)
8:00–9:00 AM	G	Grand Ballroom C, Westin	Using the National Facilities Standards to Plan and Design Your School Science Classroom/Laboratory (p. 96)
8:00–9:00 AM	E–M	211, BCEC	A Virtual Field Trip Connects Classrooms to the Wonder of Antarctic Penguins (p. 94)
8:00–9:00 AM	H	Plaza B, Seaport	Educaching: Finding Treasure to Capture Students’ Attention (p. 92)
8:00–9:00 AM	G	Grand Ballroom D, Westin	Putting It All Together: Developing Connections Between the CCSS and NGSS (p. 96)
8:00–9:00 AM	G	Harbor Ballroom I/II, Westin	First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference? (p. 92)
8:00–9:00 AM	M	255, BCEC	Teaching Technology Engineering in Context (p. 88)
8:00–9:00 AM	S	Douglass, Westin	Applying NGSS Engineering Standards to Classroom Practice (p. 92)
8:00–9:00 AM	M–H	Plaza C, Seaport	Interactive Notebooks: An Organizational Tool That REALLY Works! (p. 92)
8:00–9:00 AM	G	Stone, Westin	Garbage In/Garbage Out: Quality Online Learning Begins with Great Next Gen Courses (p. 93)
8:00–9:00 AM	6–8	156C, BCEC	Effortlessly Integrate CCSS ELA into Your Middle School Science Curriculum (p. 97)
8:00–9:00 AM	P–E	253C, BCEC	NSTA Press® Session: <i>Next Time You See...</i> (p. 95)
8:00–9:00 AM	G	254A, BCEC	NSTA Press® Session: Doing Good Science in Middle School (p. 88)
8:00–9:00 AM	G	253A, BCEC	NSTA Press® Session: Teaching for Conceptual Understanding with the NGSS (p. 87)
8:00–9:00 AM	G	Harbor Ballroom III, Westin	CSSS Session: The Value of Integratedness: Exploring Methods for Integrating Mathematics in Scientific Practices (p. 93)
8:00–9:00 AM	G	209, BCEC	Wheelock Pathway Session: The Insightful Use of Science Notebooks (p. 94)
8:00–9:00 AM	G	203, BCEC	BSCS Pathway Session: A Vision of Inquiry Using the NGSS Practices of Science and Engineering (p. 94)
8:00–9:30 AM	E–H	204 A/B, BCEC	OELA Pathway Session: Discourse Strategies to Assist English Language Learners to Engage in Physical Science (p. 98)
8:00–9:30 AM	6–8	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 103)
8:00–9:30 AM	G	154, BCEC	COMMON Practices That Get to the CORE of Great Instruction Using Discovery Education Science Techbook (p. 102)
8:00–9:30 AM	K6	151A, BCEC	DSM and STEM: Challenges for the Elementary Student (p. 102)
8:00–9:30 AM	K6	152, BCEC	FOSStering the Common Core: Science-centered Language Development (p. 102)
8:00–9:30 AM	K2	103, BCEC	Integrative STEM Learning K–2 (p. 98)
8:00–9:30 AM	6–12	104A, BCEC	Explore STEM Integration with PASCO Probeware—Free Sensor Set for Five Attendees! (p. 100)
8:00–9:30 AM	6–12	156A, BCEC	Iron Teacher: NGSS Edition (p. 103)

## Schedule at a Glance General Science, cont.

8:00–9:30 AM	41	109A, BCEC	Forces, Energy, and Motion (p. 100)
8:00–10:00 AM	G	206 A/B, BCEC	NGSS Pathway Session: <i>STEM Lesson Essentials</i> and the NGSS (p. 104)
9:00 AM–5:30 PM	30	258B, BCEC	einstein™ STEMathon (program changes)
9:30–10:30 AM	G	Constitution, Seaport	AMSE Session: Creating Project Based Learning (PBL) Experiences (p. 108)
9:30–10:30 AM	C	Caspian, Renaissance	SCST Session: Investigating the Specialized Knowledge that University Science Professors Draw Upon While Using Mathematical Representations to Teach Science (p. 108)
10:00–11:30 AM	E–H	204 A/B, BCEC	OELA Pathway Session: Using Three Promising Practices to Increase Language Development and Science Learning (p. 108)
10:00–11:30 AM	K6	152, BCEC	Science Practices: What Does Argumentation Look Like in an Elementary Classroom? (p. 112)
10:00–11:30 AM	K8	151A, BCEC	What’s Going on in There? NGSS and STEM for Administrators, Trainers, and University Faculty (p. 112)
10:00–11:30 AM	6–8	156B, BCEC	MINDSTORMS® EV3 Robotics in the Middle School Classroom: Getting Started (p. 113)
10:00–11:30 AM	G	154, BCEC	The Digital Classroom with Discovery Education Science Techbook—What Does It Look Like? (p. 113)
10:00–11:30 AM	K1	104A, BCEC	Advancing NGSS Practices with Probeware—Free Sensor Set for Five Attendees! (p. 109)
10:00–11:30 AM	K–5	153C, BCEC	33 Strategies for Integrating Disciplinary Literacy (p. 112)
10:00–11:30 AM	69	107B, BCEC	Modeling and Engineering Design—From Ideas to Reality (p. 110)
10:00–11:30 AM	KD	103, BCEC	STEM—Early Childhood Style! (p. 109)
10:00–11:30 AM	K–5	102B, BCEC	Bring Visual Science into Grades K–5 Classrooms—It’s a Game Changer! (p. 109)
10:00–11:30 AM	3C	153B, BCEC	iPad and Wireless Sensors with Vernier (p. 112)
11:00 AM–12 Noon	6–8	156C, BCEC	Merging the Three Dimensions of the <i>Next Generation Science Standards</i> (p. 116)
11:00 AM–12 Noon	M	Constitution, Seaport	AMSE Session: Developing Science and Engineering Skills Through Informal Science Programs (p. 116)
11:00 AM–12 Noon	G	052 A/B, BCEC	NMEA Session: Working the NGSS into Your Curriculum Through Ocean Exploration (p. 116)
11:05–11:30 AM	G	Exhibit Hall Entrance, BCEC	“Meet and Greet” the Presidents and Board/Council (p. 117)
12 Noon–1:00 PM	G	Grand Blrm., BCEC	STEM Behind Hollywood—Adventure, Drama, and Mystery in Your Classroom (p. 117)
12 Noon–1:30 PM	K1	156A, BCEC	Grant Writing: Designing for Dollars (p. 121)
12 Noon–1:30 PM	3C	153B, BCEC	Wireless Sensor Exploration with Vernier (p. 121)
12 Noon–1:30 PM	K8	103, BCEC	Guiding Questions for the Next Generation K–8 (p. 118)
12 Noon–1:30 PM	G5	153C, BCEC	Integration of the NGSS and the <i>Common Core State Standards</i> in the Elementary Classroom (p. 121)
12 Noon–1:30 PM	K8	104A, BCEC	SPARKscience: Sensor-based Science for K–8—Free Sensor Set for Five Attendees! (p. 118)
12 Noon–1:30 PM	6–8	258A, BCEC	Hands-On Integrated Science Activities for Middle School from Flinn Scientific (p. 121)
12 Noon–1:30 PM	G	154, BCEC	STEMtastic Strategies (p. 121)
12 Noon–1:30 PM	K6	156B, BCEC	Machines and Mechanisms for ALL Ages (p. 121)
12 Noon–1:30 PM	K8	151A, BCEC	Teaching Argumentation for Our Next Generation (p. 120)
12 Noon–1:30 PM	36	152, BCEC	Online Assessment That Informs Instruction! (p. 121)
12:30–1:30 PM	G	251, BCEC	ASTC Session: Partnering to Strengthen Elementary Science Instruction in Chicago (p. 123)
12:30–1:30 PM	9–C	156C, BCEC	Bringing Technology into Your STEM Classroom (p. 132)
12:30–1:30 PM	E–H	252A, BCEC	Bridging the STEM Gap with Toshiba/NSTA ExploraVision (p. 123)
12:30–1:30 PM	M–H	Plaza A, Seaport	Making a Great Piece of Literature Even Better Through Science (p. 127)
12:30–1:30 PM	G	Pacific A/B, Renaissance	The Museum of Inspired Learning (p. 126)
12:30–1:30 PM	MV	261, BCEC	Make It Mobile—Best Practices Science Courses in iTunes U (p. 125)
12:30–1:30 PM	E	212, BCEC	Renewable Energy: Wind Power vs. Solar Power (p. 130)

## Schedule at a Glance General Science, cont.

12:30–1:30 PM	G	254A, BCEC	NSTA Press® Session: <i>Exemplary Science: Best Practices in Professional Development</i> (p. 124)
12:30–1:30 PM	M	254B, BCEC	Seeing the Invisible: Making the Electromagnetic Spectrum Concrete (p. 130)
12:30–1:30 PM	G	Grand Ballroom C, Westin	Planning and Designing Safe and Sustainable Science Facilities That Meet NGSS (Science Facilities 101) (p. 131)
12:30–1:30 PM	E–M	211, BCEC	Moving from STEM to STEAM (p. 130)
12:30–1:30 PM	CS	Commonwealth Blrm. B, Westin	Not Just Surviving, But Thriving both Inside and Outside the Classroom (p. 128)
12:30–1:30 PM	M–H	Plaza C, Seaport	How to Create a STEM Program at Your School (p. 127)
12:30–1:30 PM	M–H	260, BCEC	Opening Up Your Door: Fostering Teacher-led Communities of Inquiry and Collaboration (p. 125)
12:30–1:30 PM	MV	Faneuil, Westin	Don't Coach from the Sidelines, Get in the Game! (p. 130)
12:30–1:30 PM	E–H	Atlantic 2, Renaissance	Cleanup in Zero G: Student Learning in Microgravity (p. 130)
12:30–1:30 PM	H	Flagship A, Seaport	Use of Problem-solving Study Groups to Impact Student Achievement (p. 127)
12:30–1:30 PM	H	052 A/B, BCEC	NMEA Session: Educator at Sea—Bridging Classrooms and Oceans Through Exploration (p. 123)
12:30–1:30 PM	G	Stone, Westin	Collaborative Development of Units Aligned to New Science and Literacy Standards (p. 128)
12:30–1:30 PM	G	Brewster, Renaissance	Advocacy 101 (p. 126)
12:30–1:30 PM	G	Webster, Westin	WHOA! This Changes Everything—From One-Size-Fits-All to Customizable and Differentiated (p. 129)
12:30–1:30 PM	S	Commonwealth Blrm. C, Westin	NSELA Session: Implementing the NGSS—Are You Prepared to Lead the Change Process? (p. 128)
12:30–1:30 PM	M–H	Seaport Ballroom B, Seaport	Science Writing as Argument (p. 130)
12:30–1:30 PM	G	Lewis, Westin	Ready, Set, STEM! (p. 128)
12:30–1:30 PM	G	Commonwealth Blrm. B, Westin	Homegrown Teacher Leaders (p. 128)
12:30–1:30 PM	G	Grand Ballroom D, Westin	Cold Fusion/Hot Science (p. 131)
12:30–1:30 PM	M–H	Lighthouse I, Seaport	Valuing the At-Risk Student: Enhancing Motivation Through Conative Approaches (p. 127)
12:30–1:30 PM	G	Stone, Westin	Considering a Sustainable Curriculum (p. 128)
12:30–1:30 PM	G	Griffin, Westin	Science Notebooks for the Next Generation (p. 128)
12:30–1:30 PM	G	Pacific D, Renaissance	A Google Suite Classroom: How to Create a Blended Learning Environment Using the Google Suite...for Free! (p. 130)
12:30–1:30 PM	G	Harbor Ballroom III, Westin	Energy as a Crosscutting Concept (p. 128)
12:30–1:30 PM	P–E	158, BCEC	Science with a Story—NGSS Style! (p. 123)
12:30–1:30 PM	M–H	Plaza C, Seaport	Coming to See What's Possible: Linking STEM Curricula to the Cultural Communities of Schools (p. 127)
12:30–1:30 PM	G	Grand Ballroom E, Westin	Formative Assessments for Meaningful Learning in Science (p. 131)
12:30–1:30 PM	E	213, BCEC	The Yearlong Field Trip: Informal and Formal Educators Working All Year Long (p. 130)
12:30–1:30 PM	MN	Seaport Ballroom A, Seaport	Getting Your Students to Construct Explanations in Science: Using a Discrepant Event to Explore the Science Practices (p. 130)
12:30–1:30 PM	E–M	255, BCEC	Here an App, There an App, Everywhere an App App (p. 124)
12:30–1:30 PM	S	Carlton, Westin	Developing a Toolkit for the Next Generation of Science Leaders (p. 127)
12:30–1:30 PM	M–H	Commonwealth Blrm. A, Westin	Get to the Point: Techniques for Downhill Writing (p. 128)
12:30–1:30 PM	G	Douglass, Westin	Career Connections with Industry Partners (p. 128)
12:30–1:30 PM	H	Lighthouse I, Seaport	Fostering the "I Don't Know the Answer, but I Think..." Classroom (p. 127)
12:30–1:30 PM	M–H	Plaza B, Seaport	Connecting Science for English Language Learners (p. 127)
12:30–1:30 PM	I	256, BCEC	Energy Literacy—to Infinity (or at Least Next Generation) and Beyond! (p. 124)
12:30–1:30 PM	E–M	207, BCEC	DeSTEMber: 31 Days of Standards-aligned Curriculum (p. 129)
12:30–1:30 PM	G	259B, BCEC	Science 2.0: Putting Web 2.0 into the Science Classroom (p. 125)



## Schedule at a Glance General Science, cont.

12:30–2:00 PM	E–H	204 A/B, BCEC	OELA Pathway Session: Designing Science Lessons That Meet the NGSS and Increase ELL Students' Language Skills and Science Knowledge (p. 132)
12:30–2:30 PM	G	206 A/B, BCEC	NGSS Pathway Session: Developing Evaluation Tools for STEM Progress at the School and District Levels (p. 132)
12:30–2:30 PM	G	203, BCEC	BSCS Pathway Session: Developing and Using Models in the Classroom (NGSS Practice 2) (p. 132)
12:30–2:30 PM	P–E	209, BCEC	Wheelock Pathway Session: No Hands! Facilitating Meaningful Science Discussions with Elementary Students (p. 132)
2:00–2:30 PM	E	252B, BCEC	Integrating Hands-On STEM Activities with <i>Common Core State Standards</i> , in English Language Arts and Mathematics (p. 134)
2:00–2:30 PM	M–H	Plaza C, Seaport	Scientific Literacy Through Literature Review: Close Reading of Scientific Journal Articles as Performance Assessment (p. 134)
2:00–3:00 PM	PI	160C, BCEC	Bringing the Inside Out—Using Class Trips to Promote Young Learners' Scientific Literacy (p. 135)
2:00–3:00 PM	MS	Faneuil, Westin	Using the “E” in STEM to Integrate STEM Silos (p. 144)
2:00–3:00 PM	M–H	Seaport Ballroom B, Seaport	Strengthening the Flipped Classroom Model by Integrating <i>Common Core State Standards</i> (p. 143)
2:00–3:00 PM	G	Burroughs, Westin	Nature of Science: The Missing Ingredient (p. 139)
2:00–3:00 PM	E–M	Plaza A, Seaport	Achieving CCSS Through Authentic Integration with Inquiry Science Kit Instruction (p. 139)
2:00–3:00 PM	M–C	Brewster, Renaissance	Citizen Scientists: The Future of Science (p. 138)
2:00–3:00 PM	G	259B, BCEC	iPads in Science (p. 138)
2:00–3:00 PM	I	256, BCEC	Remotely Operated Vehicles: An Engaging Way to Combine Marine Biology, Engineering, and Physical Science (p. 136)
2:00–3:00 PM	es	Carlton, Westin	Building a STEM Elementary Program from the Foundation Up (p. 139)
2:00–3:00 PM	G	Webster, Westin	Teachers on the Tundra: Working and Collaborating with Scientists at Toolik Field Station (p. 141)
2:00–3:00 PM	G	Commonwealth Blrm. B, Westin	Science and Democracy: How to Bring a Thirst for Scientific Knowledge Beyond Your Classroom and into Your Community (p. 140)
2:00–3:00 PM	G	Atlantic 2, Renaissance	Talk Like a Scientist! (p. 143)
2:00–3:00 PM	M–H	Seaport Ballroom A, Seaport	How's a Picture Worth 1,000 Words in Math and Science? (p. 143)
2:00–3:00 PM	E–H	Grand Ballroom D, Westin	Teaching <i>Common Core State Standards</i> , ELA Through Digital Science Interactive Notebooks (p. 144)
2:00–3:00 PM	G	Hancock, Westin	Job Shadow: Unique and Impactful Professional Development for Science Teachers (p. 140)
2:00–3:00 PM	M	255, BCEC	Staking a Claim (p. 136)
2:00–3:00 PM	M–H	Plaza B, Seaport	Enhancing Adolescents' Motivation for Science: Research-based Strategies for Teaching Male and Female Students (p. 139)
2:00–3:00 PM	M–H	Flagship A, Seaport	Enhancing Learning Outcomes Through Media with <i>NOVA</i> (p. 139)
2:00–3:00 PM	G	Commonwealth Blrm. A, Westin	Training High School Students to Be Facilitators of Science Learning: A High School/Science Museum Partnership (p. 143)
2:00–3:00 PM	G	Stone, Westin	CHOICES: The ONLY “Differentiation” That Works (p. 140)
2:00–3:00 PM	G	258C, BCEC	Closing the Achievement Gap with Constructed Response (p. 137)
2:00–3:00 PM	es	Carlton, Westin	Supporting and Developing an Elementary STEM Academy (p. 139)
2:00–3:00 PM	E	213, BCEC	Integrating Science, Technology, Engineering, and Math in an Early Elementary Classroom (p. 142)
2:00–3:00 PM	E	158, BCEC	Everyone Loves the R.E.D.S.O.X.! (Really Easy inquiry-based lessons Students Oughta eXperience) (p. 135)
2:00–3:00 PM	G	253A, BCEC	Magical Illusions for Science—It's Showtime! (p. 136)
2:00–3:00 PM	E–M	207, BCEC	NSTA Press® Session: <i>Everyday Engineering</i> (p. 142)
2:00–3:00 PM	G	254A, BCEC	NSTA Press® Session: Safer STEM Activities (p. 136)
2:00–3:00 PM	G	Griffin, Westin	Assessing “Science Writing” in Linguistically Diverse Elementary Classrooms (p. 140)
2:00–3:00 PM	G	Atlantic 1, Renaissance	Infusing Technology into a Project Based Learning Environment in an Alternative High School (p. 142)

## Schedule at a Glance General Science, cont.

2:00–3:00 PM	E	212, BCEC	Child-friendly Classification: Organizing the Natural World from the Perspective of Elementary School Learners (p. 142)
2:00–3:00 PM	G	Grand Ballroom E, Westin	What Makes an Effective Engineering Curriculum? (p. 144)
2:00–3:00 PM	E–M	211, BCEC	Strategies for Success in Science (p. 142)
2:00–3:00 PM	E	162B, BCEC	First-Grade STEM Robotics (p. 141)
2:00–3:00 PM	G	Burroughs, Westin	Doing Inquiry-oriented Research as a Teacher-Researcher (p. 139)
2:00–3:00 PM	E–H	Lewis, Westin	Let the iPad Tell a Science (Digital) Story! (p. 140)
2:00–3:00 PM	I	251, BCEC	ASTC Session: Leveraging Informal Science Organizations to Address the <i>Next Generation Science Standards</i> (p. 136)
2:00–3:00 PM	E–H	Harbor Ballroom III, Westin	CSSS Session: Assessment of the NGSS: Implementing the Recommendations from the NRC <i>Framework</i> (p. 140)
2:00–3:00 PM	H	Lighthouse I, Seaport	Science Identities in a High School Classroom: A Year of Practitioner Inquiry (p. 139)
2:00–3:00 PM	G	252A, BCEC	An Overview of No Child Left Behind and Federal STEM Education Policy (p. 136)
2:00–3:00 PM	S	Otis, Westin	Evaluating Science Instruction Through Observations, Feedback, and Growth (p. 140)
2:00–3:00 PM	G	Commonwealth Blrm. C, Westin	Science Sense-making and Discourse in Support of the NGSS Instructional Practices (p. 140)
2:00–3:00 PM	G	Grand Ballroom C, Westin	Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102) (p. 144)
2:00–3:30 PM	K–1	154, BCEC	Top FREE STEM Resources for Your Classroom (p. 147)
2:00–3:30 PM	K–8	151A, BCEC	Science Gnus for Teachers—Famous Scientists, STEM, and the NGSS (p. 146)
2:00–3:30 PM	5–8	152, BCEC	Asteroid! Will Earth Be Hit Again? (p. 147)
2:00–3:30 PM	G5	156B, BCEC	Bring the World of Digital Learning to Your Classroom with WeDo (p. 147)
2:00–3:30 PM	5–8	107C, BCEC	Do Your Students Like to Argue? Meet the NGSS and CCSS Using Argumentation (p. 146)
2:00–3:30 PM	6–C	106, BCEC	MakerScience and Arduino (p. 145)
2:00–3:30 PM	K–5	103, BCEC	STEM and <i>Common Core State Standards</i> K–5 (p. 144)
2:00–3:30 PM	3C	153B, BCEC	iPad and Wireless Sensors with Vernier (p. 147)
2:00–3:30 PM	5–C	258A, BCEC	Flinn Scientific Presents “How to Design a Safe and Efficient Science Laboratory” (p. 148)
2:00–3:30 PM	K1	104A, BCEC	SPARKvue: Sensor-based Science with Data Sharing for Your iPad—Free Sensor Set for Five Attendees! (p. 145)
2:30–4:00 PM	G	204 A/B, BCEC	OELA Pathway Session: Using Parent-Student-Teacher Relationships to Enhance ELLs’ Science and Language Learning (p. 148)
3:00–5:00 PM	G	206 A/B, BCEC	NGSS Pathway Session: Developing Performance Assessments Linking the NGSS and the CCSS (p. 148)
3:00–6:00 PM	G	203, BCEC	BSCS Pathway Session: Analyzing and Interpreting Data in the Classroom ( <i>NGSS Practice 4</i> ) (p. 149)
3:30–4:30 PM	G	210C, BCEC	Engineering and Science: Strengthening the Partnership (p. 150)
3:30–4:30 PM	M–H	Constitution, Seaport	Failing at Poetry: The Best Staff Development for Science Teachers (p. 153)
3:30–4:30 PM	ei	207, BCEC	Through My Window: Using Narrative as a Digital Learning Environment to Engage Youth in Engineering (p. 157)
3:30–4:30 PM	P–E	259A, BCEC	Compost: The “Rot” Thing for Our Earth (p. 152)
3:30–4:30 PM	M–H	Lighthouse I, Seaport	Increase Online Student Collaboration with Google Docs and Apps for Education (p. 153)
3:30–4:30 PM	H	Plaza A, Seaport	The DuPont Challenge© as a Research Curriculum (p. 154)
3:30–4:30 PM	M–H	Seaport Ballroom B, Seaport	Using Food in Science Education (p. 157)
3:30–4:30 PM	E–M	254B, BCEC	The Mathematics of Bridging Design in STEM (p. 157)
3:30–4:30 PM	H	Flagship A, Seaport	A Prescription for Project Based Learning: A New Health-centered Charter School (p. 153)
3:30–4:30 PM	M–H	Lighthouse I, Seaport	Practical iPads: A Workflow Model (p. 153)

## Schedule at a Glance General Science, cont.

3:30–4:30 PM	G	Webster, Westin	Start an Academy That Integrates Real-World Engineering and Manufacturing (p. 155)
3:30–4:30 PM	G	Hancock, Westin	Connecting Research Institutions to K–12 Educators (p. 155)
3:30–4:30 PM	E	212, BCEC	Knowing What to Do When You Don't Have the Answer: Modeling Science Practice (p. 157)
3:30–4:30 PM	M	255, BCEC	Project-based Science (p. 152)
3:30–4:30 PM	M	Pacific F, Renaissance	NARST Session: Role-Playing STEM Professionals: A Game-like Approach Based on Video Game Research (p. 153)
3:30–4:30 PM	G	Pacific F, Renaissance	NARST Session: Creating School Scientific Communities Among Urban Refugee ELL Populations (p. 153)
3:30–4:30 PM	G	Harbor Ballroom I/II, Westin	Conference Tips for First-Timers (p. 155)
3:30–4:30 PM	E	252B, BCEC	Use Crickets to Introduce Scientific Investigations to Elementary Students (p. 151)
3:30–4:30 PM	G	Stone, Westin	Great Science Lesson = Presidential Award + \$10,000 (p. 155)
3:30–4:30 PM	G	252A, BCEC	Community-based Problem Solving: Bringing the Community into the Classroom (p. 151)
3:30–4:30 PM	E–M	211, BCEC	Literacy Strategies That Empower Student Scientists (p. 157)
3:30–4:30 PM	E–M	158, BCEC	Enhance, Engage, Engineer! (p. 151)
3:30–4:30 PM	G	Burroughs, Westin	Polar Educators International (PEI): A Network of Teacher Leaders in Polar Science (p. 154)
3:30–4:30 PM	E–H	258C, BCEC	The 4Cs and Science: Incorporating 21st-Century Learning and Innovation Skills into K–12 Curricula (p. 157)
3:30–4:30 PM	MS	Carlton, Westin	Meeting the Challenge of Change: Integrating the NGSS and CCSS <i>Mathematics</i> in Middle Schools for All Students (p. 154)
3:30–4:30 PM	S	Griffin, Westin	Infusing Practices into Lesson Sequences (p. 155)
3:30–4:30 PM	G	259B, BCEC	The World of Google in Science (p. 152)
3:30–4:30 PM	G	Commonwealth Blrm. A, Westin	Effective Science Instruction for English Language Learners (p. 157)
3:30–4:30 PM	E–M	160C, BCEC	Transition from Text to Inquiry (p. 151)
3:30–4:30 PM	G	Brewster, Renaissance	Comic Strip Science (p. 152)
3:30–4:30 PM	M–H	Seaport Ballroom A, Seaport	But I Teach High School Science, Not English Language! (p. 157)
3:30–4:30 PM	G	Harbor Ballroom III, Westin	Better Assessment Through Four Essential Questions (p. 155)
3:30–4:30 PM	G	Burroughs, Westin	Using Classroom Observation Protocols for Data-driven Feedback and Professional Development (p. 154)
3:30–4:30 PM	G	Grand Ballroom E, Westin	Hands-On Education and Science Standards (p. 158)
3:30–4:30 PM	G	Lewis, Westin	Enhancing the Wonder of Science with Children's Literature (p. 155)
3:30–4:30 PM	P–E	213, BCEC	Bringing Fairy Tales to Life by Integrating Science Concepts (p. 157)
3:30–4:30 PM	C	Pacific G/H, Renaissance	Make a Difference! Start an NSTA Student Chapter (p. 153)
3:30–4:30 PM	M–H	Plaza B, Seaport	Introducing the New Exploratorium (p. 154)
3:30–4:30 PM	G	Grand Ballroom D, Westin	CSSS Session: Teaching Engineering Concepts and Skills—Beyond Activitymania (p. 158)
3:30–4:30 PM	P–E	162B, BCEC	Starting Out with STEM (p. 156)
3:30–4:30 PM	H–C	Caspian, Renaissance	SCST Session: Teaching and Learning the Language of Chemistry and Biology (p. 153)
3:30–4:30 PM	S	Commonwealth Blrm. C, Westin	CSSS Session: Unique NGSS-focused Webinars from a Collaborative Partnership Model for State Science Teachers and Principals Associations (p. 154)
3:30–4:30 PM	6–8	156C, BCEC	Project-based Science CyberPD for the 21st Century: A Panel Discussion of 24/7, Just-in-Time Professional Development (p. 158)
3:30–4:30 PM	G	Pacific D/E, Renaissance	Building a Collaborative Effort Between Corporate Entities and Educators: How Problem-Based Learning Can Increase Awareness of STEM Careers (p. 150)
4:00–5:30 PM	9–12	104A, BCEC	SPARKscience: Sensor-based Science for High School—Free Sensor Set for Five Attendees! (p. 159)
4:00–5:30 PM	G5	153C, BCEC	Get Results with Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 161)

## Schedule at a Glance General Science, cont.

4:00–5:30 PM	21	107C, BCEC	Participate in National Geographic’s Engineering Exploration Challenge (p. 160)
4:00–5:30 PM	6–C	106, BCEC	MakerScience and Arduino (p. 161)
4:00–5:30 PM	G	154, BCEC	Rush to Get Smashed Then “Busted” (p. 161)
4:00–5:30 PM	K6	151A, BCEC	Science, the Literacy Connection, and the <i>Common Core State Standards, ELA</i> (p. 161)
4:00–5:30 PM	5–8	152, BCEC	Evidence for Plate Movement (p. 161)
5:00–5:30 PM	EO	Pacific G/H, Renaissance	The Development of a STEM Certificate Opportunity for Preservice Elementary Education Majors (p. 162)
5:00–6:00 PM	E–M	207, BCEC	Integrating Math and Science Practices—It’s SO Predictable (p. 168)
5:00–6:00 PM	E–M	211, BCEC	Do Penguins Have Knees? Vocabulary and Literacy Strategies for the Science Classroom (p. 168)
5:00–6:00 PM	G	252B, BCEC	Research Is Elementary! Student-directed Science Research in the Elementary Classroom (p. 164)
5:00–6:00 PM	G	259B, BCEC	Using Evernote, Wikis, and Blogs to Create a Science Diary (p. 165)
5:00–6:00 PM	H	Lighthouse I, Seaport	Joint Science Education Project (p. 166)
5:00–6:00 PM	E	213, BCEC	Science Olympiad, CCSS, and the NGSS—What a Team! (p. 168)
5:00–6:00 PM	M–H	204 A/B, BCEC	Corn Belt STEM Alliance: Implementing the NGSS with Emphasis on Engineering and Technology (p. 164)
5:00–6:00 PM	M–H	Plaza A, Seaport	Implementing Standards-based Practices in a Points-based Science Classroom (p. 166)
5:00–6:00 PM	H	Seaport Ballroom A, Seaport	Using Case Studies in the Classroom to Scaffold Literacy and Science Practices (p. 170)
5:00–6:00 PM	E–H	Grand Ballroom E, Westin	Questioning in the Garden: Living, Growing Resources as a Means for Engaging with Scientific Practices/Skills (p. 170)
5:00–6:00 PM	M–H	Lighthouse I, Seaport	Scientists in the Classroom (p. 166)
5:00–6:00 PM	G	Grand Ballroom D, Westin	Using News Media Resources in the Classroom—Addressing the Science, Avoiding the Issues (p. 170)
5:00–6:00 PM	M–H	Plaza C, Seaport	Science Glossaries as Teaching Tools (p. 166)
5:00–6:00 PM	G	Commonwealth Blrm. A, Westin	The ELL Experience: Understanding ELLs to Improve Science Instruction (p. 170)
5:00–6:00 PM	H	Constitution, Seaport	Conducting Long-Term Independent Inquiry Projects in an Urban High School (p. 165)
5:00–6:00 PM	G	Webster, Westin	NOAA in Your Backyard: Professional Development Opportunities and Local Educator Resources (p. 167)
5:00–6:00 PM	G	Burroughs, Westin	Differentiating Assessment in the Science Classroom (p. 166)
5:00–6:00 PM	E	162B, BCEC	An Integrated Science and Literacy 5E Learning Cycle About Classification (p. 168)
5:00–6:00 PM	EN	Pacific F, Renaissance	NARST Session: Continuous Learning Through Classroom Observation Cycles (p. 165)
5:00–6:00 PM	E	212, BCEC	Size Matters! Teaching Science with Gummy Bears and More! (p. 168)
5:00–6:00 PM	M	255, BCEC	Assessment of Science, Engineering, and Literacy Practices (p. 164)
5:00–6:00 PM	MN	Plaza B, Seaport	Practicing at STEM (p. 166)
5:00–6:00 PM	H	Flagship A, Seaport	“Nuclear”ification: A Smorgasbord of Classroom Applications and Resources (p. 165)
5:00–6:00 PM	E–M	158, BCEC	The Maker Movement and STEM (p. 163)
5:00–6:00 PM	M–H	Plaza C, Seaport	Core Literacy = Good Science (p. 166)
5:00–6:00 PM	G	Brewster, Renaissance	Visual Tools for Accelerated/Inclusive Learning (p. 165)
5:00–6:00 PM	G	254A, BCEC	NSTA Press® Session: Whole Class Inquiry—How to Improve Participation (p. 164)
5:00–6:00 PM	MN	Seaport Ballroom B, Seaport	CPALMS Perspectives: STEM Video Resources for Teacher Professional Development (p. 170)
5:00–6:00 PM	S	260, BCEC	Teachers and STEM Education Policy (p. 165)
5:00–6:00 PM	G	Lewis, Westin	Pen in Hand: Notebooking with Young Scientists (p. 167)

## Schedule at a Glance General Science, cont.

5:00–6:00 PM	G	Hancock, Westin	Science Specialists or Classroom Teachers—What Model of Science Teaching Serves Students Best? (p. 167)
5:00–6:00 PM	G	Stone, Westin	Creating a STEM School District (p. 167)
5:00–6:00 PM	G	Harbor Ballroom III, Westin	Science Literacy Through Science Journalism: A Variety of Implementation Strategies (p. 167)
6:00 PM–12 Midnight	G	Pacific A/B, Renaissance	A Festival of Engineering, Technology, and Science Treats as Related to STEM, the NRC <i>Framework</i> , and the NGSS, Part I (p. 172)

### Physics/Physical Science

8:00–8:30 AM	M	159, BCEC	The Best Teachers Lead from the Classroom (p. 85)
8:00–9:00 AM	E–H	205C, BCEC	Claymation: Science and Creativity (p. 86)
8:00–9:00 AM	C	Caspian, Renaissance	SCST Session: <i>Allegro Ma Non Troppo</i> —Coaching as a Way to Promote Faculty Pedagogical Change in Undergraduate Physics Courses (p. 90)
8:00–9:30 AM	5	151B, BCEC	Chemistry and the Atom: Fun with Atom Building Games! (p. 102)
8:00–9:30 AM	9–C	153A, BCEC	Physics with Vernier (p. 102)
10:00–11:30 AM	9–12	104C, BCEC	Explore NGSS Science and Engineering Practices and Problem Solving Through Racing (p. 109)
10:00–11:30 AM	5	104B, BCEC	Light and Color: Engaging Classroom Activities (p. 109)
10:00–11:30 AM	49	109A, BCEC	Exploring Machines (p. 110)
12 Noon–1:30 PM	5–9	109A, BCEC	Renewable Energy (p. 120)
12 Noon–1:30 PM	9–C	109B, BCEC	Perimeter Institute: Classroom Activities for Dark Matter (p. 120)
12 Noon–1:30 PM	9–12	105, BCEC	<i>Conceptual Physics</i> and <i>Conceptual Physical Science</i> (p. 119)
12 Noon–1:30 PM	5	151B, BCEC	Building an Electronic Motor the STEM Way with CPO Science (p. 120)
12:30–1:00 PM	E–M	159, BCEC	Reaching All Students: Teaching Science with Confidence to Students with Learning Disabilities (p. 122)
12:30–1:30 PM	H–C	Pacific G/H, Renaissance	Using Analogies to Elicit Student Ideas About Energy in Physics, Chemistry, and Biology (p. 126)
12:30–1:30 PM	E–H	205C, BCEC	Get Wired Using the Simple Circuit Board (p. 129)
2:00–3:00 PM	E–M	160A, BCEC	Using Technology to Boost Student Understanding of Science Concepts (p. 135)
2:00–3:00 PM	MN	205C, BCEC	Physics at the Philadelphia Museum of Art (p. 136)
2:00–3:00 PM	E	259A, BCEC	How Can I Change It and What Will Happen? Identifying Variables with Wind-ups (p. 142)
2:00–3:00 PM	C	156C, BCEC	Inquiry-based College Science Texts for the Next Generation of Students and Teachers (p. 144)
2:00–3:30 PM	6–12	102B, BCEC	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 144)
2:00–3:30 PM	7–C	153A, BCEC	Investigating Renewable Energy with KidWind and Vernier (p. 147)
2:00–3:30 PM	9–C	109B, BCEC	Perimeter Institute: Hands-On Wave-Particle Duality (p. 146)
2:00–3:30 PM	9–12	104C, BCEC	Explore NGSS Science and Engineering Practices and Problem Solving Through Racing (p. 145)
2:00–3:30 PM	6–12	156A, BCEC	STEM Engineering for Middle School and High School with TeacherGeek Rubber Band Racer (p. 147)
2:00–3:30 PM	5	151B, BCEC	Wind Turbine: A STEM Approach to Science Concepts (p. 146)
2:00–3:30 PM	36	109A, BCEC	Introduction to Simple Machines (p. 146)
3:30–4:30 PM	M	159, BCEC	Teaching <i>Common Core State Standards, ELA</i> Using <i>Project-Based Inquiry Science</i> (p. 156)
3:30–4:30 PM	M	253C, BCEC	NSTA Press® Session: Science for All: Adapting Labs for Students with Learning Disabilities (p. 157)
3:30–4:30 PM	M–H	205C, BCEC	Engineering Education with <i>NOVA</i> 's “Making Stuff” Series (p. 156)
4:00–5:30 PM	5	109A, BCEC	DNA Replication and Transcription (p. 161)
4:00–5:30 PM	5	151B, BCEC	Light and Optics: A Series of EnLIGHTening Experiments! (p. 161)

## Schedule at a Glance Physics/Physical Science, cont.

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5:00–5:30 PM	E	159, BCEC	Doing and Talking Science: Teaching Strategies for Expanding English Language Learners' Language Skills (p. 162)
5:00–6:00 PM	E–M	160A, BCEC	Sounds Like Fun: Ideas for the Science of Sound (p. 167)
5:00–6:00 PM	G	205C, BCEC	Attitudes About High School Physics in Relationship to Gender and Ethnicity: Research-based Strategies to Increase Participation and Performance (p. 164)

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