

WEDNESDAY & THURSDAY, MARCH 30 & 31

NATIONAL CONFERENCE *on* SCIENCE EDUCATION

NASHVILLE

MARCH 31–April 3, 2016

#NSTA16



VOL. 1
GENERAL INFORMATION

NSTA National
Science
Teachers
Association



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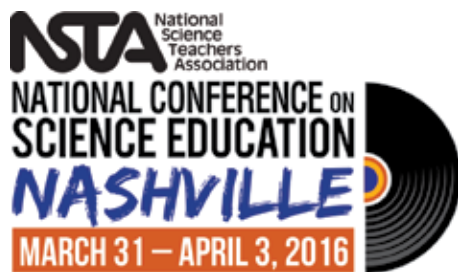
Visit Booth #1345

It's an exciting time in education—technology has the potential to help improve outcomes and inspire student success. Our programs are purposefully designed to meet your digital, print, or blended instructional needs so you can provide customized learning experiences for every student. Get inspired by:

- Live demos of our NEW programs.
- Presenters including Dinah Zike, science experts and thought leaders.
- Workshops on NGSS*, literacy integration, gamification, and more.
- Exciting giveaways

Learn more at
mheonline.com/nsta2016

*Next Generation Science Standards is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards was involved in the production of, and does not endorse, this product.



NSTA 64th National Conference on Science Education

Science: Empowering Performance

Nashville, Tennessee • March 31–April 3, 2016

Volume 1 Wed., March 30/Thu., March 31

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Volume 2 Fri., April 1

Science in the Community Breakfast (M-2)

Science in the Community Featured Presentation:

Andrew Fraknoi

Elementary Extravaganza

NGSS@NSTA Forum

Featured Presentation: Stanley B. Prusiner

Science in the Community Share-a-Thon

Featured Presentation: Jean Kaneko, *sponsored by Shell*

“Meet and Greet” the Presidents and Board/Council

NSTA District Director and Chapter/Associated Group Social
in Honor of Wendell Mohling

Science in the Community Forum

Robert H. Carleton Lecture: Herb Brunkhorst

NSTA Teacher Awards Gala (M-3)

President’s Mixer with DJ and cash bar

Friday Daily Program

Volume 3 Sat., April 2 /Sun., April 3

The NGSS@NSTA Hub

Teacher Researcher Day

NGSS@NSTA Share-a-Thon

Paul F-Brandwein Lecture: J. Drew Lanham

Meet Me in the Middle Day

AGU Lecture: Linda C. Kah

Arthur C. Clarke Institute for Space Education Lecture:

Jeff Goldstein

NSTA/ASE Honors Exchange Lecture: Corinne Stevenson

Science in the Community Forum

Featured Presentation: Peter McLaren

Boot Scootin’ Boogie (*at Frontier Room, above Whiskey Bent Saloon*)

Saturday Daily Program

Sunday Daily Program

Volume 4 Exhibitors

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Exhibitor List

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Cover photo credit:

Courtesy of Sean Pavone, Nashville, Tenn.

*People enjoy the Music City Walk of Fame Park in front of
the Country Music Hall of Fame in Nashville.*

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.



National Science Teachers Association

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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 Nashville Conference

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

Sponsors

Arthur C. Clarke Institute for Space Education

Carolina Biological Supply

Chevron

College of Education and Human Services at Central Michigan University

Delta Education

Educational Innovations, Inc.

ePlanetarium, home of Discovery Dome®

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The Planetary Society

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Tennessee Dept. of Agriculture, Div. of Forestry

Tennessee Science Teachers Association

Texas Instruments

Vulcan Inc.

Ward's Science



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

President's Welcome—Developing Creative Attitudes in Science



Welcome to Nashville and the NSTA 2016 National Conference on Science Education. The conference planning committee has embraced my presidential theme “*Developing Creative Attitudes in Science*” by creating program strands that will enable teachers to implement strategies while engaging students in learning science and encouraging them to be the innovators of the future. The Nashville program is built around students “doing science” and not just “memorizing science facts.”

Utilizing the conference theme “*Science: Empowering Performance*,” you will find many examples to connect science curricula with literature, mathematics, engineering, and technology using the *Next Generation Science Standards*. I encourage you to take full advantage of the four strands that support the conference theme.

- Setting the Stage: Scientific Literacy
- Building the Band: Involving Community Stakeholders
- Harmonizing Concepts: Integrating Instruction
- Stringing It All Together: Three-Dimensional Learning

Whether you choose to attend strand-specific sessions or those that help your pedagogy or your teaching content area, you will discover outstanding choices to help you connect with your students. Also, be sure to use #NSTA16 to share ideas learned and to discover what is happening at sessions you cannot attend throughout the conference.

Meet NSTA leadership by stopping by the #AskNSTA booth in the Exhibit Hall or Friday’s “Meet and Greet” the Presidents and Board/Council at the exhibits entrance and find out how to get more involved in NSTA, as well as voice your opinions on current science education issues.

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

Carolyn Hayes

2015–2016 NSTA President

BOOT SCOOTIN’ BOOGIE!

Saturday, April 2, 8:00–10:00 PM, at the Frontier Room

Frontier Room (located above the Whiskey Bent Saloon)
306 Broadway, Nashville, TN 37201 • 615-401-2580

Open to y’all!

Git yerself over to the **Frontier Room** (directions at left) for an opportunity to network and meet up with your colleagues on the last night of the NSTA conference.

This evening of entertainment will feature...

- **Charity Byars, performing artist and band** as well as line dance lessons and traditional bar foods for sale, including pulled pork sandwiches, sliders, tater tots, etc. (ranging from \$5 to \$15).

*Cash bar with the “*Boot Scootin’ Bourbon*” drink special!



*The Frontier Room of the Whiskey Bent Saloon has a separate entrance, which is located around the corner on 3rd Avenue and up the stairs behind the Saloon.



#askNSTA

How can I find funds to attend an NSTA conference?

Where can I find free articles tailored to my grade level and subject area?

What does NSTA have for student teachers?

What are the Next Generation Science Standards?

The #askNSTA Lounge is *the* place in Nashville to learn more about NSTA Membership and become part of the group who is crafting the future of science education!

#NSTA16

Come by booth #934 in the Exhibit Hall and
ASK US ANYTHING!

NSTA National
Science
Teachers
Association

Welcome to Nashville: Science: Empowering Performance



Becky Ashe



Margie Hawkins



Tanisha L. Wesby

Welcome to Nashville, y'all! Our conference theme, "Science: Empowering Performance" was inspired by Nashville's reputation as the country music performance capital of the world. The Tennessee legislature commemorated this event by passing a resolution in its last legislative session to recognize 2016 throughout the state as the "Year of Science Education"! We're so happy to welcome you to our special brand of Southern hospitality and progressive education reform designed around these four strands:

- Setting the Stage: Scientific Literacy
- Building the Band: Involving Community Stakeholders
- Harmonizing Concepts: Integrating Instruction
- Stringing It All Together: Three-Dimensional Learning

Your Conference Planning Committee has recruited a great group of volunteers to ensure that every participant may be empowered and experience best practices in science education demonstrated through performance-based learning and modeling as called for by the NGSS. We've rethought the whole conference experience from the featured speakers and panels, to social and networking events, short courses, and educational trips with the intention of letting you experience the best ideas and innovations in all aspects related to K–16 science education.

We've jam-packed every learning opportunity with unique Tennessee flavors and vibes to make the most of our beautiful setting in Nashville's newest convention center. Music City Center is located a country hop skip 'n a jump from "The Music Mile" where you have literally dozens of honky-tonks and the best restaurants within easy walking distance.

There's lots to sample from more than 1,200 hours of programming we're offering—from the best science educators, thought leaders, and vendors at the exhibit hall we could gather across our country. It could not have happened without tireless efforts by countless volunteers, who we hope you will join us in delivering our deepest thanks and gratitude for their time and energy.

Scoot those boots and enjoy your time empowering your science performance at the 2016 NSTA National Conference in Nashville. Y'all come back now—ya hear?!?

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Strand Leader: Harmonizing Concepts: Integrating Instruction

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Strand Leader: Setting the Stage: Scientific Literacy

Barry Farris

Dean of Dept. of Science
and Mathematics
Columbia Academy
Columbia, TN

Strand Leader: Building the Band: Involving Community Stakeholders

Linda Gale Stanley

TSTA President and
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Volunteers Manager

Donna Rule

Hands-On Science Manager
Metro Nashville Public Schools
Nashville, TN

NSTA Conferences Go Green!

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

Conference Previews

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

Online Conference Information and Personal Scheduler

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

Recycled Paper and Sustainable Print Services

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

Environmentally Friendly Exhibition Practices

Our conference partner, Hargrove, Inc., offers many green product options and services in the production of our conference exhibitions, including 100% recyclable carpet and padding, recycled exhibit structures, a "reclaimer" that recycles 92% of all solvents the company uses in production of graphics, use of LP natural gas in 75–90% of show-site vehicles, and many biodegradable and recycled products such as trash bags and 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 App

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

Green Initiatives at Music City Center

The Music City Center makes it part of their mission to focus on environmental sustainability. Current green initiatives include:

- **Green Roof.** Designed to mimic the rolling hills of Tennessee, MCC's green roof is composed of 14 different types of vegetation and a waterproofing membrane. The green roof helps to lower urban air temperatures by reducing the "heat island effect" and also helps reduce air pollution and greenhouse gas emissions. In addition, an array of 845 solar panels produces renewable energy to assist in powering HVAC fans throughout the building.
- **Water Conservation.** All MCC toilets and faucets use low-flow technology. Storm water runoff and HVAC condensation is collected in a 360,000 gallon cistern, providing water to over 500 toilets and to irrigate outdoor landscaping.
- **LEED Certification.** The Music City Center is certified gold level LEED—Leadership in Energy and Environmental Design—by the U.S. Green Building Council.
- **Recycling.** More than 20 percent of all of the materials used in construction of the MCC contained recycled content. Most paper products, aluminum, plastics, pallets, and batteries are among the items MCC recycles. In addition, the MCC promotes "green" meetings and all contracted vendors are required to meet sustainability standards.

"Go Green" at the Nashville Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the Music City Center.
- Recycle or reuse your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on the Session Browser/Personal Scheduler.
- 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 Omni Nashville Hotel and the Renaissance Nashville Hotel. Conference registration, the exhibits, and the NSTA Science Store will be located at Music City Center. Most sessions will be held at Music City Center, Omni Nashville Hotel, and Renaissance Nashville Hotel; and short courses will be held at the Sheraton Nashville Downtown.

The conference will begin on Thursday, March 31, at 8:00 AM and end on Sunday, April 3, at 12 Noon (**Bill Nye to give preconference session on Wednesday evening at 6:00 PM*).

Registration

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

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

Wed., March 30	5:00–8:00 PM
Thu., March 31	7:00 AM–6:00 PM
Fri., April 1	7:00 AM–5:00 PM
Sat., April 2	7:00 AM–5:00 PM
Sun., April 3	7:30 AM–12 Noon

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

Purchasing Ticketed Events

The Nashville Conference Committee has scheduled a variety of ticketed events (e.g., professional learning institutes, short courses, educational 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 47) for details. Note that some events may have required advance registration.

Conference Hotels/Housing Bureau

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 Information Desk located on Level 2 in the Registration Lobby during registration hours on Wednesday evening through Saturday to assist with housing questions. You can also reach a Housing Bureau representative by phone at 877-352-6710 or by e-mail at help@orchideventsolutions.com.

Airlines/Amtrak

NSTA has made arrangements with several major airlines and Amtrak to offer discounted fares to Nashville conference attendees. Visit www.nsta.org/nashvilletravel for details.

Discounted Rental Cars

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

Enterprise 800-593-0505 16AH230

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



— Nashville Convention & Visitors Corp.

Registration, Travel, and Hotels

Ground Transportation to/from Airport

From the Nashville International Airport (BNA), the taxi meter starts at \$7 and the rate is \$2.10 per mile. There is a flat rate of \$25 to the downtown Nashville area, plus an additional passenger charge of \$1 when accompanying original passenger and proceeding to same destination.

Jarmon Transportation, 615-275-0146, (www.jarmontransportation.com) is located on the ground level of the airport and offers transportation to all downtown and metropolitan Nashville area hotels. Shuttles depart every 15 minutes from the airport. Reservations are not required for service from the airport. Transportation is available from hotels, but reservations are suggested to ensure a timely departure.

Jarmon Special Offer

Below are special rates available to NSTA conference attendees. To access Jarmon's special NSTA reservation page, go to bit.ly/1T3kQLR.

Downtown hotels near

Music City Center

\$12 one way

\$18 round-trip

Outlying West End hotels

\$12 one way

\$18 round-trip

Outlying hotels near Opryland

\$18 one way

\$27 round-trip

Reservations are welcomed and appreciated. However, if you fail to make a reservation,

just mention NSTA and the Jarmon counter personnel will honor the special rate.

For a complete listing of ground transportation options, including hotel shuttle information, visit www.flynashville.com.

Getting Around Town

The FREE Music City Circuit (green circuit) stops at Music City Center (Demonbreun/6th Avenue South and Demonbreun/7th Avenue South) and runs until 11:00 PM. For complete schedule details, visit bit.ly/1PTg7fn.

Parking

The Music City Center parking garage is a three-level covered parking garage located on 6th Avenue and Demonbreun. Rates start at \$7 for up to four hours. For more information, visit bit.ly/1KVuNmV.



800 Fort Negley Blvd. | Nashville
(615) 862-5160
www.AdventureSci.org

Open Daily 10 a.m. - 5 p.m.

Special Offer for NSTA Conference Registrants

50% off

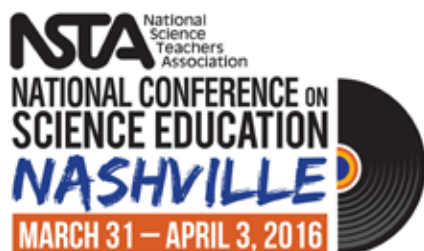
General Admission

Thursday, March 31, through Sunday, April 3, 2016

Attention Nashville conference-goers:

Show your NSTA badge at the ticket counter for half off general admission, offered exclusively to NSTA Nashville Conference registrants. Ignite your curiosity at **Adventure Science Center**, where a world of interactive exhibits that inspire imagination and discovery for visitors of all ages is waiting. Explore a day in the life of an astronaut in the *Space Chase* exhibit, where you can experience the effects of zero gravity and discover the relationships between the planets. Step into the award-winning *BodyQuest* exhibit, where you'll experience health like you've never seen it before! The *Adventure Tower* is a pillar of imagination, packed with exciting scientific exploration. Don't forget to catch a show in the **Sudekum Planetarium** for a one-of-a-kind full dome digital experience!





National Science Teachers Association

Shuttle Service to Music City Center

Shuttle service is provided between Music City Center and the official NSTA hotels listed on this flyer. 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) 425-2443 during shuttle hours.



Hotels and Boarding Locations

ROUTE 1

The Capitol Hotel Downtown
Courtyard Nashville Downtown
DoubleTree by Hilton—Downtown
Holiday Inn Express Downtown
Homewood Suites Downtown
Hotel Indigo Nashville
Sheraton Nashville Downtown

Boarding Location

At Sheraton Nashville Downtown
Curbside on 4th Ave.
At Courtyard Nashville Downtown
Curbside on 10th Ave.
At Sheraton Nashville Downtown
At DoubleTree by Hilton—Downtown
Curbside on Union St.

ROUTE 2

Aloft Nashville West End
Courtyard Nashville Vanderbilt/West End
Embassy Suites by Hilton at Vanderbilt
Hampton Inn Nashville/West End
Hilton Garden Inn Vanderbilt
Hutton Hotel

Boarding Location

At Hilton Garden Inn Vanderbilt
Curbside on 19th Ave.
Curbside on Broadway
At Courtyard Nashville Vanderbilt/West End
Curbside on Broadway
Curbside on West End Ave.

ROUTE 3

Hampton Inn & Suites—Vanderbilt—Elliston Place
Homewood Suites Nashville Vanderbilt
Loews Vanderbilt Hotel

Boarding Location

Curbside on Elliston Pl.
Curbside on West End Ave.
Curbside on West End Ave.

ROUTE 4

Holiday Inn Vanderbilt
Nashville Marriott at Vanderbilt

Boarding Location

Curbside on 28th
Kensington Entrance

ROUTE 5

Millennium Maxwell House Hotel

Boarding Location

Front Entrance

ROUTE 6

Gaylord Opryland Resort & Convention Center

Boarding Location

Bus boarding area

Walk Hotels

The hotels listed in this section are within walking distance of Music City Center.

Hilton Garden Inn Nashville Downtown ♦ Hilton Nashville Downtown ♦ Hyatt Place Nashville Downtown
Omni Nashville Hotel ♦ Renaissance Nashville Hotel ♦ Union Station Hotel, Autograph Collection

Hours of Shuttle Operation

Peak Service: Shuttles depart every 10–15 minutes **Off-peak Service:** Shuttles depart every 20–30 minutes

Wednesday, March 30

Professional Learning Institutes Shuttle between Route Hotels and Music City Center

Off-peak: 8:00 – 11:00 AM
(No shuttle service: 11:00 AM – 4:30 PM)
Peak: 4:30 – 8:30 PM *

Conference Shuttle between Music City Center and Route Hotels

Thursday, March 31

Conference Shuttle between Route Hotels and Music City Center

Peak: 6:30 – 10:30 AM
(No shuttle service: 10:30 AM – 4:30 PM)
Peak: 4:30 – 8:30 PM *

Conference Shuttle between Music City Center and Route Hotels

Short Course Shuttle between Music City Center and Sheraton Nashville Downtown

Off-peak: 12:30 PM – 4:30 PM ♦

Friday, April 1

Conference Shuttle between Route Hotels and Music City Center

Peak: 6:30 – 10:30 AM
(No shuttle service: 10:30 AM – 4:00 PM)

Conference Shuttle between Music City Center and Route Hotels

Short Course Shuttle between Music City Center and Sheraton Nashville Downtown

Peak: 4:00 – 7:00 PM *
Off-peak: 10:30 AM – 4:00 PM ♦

NSTA Teachers Awards Gala & President's Mixer at Renaissance Nashville

Off-peak: 7:00 – 10:00 PM

Every hour from the Renaissance Nashville: 10:00 PM – 12:30 AM ♦♦
Shuttle between Route Hotels and Renaissance Nashville. Transportation is being provided for Route Hotels ONLY.

Saturday, April 2

Conference Shuttle between Route Hotels and Music City Center

Peak: 6:30 – 10:30 AM
(No shuttle service: 10:30 AM – 4:00 PM)
Peak: 4:00 – 7:00 PM *

Conference Shuttle between Music City Center and Route Hotels

Short Course Shuttle between Music City Center and Sheraton Nashville Downtown

Off-peak: 10:30 AM – 12:30 PM ♦

Sunday, April 3

Conference Shuttle between Route Hotels and Music City Center

Off-peak: 7:30 AM – 12:30 PM *

* This is the time the last shuttle from Music City Center departs for Route Hotels. Last shuttle from hotels depart one hour prior.

♦ This is the time the last Short Course shuttle from Sheraton Nashville Downtown departs for Music City Center.

♦♦ This is the time the last Awards Gala and President's Mixer shuttle departs from Renaissance Nashville to Route Hotels.



NSTA Conference Hotels

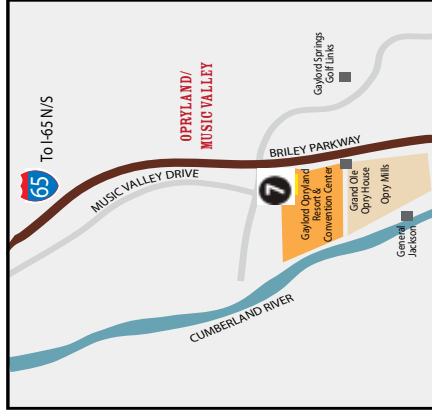
Numbers correspond to map on facing page.

1. Aloft Nashville West End
1719 West End Ave.
615-329-4200
2. The Capitol Hotel Downtown Nashville
(formerly Best Western)
711 Union St.
615-242-4311
3. Courtyard Nashville Downtown
170 4th Ave. N
615-256-0900
4. Courtyard Nashville Vanderbilt/
West End
1901 West End Ave.
615-327-9900
5. DoubleTree by Hilton Hotel Nashville—
Downtown
315 4th Ave. N
615-244-8200
6. Embassy Suites by Hilton Nashville at
Vanderbilt
1811 Broadway
615-320-8899
7. Gaylord Opryland Resort
2800 Opryland Dr.
615-889-1000
8. Hampton Inn & Suites Nashville—
Vanderbilt—Elliston Place
2330 Elliston Place
615-320-6060
9. Hampton Inn Nashville/Vanderbilt
1919 West End Ave.
615-329-1144
10. Hilton Garden Inn Nashville Downtown/
Convention Center
305 Korean Veterans Blvd.
615-251-3013
11. Hilton Garden Inn Nashville Vanderbilt
1715 Broadway
615-369-5900
12. Hilton Nashville Downtown
121 4th Ave. S
615-620-1000
13. Holiday Inn Express Nashville—Downtown
920 Broadway
615-244-0150
14. Holiday Inn Nashville—Vanderbilt
2613 West End Ave.
615-327-4707
15. Homewood Suites by Hilton
Nashville—Downtown
706 Church St.
615-742-5550
16. Homewood Suites by Hilton Nashville
Vanderbilt
2400 West End Ave.
615-340-8000
17. Hotel Indigo Nashville
301 Union St.
615-891-6000
18. Hutton Hotel
1808 West End Ave.
615-340-9333
19. Hyatt Place Nashville Downtown
301 3rd Ave. S
615-687-9995
20. Loews Vanderbilt Hotel
2100 West End Ave.
615-320-1700
21. Millennium Maxwell House Hotel Nashville
2025 Rosa L. Parks Blvd.
615-259-4343
22. Nashville Marriott at Vanderbilt University
2555 West End Ave.
615-321-1300
23. Omni Nashville Hotel
(Co-Headquarters Hotel)
250 5th Ave. S
615-782-5300
24. Renaissance Nashville Hotel
(Co-Headquarters Hotel)
611 Commerce St.
615-255-8400
25. Sheraton Nashville Downtown Hotel
623 Union St.
615-259-2000
26. Union Station Hotel, Autograph Collection
1001 Broadway
615-726-1001

Official Hotels for the NSTA Nashville National Conference

Music City Center (Convention Center) • Downtown Nashville Tennessee

1. Aloft Nashville West End (1.2 miles)
2. The Capitol Hotel Downtown Nashville (formerly Best Western Downtown) (5 blocks)
3. Courtyard Nashville Downtown (4 blocks)
4. Courtyard Nashville Vanderbilt/West End (1.3 miles)
5. DoubleTree by Hilton Hotel Nashville—Downtown (6 blocks)
6. Embassy Suites by Hilton Nashville at Vanderbilt (1.3 miles)
7. Gaylord Opryland Resort (11 miles)
8. Hampton Inn & Suites Nashville—Vanderbilt—Elliston Place (1.9 miles)
9. Hampton Inn Nashville/Vanderbilt (1.4 miles)
10. Hilton Garden Inn Nashville Downtown/Convention Center (1 block)
11. Hilton Garden Inn Nashville Vanderbilt (1.2 miles)
12. Hilton Nashville Downtown (112 block)
13. Holiday Inn Express Nashville—Downtown (3 blocks)
14. Holiday Inn Nashville—Vanderbilt (2.2 miles)
15. Homewood Suites by Hilton Nashville—Downtown (4 blocks)
16. Homewood Suites by Hilton Nashville Vanderbilt (1.9 miles)
17. Hotel Indigo Nashville (6 blocks)
18. Hutton Hotel (1.2 miles)
19. Hyatt Place Nashville Downtown (2 blocks)
20. Loews Vanderbilt Hotel (1.6 miles)
21. Millennium Maxwell House Hotel Nashville (2.5 miles)
22. Nashville Marriott at Vanderbilt University (2.1 miles)
23. Omni Nashville Hotel (Co-Headquarters) (adjacent)
24. Renaissance Nashville Hotel (Co-Headquarters) (2 blocks)
25. Sheraton Nashville Downtown Hotel (5 blocks)
26. Union Station Hotel—Autograph Collection (4 blocks)



*Complimentary shuttle service will be provided to most hotels
*Note that distances are in relation to the Music City Center (Convention Center)



—Courtesy of Jacob Slaton

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 pages 15–16). 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 Hall B at Music City Center.

Exhibit Hall Hours. Located in Hall B of Music City Center, exhibits will be open for viewing during the following hours:

Thu., March 31	11:00 AM–6:00 PM
Fri., April 1	9:00 AM–5:00 PM
Sat., April 2	9:00 AM–3:00 PM

Did you know that NSTA offers Exclusive Exhibit Hall and exhibitor workshop hours—Thursday, 11:00 AM–12:30 PM? 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 165.

#askNSTA

The #askNSTA Lounge will be the place in Nashville to meet and become part of the group who is crafting the future of science education. NSTA board members, NGSS curators, authors, Learning Center advisors, conference presenters, journal editors and reviewers, NSTA staff, and local committee members will all be spending time there, and you can ask us anything! Learn how to join NSTA, run your journal article idea past an editor, ask us about presenting at a conference, find out what NGSS implementation resources

we have, learn about the New Science Teacher Academy, ask about the Mickelson Teacher Academies held during the summer, or get information about our teacher awards (earn cash or equipment for your classroom). Mingle with us at the #askNSTA Lounge during exhibit hall hours Thursday, Friday, and Saturday.

NSTA Science Store

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

- Exclusive author signings and meet-and-greet opportunities with NSTA Press® authors presenting workshops in Nashville,
- Our newest books—*Teaching for Conceptual Understanding in Science*; *Solar Science*; *Uncovering Student Ideas in Earth and Environmental Science*; and *The Feedback Loop: Using Formative Assessment Data*—and our new children's books from NSTA Kids, including the *Next Time You See* series,
- Our newest enhanced e-books: *Cells and Chemical Reactions*; *Nutrition*; and *Atomic Structure*,
- "I Love Science" and NSTA gear product lines to show your love of science and pride in teaching,
- Member discounts of 20% on NSTA Press® items for all attendees, and
- Daily book and gear specials, product giveaways, and more.

TSTA Booth

The Tennessee Science Teachers Association (TSTA) booth is located in Hall B of Music City Center. TSTA provides the science community with opportunities for professional growth and leadership. Stop by and find out how to be part of the largest science teacher organization in Tennessee.

Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at svy.mk/1Q7MC6K.

Wi-Fi at Music City Center

Free wireless internet intended for light web browsing is available throughout Music City Center in the common areas (lobby). To access, connect to "MCC-Public"; no password is required.

First Aid Services

The First Aid Room is located outside of Hall B at Music City Center. Look for the red cross. To reach the First Aid office, call 615-401-1314.

In addition, a lactation room at Music City Center will be available. See Attendee Registration for details.

Lost and Found

All lost-and-found items at Music City Center 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.

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.

Graduate Credit Opportunity

Nashville conference attendees can earn one graduate-level credit hour in professional development through Framingham State University at NSTA's Nashville 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 \$179. To learn more about the assignment requirements and registration, visit www.framingham.edu/nsta. *Note: Credit is by pass/fail only.*

CONFERENCE APP



Connect. Share. Engage.

Download our conference app for a social experience you don't want to miss.

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

Available for download on



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

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.

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 Music City Center, hotels, and the Exhibit Hall; social media plugins; and a note-taking tool. Scan the QR code or visit 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.

Business Services

The UPS Store Business Center is conveniently located on Level 2 near the Sixth Avenue entrance and Nashville Songwriters Hall of Fame at Music City Center. For more information, e-mail store6425@theupsstore.com. Hours are:

Monday–Friday	9:00 AM–5:00 PM
Saturday	8:00 AM–5:00 PM
Sunday	8:00 AM–1:00 PM

The UPS Store at the Omni Nashville Hotel provides a full-service business center. Services include computer access, faxing, copying, printing, and shipping. For more information, call 615-761-3640. Hours are:

Monday–Friday	7:00 AM–6:00 PM
Saturday–Sunday	9:00 AM–4:00 PM

Visit Music City

Please visit our Nashville concierge on Level 2 in the Registration Lobby of Music City Center on Wednesday, 5:00–8:00 PM; Thursday through Saturday, 9:00 AM–5:00 PM; and Sunday, 9:00 AM–12 Noon for all the information you need to have an enjoyable visit in the Music City. We will be there to answer your city questions, to give you directions, and to make restaurant suggestions.

Audiovisual Needs

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

Music City Center	Room 213
Omni	Music Row 6
Renaissance	Ryman Two

NSTA International Lounge

The Mockingbird 1 room at the Omni 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.

Friday “Meet and Greet”

Be sure to stop by Friday from 12:45 PM to 1:30 PM at the entrance to Hall B of Music City Center for a special session. Come “meet and greet” with your elected NSTA officers.



Photo courtesy of Music City Center

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 Nashville.

NSTA TV is an on-site conference television channel featuring a new episode daily, screened around Music City Center, 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.



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 March 30–April 14, 2016, while the session is fresh in your mind! During the conference, session evaluations can be completed on the computers at the Presenters/Presiders booth in the Registration Area. **And this year, we're giving away an Apple iPad mini 2 Wi-Fi tablet to two lucky attendees who complete a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

To evaluate a session, attendees should follow these steps:

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

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

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

Beginning April 26, 2016, an attendee can view his or her transcript at the NSTA Learning Center (learningcenter.nsta.org) by first clicking on "Professional Learning Tools," and then selecting "View My Certificates." Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits, etc.). In addition, the NSTA Learning Center offers professional development experiences (online and face-to-face) for your long-term growth and professionalism.

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

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)



— Nashville Convention & Visitors Corp.

FEATURED PRESENTATION SPONSORED BY HHMI BIOINTERACTIVE

THE SERENGETI RULES

THE QUEST TO DISCOVER
HOW LIFE WORKS
AND WHY IT MATTERS

by award-winning biologist and author
SEAN B. CARROLL

Thursday, March 31, 3:30 to 4:30 PM
Room 102 A/B of Music City Center

First 300 attendees receive a free book

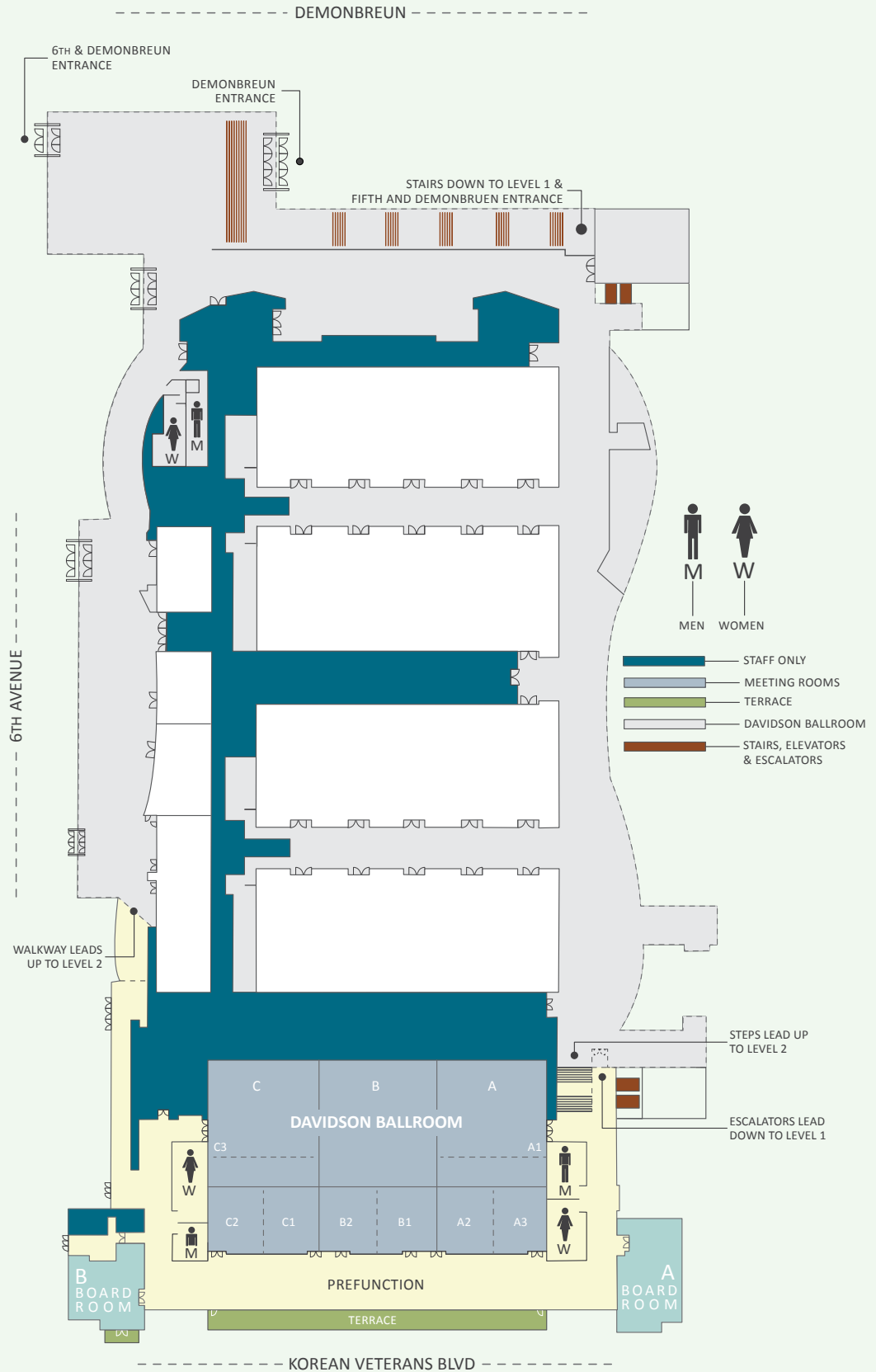
hhmi | BioInteractive



Level 1



Level 1M

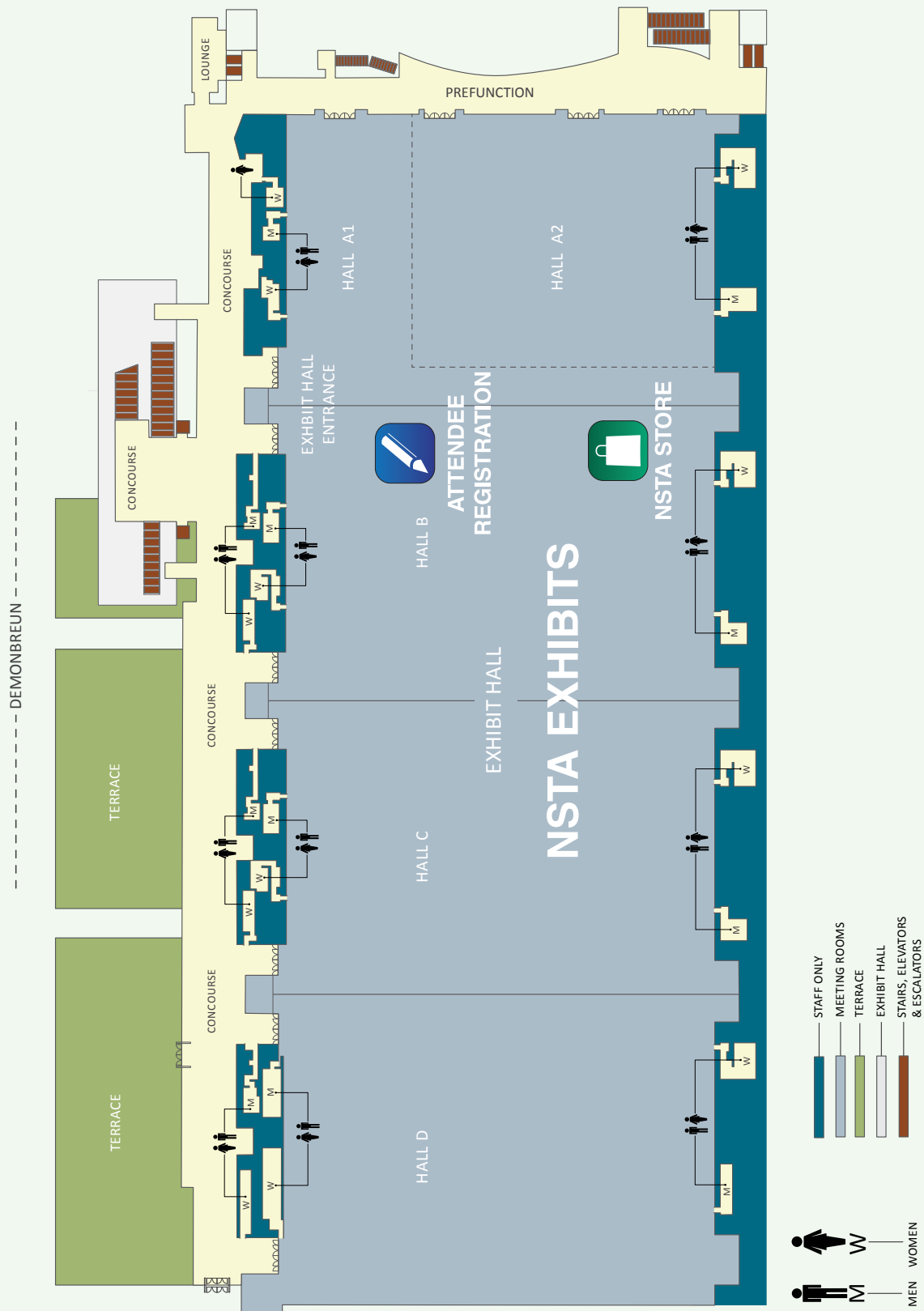


Level 2

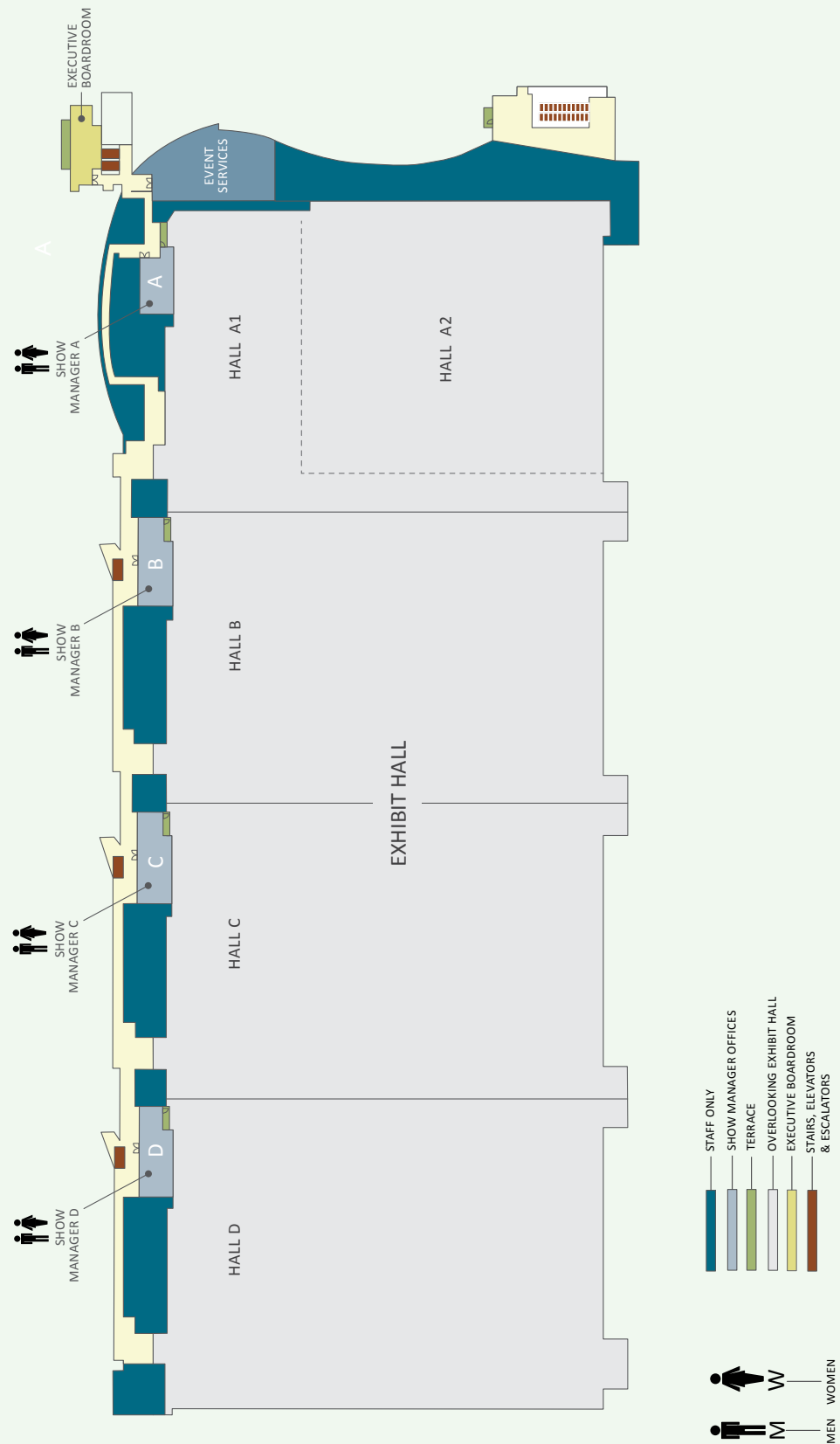


Level 3 (Exhibit Hall)

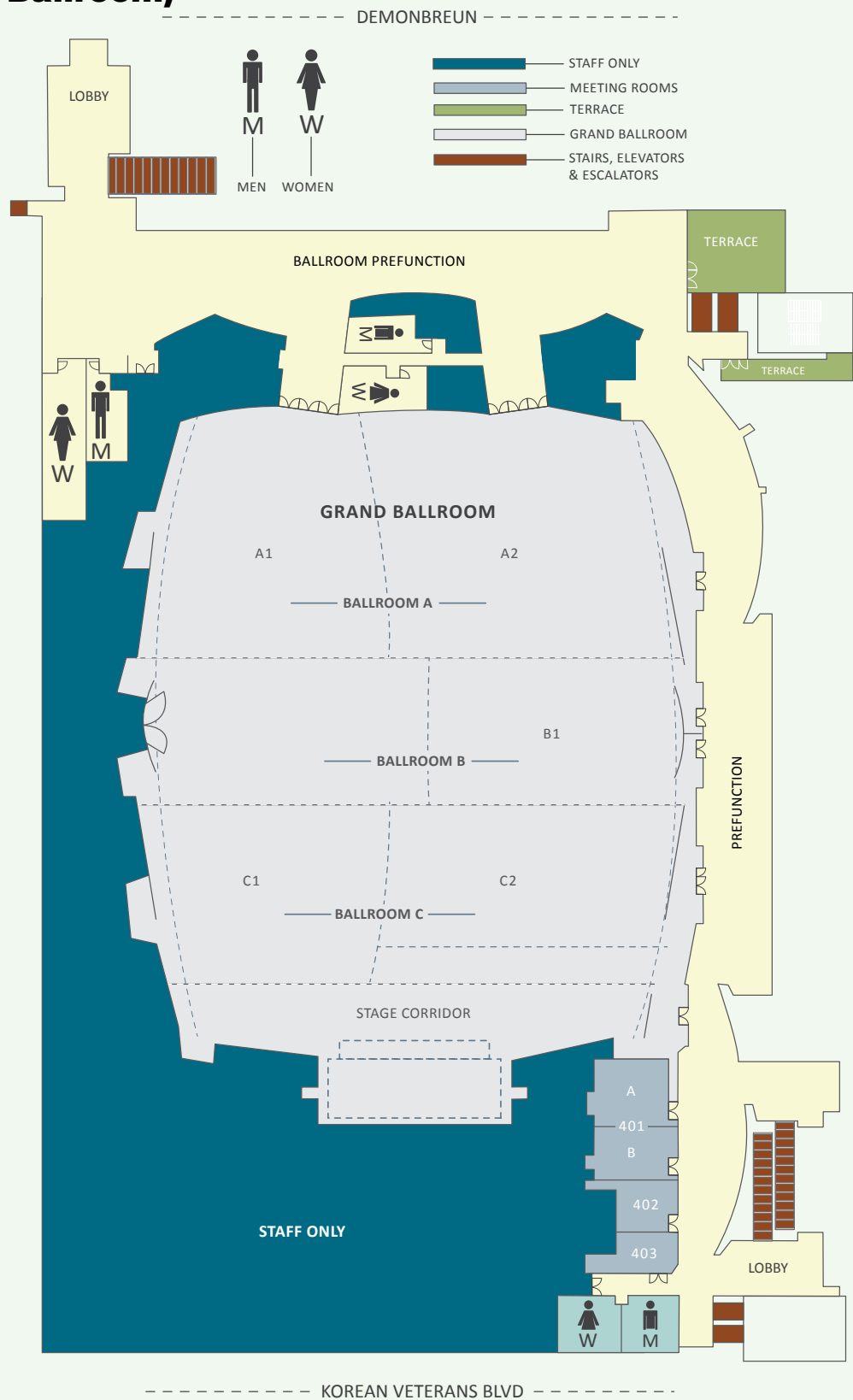
5th AVENUE SOUTH



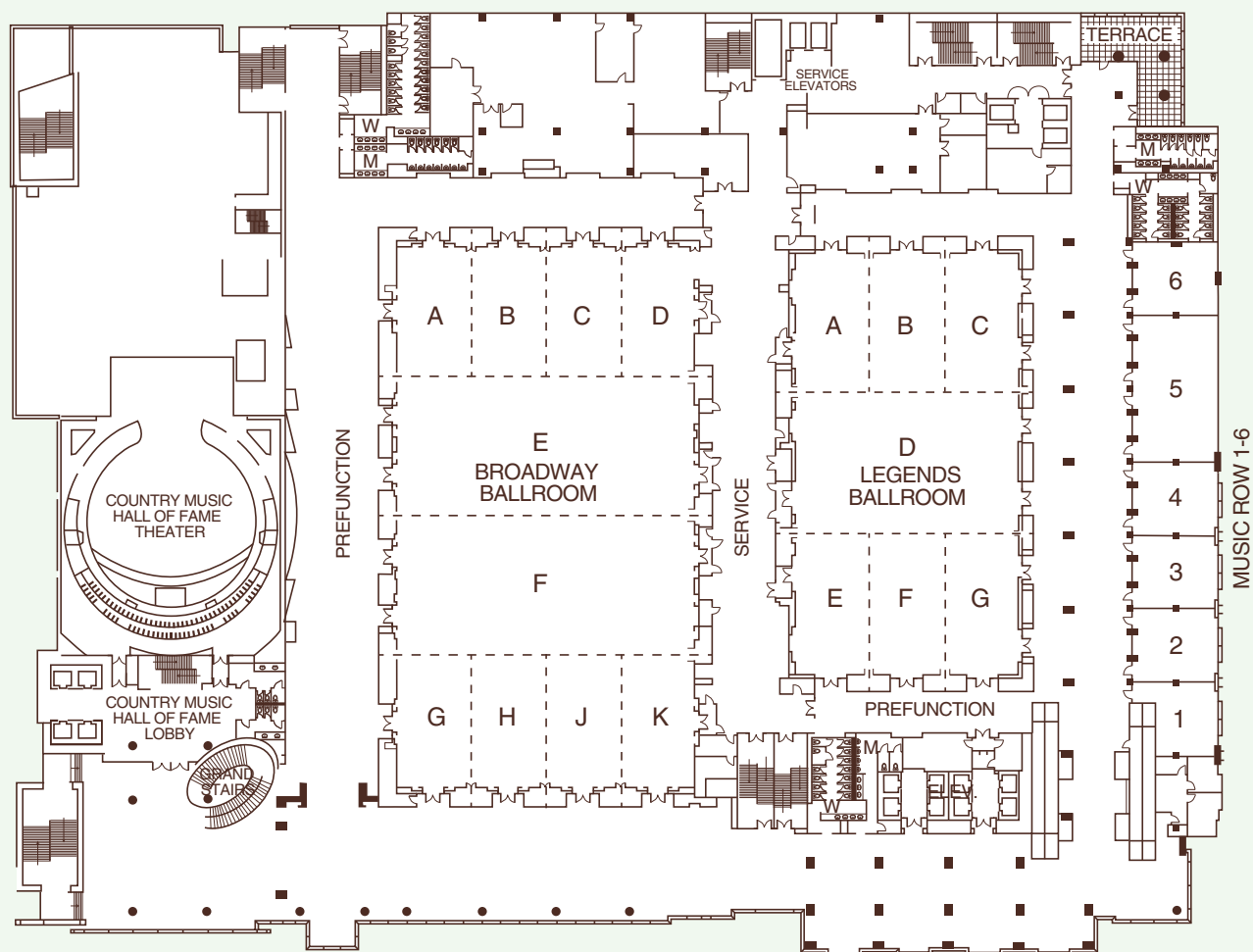
Level 3M



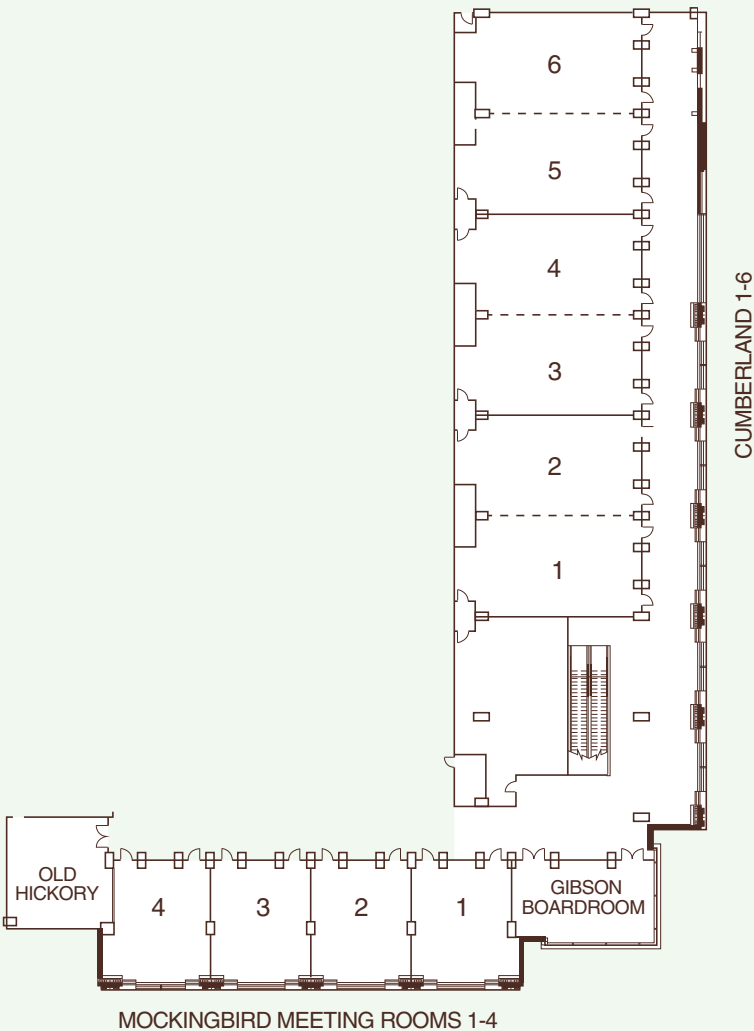
Level 4 (Grand Ballroom)



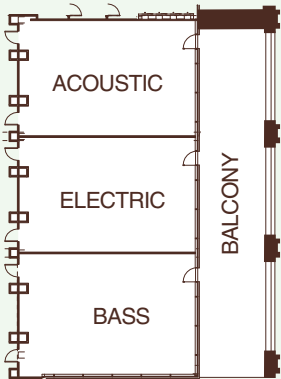
LEVEL TWO



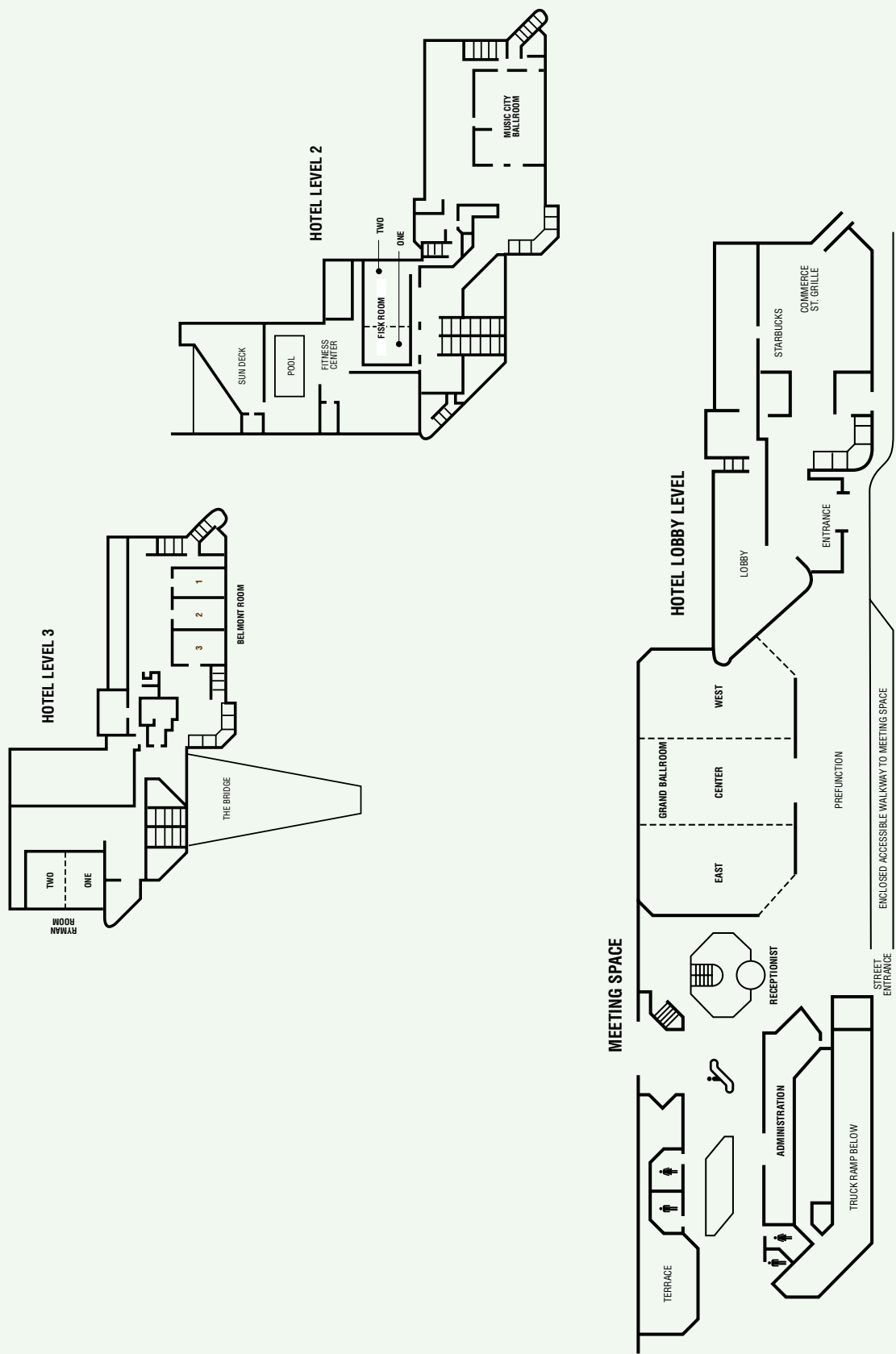
LEVEL THREE



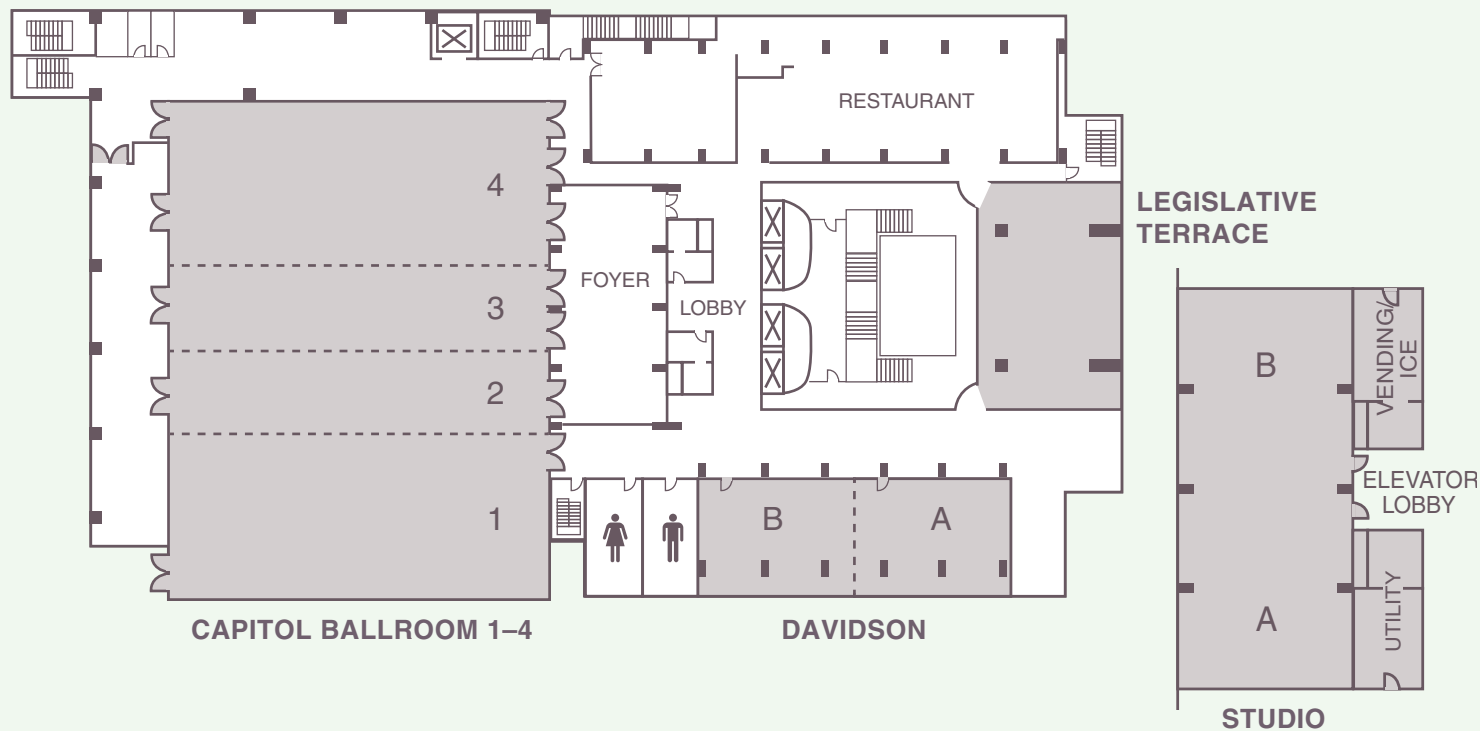
LEVEL FOUR



Renaissance Nashville Hotel



Sheraton Nashville Downtown



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Michelle Butler, Executive Administrator and Manager
Shawn Crowder, Administrative Coordinator

BOARD RELATIONS

Michelle Butler, Executive Administrator and Manager

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Shawn Crowder, Administrative Coordinator

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Azi Ambrishami, Development Coordinator

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Jennifer Horak, Project Director

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Amanda Upton, Manager

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Kristen Reiss, Customer Service Representative, Publication Sales

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Edwin Pearce, Manager, IT Support
Edward Hausknecht, Web and Database Developer
Martin Loping, Manager, Web Development

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Jeffrey LeGrand, Account Manager
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Joseph Butera, Senior Graphic Designer
Hima Bichali, Graphic Designer

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Eleanore Dixon-Roche, e-Learning Multimedia Specialist

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Luke Towler, Editorial Assistant

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Valynda Mayes, Managing Editor

Science Scope

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The Science Teacher

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Journal of College Science Teaching

Ann Cutler, Field Editor
Caroline Barnes, Managing Editor

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Beverly Shaw, Conference Administrator
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Kimberlyn McDonald, Registration Supervisor/Administrative Assistant
Jasmine McCall, Database Coordinator
Marcelo Nunez, Exhibit Services Coordinator

LEARNING CENTER/SciLINKS

Flavio Mendez, Senior Director
Edward Hausknecht, Web and Database Developer

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Dayna Anderson, Program Manager
Alexandra Wakely, Administrative Coordinator, Services

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Sarah Beistel, Program Manager, Science Education Competitions
Tom Chinick, Assistant Manager, Science Education Competitions
Tonya Hunt, Administrative Assistant, Competitions
Jarod Phillips, Project Manager/GEMS
Sue Whitsett, AEOP Project Director
Vacant, eCYBERMISSION Project Manager
Frank Curcio, eCYBERMISSION Outreach Specialist
Cheryl Long, eCYBERMISSION Outreach Specialist
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Alexis Mundis, eCYBERMISSION Volunteer Coordinator
Jasmine Culver, eCYBERMISSION Administrative Assistant
Keisha Jeffries, eCYBERMISSION Administrative Assistant
Debbie Murray, AEOP Budget and Project Operations Manager
Dimetrius Simon, AEOP Communications Coordinator
Marcia Washburn, AEOP Logistics Coordinator
Renee Wells, AEOP Administrative Assistant

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

NSTA Mission Statement

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

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Kelly Price, Coordination and Supervision of Science Teaching
Dennis Schatz, Informal Science
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Jen Gutierrez, District XIV
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Robert Ferguson, AMSE Affiliate Representative
Margaret Glass, ASTC Affiliate Representative
Lisa Martin-Hansen, ASTE Affiliate Representative
James McDonald, CESI Affiliate Representative
Deborah Hanuscin, NARST Affiliate Representative
Mary Lou Lipscomb, NMLSTA Affiliate Representative
Craig Gabler, NSELA Affiliate Representative
Brian Shmaefsky, SCST Affiliate Representative

All cities are subject to change pending final negotiation.

National Conferences on Science Education

Los Angeles, California
March 30–April 2, 2017

Atlanta, Georgia
March 15–18, 2018

St. Louis, Missouri
April 11–14, 2019

Boston, Massachusetts
March 26–29, 2020

Chicago, Illinois
April 8–11, 2021

2016 5th Annual STEM Forum & Expo, hosted by NSTA
Denver, Colorado—July 27–29

Area Conferences on Science Education

2016 Area Conferences

Minneapolis, Minnesota—October 27–29

Portland, Oregon—November 10–12

Columbus, Ohio—December 1–3

2017 Area Conferences

Baltimore, Maryland—October 5–7

Milwaukee, Wisconsin—November 9–11

New Orleans, Louisiana—November 30–December 2

NSTA 2017 National Conference on Science Education

Los Angeles, CA • March 30 – April 2

SHARE YOUR IDEAS!

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

Proposal Deadline:
4/15/2016

To submit a proposal, visit

www.nsta.org/conferenceproposals

NSTA National
Science
Teachers
Association

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

NSTA 2016 Nashville National Conference Professional Learning Documentation Form

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

Beginning April 26, 2016, Nashville transcripts can be accessed at the NSTA Learning Center (learningcenter.nsta.org) by logging on with your Nashville Badge ID# and first clicking on “My Profile” under the “Welcome.” Here you’ll find a “Certificates” tab to access your transcript. Keep this form and use it to add the following activities to your Nashville transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.

First Name: _____ **Last Name:** _____ **Badge ID#** _____

Evaluate sessions by accessing the conference session browser: www.nsta.org/nashvillebrowser. You will need your badge number to evaluate sessions. See page 17 of the conference program for instructions. *Note: Our session evaluation system is designed to work from a computer and while it may work on smartphones/tablets, it is not really designed for them. **And don’t forget, the more sessions you attend and evaluate, the more chances you have to win an Apple iPad mini 2!***

Sample Questions:

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

Sample Responses:

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

Wednesday, March 30 8:30 AM–8:30 PM

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

Thursday, March 31 8:00 AM–9:30 PM

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

We’re giving an Apple iPad mini 2 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 1, 7:00 AM–12 Midnight

Start Time	End Time	Activity/Event Title

Saturday, April 2, 7:30 AM–10:00 PM

Start Time	End Time	Activity/Event Title

Sunday, April 3 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title

NSTA

AREA CONFERENCES ON SCIENCE EDUCATION

SAVE THE DATES | 2016

MINNEAPOLIS
MINNESOTA

OCTOBER 27-29

CELEBRATE SCIENCE:
10,000 CONNECTIONS

PORTLAND
OREGON

NOVEMBER 10-12

EXPLORING MOUNTAINS:
GUIDING SCIENCE
TEACHING AND LEARNING

COLUMBUS
OHIO

DECEMBER 1-3

CHAMPIONS OF SCIENCE:
A GAME PLAN FOR
THE FUTURE!

PROFESSIONAL DEVELOPMENT STRANDS

Teaching Science in a
Connected World

STEMify Instruction Through
Collaboration Across the
Curriculum

Celebrating Elementary
Science and Literacy
Connections

Base Camp: Collaborating to
Integrate Elementary Science
Instruction with Math and ELA

The View from the Summit:
Celebrating Science for All

The View from All Angles:
Connecting Three-Dimensional
Science Instruction

Training Camp: Strengthening
Fundamentals in Elementary
Education

Game Time: Tackling Scientific
Problems and Pitching
Engineering Solutions

Science Boosters: Taking It
to the Next Level

For more information and to register, visit
www.nsta.org/conferences

NSTA National
Science
Teachers
Association

National Science Teachers Association

Legacy Award



Hans Oliver Andersen
1989–1990 NSTA President
Bloomington, Ind.

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

Robert H. Carleton Award

for National Leadership in the Field of Science Education



LaMoine Motz
1988–1989 NSTA President
Motz Consulting Group
White Lake, Mich.

Presidential Citation



Tyraine Ragsdale
“Grand Hank”
Master Scientist and
Television Personality
Philadelphia, Pa.

Angela Award



Eleanor Ann Schoenbrun
Science Student
Hornedo Middle School
El Paso, Tex.

National Science Teachers Association

Distinguished Teaching Award



Victoria Jordan
Science Teacher/Department Head
Wellington Middle School
Bellvue, Colo.

National Science Teachers Association

Distinguished Informal Science Education Award



Margaret Glass
Director of Professional
Development
Association of Science-
Technology Center
Springfield, Va.



Ronda Hamm
Patent Liaison and Science
Ambassador Chair
Dow AgroSciences
Carmel, Ind.

National Science Teachers Association

Distinguished Service to Science Award



Jay Labov
Senior Advisor for Education
and Communication
National Academy of Sciences
Washington, D.C.



Morton Sternheim
Professor
UMass Amherst
Amherst, Mass.

Robert E. Yager Excellence in Teaching Award

Yager Scholar

*NSTA District XI
(KS, MO, NE)*



Rob Lamb
Science Teacher
Pattonville School District
Maryland Heights, Mo.

*NSTA District III
(DE, DC, MD)*



Tiffany Taylor
Science Teacher
St. Charles High School
Waldorf, Md.

*NSTA District V
(AL, FL, GA, PR, VI)*



Megan Faliero
Science Teacher
Durant High School
Plant City, Fla.

*NSTA District IX
(MN, ND, SD)*



Julie Olson
Science Teacher
Second Chance High/
Mitchell High School
Mitchell, S.Dak.

*NSTA District XV
(ID, MT, WY)*



Sharla Dowding
Science Teacher
Glenrock High School
Glenrock, Wyo.

*NSTA District XVII
(AK, OR, WA)*



Alfonso Garcia Arriola
Science Teacher
ACCESS Academy
Portland, Ore.

Northrop Grumman Foundation Excellence in Engineering Education Award

Sponsored by Northrop Grumman Foundation



Jose Rivas
Science Teacher
Lennox Math, Science & Technology
Academy
Lennox, Calif.

Sylvia Shugrue Award for Elementary School Teachers



Debra Ericksen
Science Teacher
Adamsville Primary School
Bridgewater, N.J.

National Science Teachers Association

Fellow Award



Inez Liftig
NSTA Consultant
Westport, Conn.

Fellow Award



Christine Anne Royce
Professor
Shippensburg University
Shippensburg, Pa.

Wendell G. Mohling Outstanding Aerospace Educator Award



Wendi Laurence
Adjunct Faculty
Portland State University
Park City, Utah

Ron Mardigian Memorial Biotechnology Explorer Award

Sponsored by Bio-Rad Laboratories



Nicki Derryberry
Biotechnology Science Teacher
Red Mountain High School
Tempe, Ariz.

Faraday Science Communicator Award



Sue Dale Tunnicliffe
(The Lady Tunnicliffe)
Reader in Science Education
University College London
Institute of Education
London, U.K.

PASCO STEM Educator Awards

Sponsored by PASCO scientific



Middle Level

Chris McChesney
Science and Engineering
Teacher
Pikesville Middle School
Baltimore, Md.



High School

Jacqueline Fernandez
Science Teacher/STEM
Director
LAYC-Career Academy
Public Charter School
Washington, D.C.



Brandie Freeman
Science Teacher
Woodland High School
Cartersville, Ga.

Vernier Technology Awards

Sponsored by Vernier Software & Technology

Elementary Level



Sherie Ryan-Bailey
Science Teacher
Oakley Elementary School
Asheville, N.C.

Middle Level



Greer Harvell
Science Teacher
Walton Middle School
Defuniak Springs, Fla.



Aaron Mueller
Science Teacher
Scullen Middle School
Naperville, Ill.

High School Level



Richard Erickson
Science Teacher
Bayfield High School
Bayfield, Wis.



Dan Starr
Science Teacher
Green Lake School
Green Lake, Wis.



Ben Smith
Science Teacher
Peninsula High School
Rolling Hills, Calif.

College Level



Kasey Wagoner
Assistant Physics Professor
Philadelphia University
Philadelphia, Pa.

Shell Science Teaching Award

Sponsored by Shell Oil Co.

Awardee



Aaron Osowiecki
Science Teacher
Boston Latin School
Boston, Mass.

Finalist



Russell "Ben" Walker
Science Teacher
Romig Middle School
Anchorage, Alaska

Finalist



Joel Truesdell
Chemistry Teacher
Kamehameha Schools
Hilo, Hawaii

SeaWorld/Busch Gardens Outstanding Environmental Educator of the Year



Bev Bryant
Interpretive Naturalist
Wehr Nature Center
Transform Forest
Franklin, Wis.

Shell Urban Science Educators Development Award

Sponsored by Shell Oil Co.



Olukayode Banmeke
Science Teacher
Duval High School
Lanham, Md.



Aja Brown
Science Teacher
P.S. 214 Lorraine
Hansberry Academy
Bronx, N.Y.



Paul Orbe
Science Teacher
Academy for Enrichment
and Advancement
Union City, N.J.



Elena Reyes Lovins
Science Teacher
Amboy Elementary
School
Sherwood, Ark.



Sarah Tazghini
Science Teacher
Khalil Gibran
International Academy
Brooklyn, N.Y.



Pearlie Walker
Science Teacher
T.J. Harris Upper
Elementary School
Meridian, Miss.



Vanessa Perez
Science Teacher
Sul Ross Middle School
San Antonio, Tex.

The Maitland P. Simmons Memorial Award for New Teachers

Lily Apedaile	Erin Park
Andrew Bean	Michael Perez
Colleen Buzby	Daniella Perry
Catherine Calogero	Taylor Planz
Heather Carter	Diane Radov
Shane Chinni	Amanda Richter
Kevin Frederick	Jeremy Siegel
Tori Frezza	Theila Smith
Allison Jaycox	Jessica Suri
Rhochelle Krawetz	Gregory Taylor
Nicholas Krissie	Jane Thompson
Kammas Murphy	Jonathan Trebble-Greening
Keila Olmeda	

DuPont Pioneer Excellence in Agricultural Science Education Award



H. Marie Lemon
Science Teacher
Greenville Early College
High School
Greenville, S.C.

NSTA Teacher Awards Gala

ALL of the teacher awards will be presented in one grand evening. See page 73 for details about this ticketed event.

2015 DuPont Challenge Science Essay Teacher Awardees

Elementary Division



Kindergarten
Grand-Prize Winner
Maureen Danahy
Kindergarten Teacher
Benjamin Banneker Charter
School
Cambridge, Mass.



First Grade
Grand-Prize Winner
Laura Fedorchuk
First-Grade Teacher
Kelly Mill Elementary School
Cumming, Ga.



Second Grade
Grand-Prize Winner
Pamela Gadboys
Second-Grade Teacher
Holley Navarre Primary
Navarre, Fla.



Third Grade
Grand-Prize Winner
Brandi Leggett
Former Third-Grade Teacher
Prairie Ridge Elementary
School
Shawnee, Kans.



Fourth Grade
Grand-Prize Winner
Laurel Brandon
Former Third- to Sixth-
Grade Teacher
Fireside Elementary School
Phoenix, Ariz.



Fifth Grade
Grand-Prize Winner
Rebecca Howland
Fifth-Grade Math and
Science Teacher
William S. Talbot Elementary
School
Gainesville, Fla.

Junior Division



Grand-Prize Winner
Dave Palguta
Seventh-Grade Science Teacher
Gahanna Middle School East
Gahanna, Ohio



Grand-Prize Winner
Peter Starodub
Chemistry and Science
Research Teacher
Palos Verdes Peninsula High
School
Palos Verdes, Calif.

Senior Division

2015–2016 Shell Science Lab Challenge, sponsored by Shell Oil Company

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 Vol. 2 for the “Do You Need a New Science Lab?” and “The Shell Science Teaching Award: Fueling Success with Students” sessions.

Grand-Prize Winner

NSTA District VII
(AR, LA, MS)



Alicia Conerly
Science Teacher
South Pike High School
Magnolia, Miss.

Co-Applicant

NSTA District VII
(AR, LA, MS)



Chander Jenkins
Science Teacher
South Pike High School
Magnolia, Miss.

Co-Applicant

NSTA District VII
(AR, LA, MS)



DeAndra Johnson
Science Teacher
South Pike High School
Magnolia, Miss.

Co-Applicant

NSTA District VII
(AR, LA, MS)



Tony Richardson
Science Teacher
South Pike High School
Magnolia, Miss.

National Finalists

District III

(DE, DC, MD)

Catherine Krygeris
Science Teacher
Mardela Middle/High School
Mardela Springs, Md.

District VI

(NC, SC, TN)

Roy “Jay” Renfro
Science Teacher
Knowledge Academies
Antioch, Tenn.

District XIV

(AZ, CO, UT)

Rene Corrales
Science Teacher
STAR Academic Center
Tucson, Ariz.

District XVI

(AM SAMOA, CA, GUAM, HI, NV)

Petra McCullough
Science Teacher
Sunset School
Oak View, Calif.

The Planetary Society Lecture

Wednesday, March 30, 6:00–8:00 PM



Bill Nye
CEO, The Planetary
Society

If the Dinosaurs Had a Space Program

Join Bill Nye as he
probes scientific efforts
to find ice and rocks in

space and then nudge them out of the way
of Earth's atmosphere. Achieving this could
save us all—and the technological advances
along the way will enrich the lives of Earth's
citizens everywhere.

Sponsored by The Planetary Society

(See page 82 for details.)

Is This Your First NSTA Conference?

Yes, you say? Then you are invited
to attend a Thursday morning
session specifically intended for
first-time conference attendees,
sponsored by Ward's Science. This
session will help you make the
most of your first-time conference
experience.

See page 87 for details.

Ribbon-Cutting Ceremony

An opening ceremony is
scheduled on Thursday at
11:00 AM in the entrance to Hall
B of Music City Center.

Wednesday, March 30 (Volume 1)

9:00 AM–4:00 PM	NSTA Professional Learning Institutes (check in between 8:00 and 9:00 AM).	77
12 Noon–5:30 PM	Global Conversations in Science Education Conference (M-1)	80–81
6:00–8:00 PM	The Planetary Society Lecture: Bill Nye	82

Thursday, March 31 (Volume 1)

8:00–9:00 AM	First-Timers' Session, <i>sponsored by Ward's Science</i> : Welcome to Your First NSTA Conference	87
9:15–10:30 AM	General Session: Tyraine “Grank Hank” Ragsdale	100
11:00–11:05 AM	Exhibits Opening/Ribbon-Cutting Ceremony	107
11:05 AM–6:00 PM	Exhibits	108
2:00–3:00 PM	Featured Panel: Moderator: J. Wesley Hall	127
2:00–4:00 PM	Science in the Community Forum: Learning Through Failure	139
3:30–4:30 PM	Featured Presentation: Sean Carroll	142
3:30–4:30 PM	Mary C. McCurdy Lecture: Christine Cunningham, <i>sponsored by Shell</i>	142
7:30–9:30 PM	NGSS Live Chat.	163

Friday, April 1 (Volume 2)

See Conference Highlights, Volume 2, for page numbers.

7:30–8:00 AM	Science in the Community Breakfast (M-2)	
8:00–9:00 AM	Science in the Community Featured Presentation: Andrew Fraknoi	
8:00–10:00 AM	Elementary Extravaganza	
8:00 AM–3:30 PM	NGSS@NSTA Forum	
8:30–9:30 AM	Featured Presentation: Stanley B. Prusiner	
9:00 AM–5:00 PM	Exhibits	
9:15–11:15 AM	Science in the Community Share-a-Thon	
9:30–10:30 AM	Featured Presentation: Jean Kaneko, <i>sponsored by Shell</i>	
12:45–1:30 PM	“Meet and Greet” the Presidents and Board/Council	
1:30–2:30 PM	NSTA District Director and Chapter/Associated Group Social in Honor of Wendell Mohling	
2:00–4:00 PM	Science in the Community Interactive Forum on Science and Art	
3:30–4:30 PM	Robert H. Carleton Lecture: Herb Brunkhorst	
6:00–8:45 PM	NSTA Teacher Awards Gala (M-3)	
9:00 PM–12 Mid.	President's Mixer with DJ and cash bar	

General Session

Thursday, March 31, 9:15–10:30 AM



Tyraine “Grand Hank” Ragsdale

Grandmaster of Science
and President, Grand Hank
Productions

Energize Science

Use the superpowers of hip-hop music and kinesthetic learning to inspire students to achieve their maximum learning potential in science. This creative out-of-the-box approach provides teachers with firsthand strategies and techniques on how to use “Event-Based Instruction” (a term coined by Grand Hank) to pique the interest of students and create a winning formula for success in science

(See page 100 for details.)

Saturday, April 2 (Volume 3)

See Conference Highlights, Volume 3, for page numbers.

8:00–9:00 AM	The NGSS@NSTA Hub
8:30 AM–3:00 PM	Teacher Researcher Day
9:00 AM–3:00 PM	Exhibits
9:30–10:30 AM	NGSS@NSTA Share-a-Thon
9:30–10:30 AM	Paul F-Brandwein Lecture: J. Drew Lanham
10:00 AM–4:00 PM	Meet Me in the Middle Day
11:00 AM–12 Noon	AGU Lecture: Linda C. Kah
2:00–3:00 PM	Arthur C. Clarke Institute for Space Education Lecture: Jeff Goldstein
2:00–3:00 PM	NSTA/ASE Honors Exchange Lecture: Corinne Stevenson
2:00–4:00 PM	Science in the Community Forum on Family Science Learning
3:30–4:30 PM	Featured Presentation: Peter McLaren
8:00–10:00 PM	Boot Scootin’ Boogie (at Frontier Room, above Whiskey Bent Saloon)

Are You Concerned About Gas Jet Safety in Your Lab?

Visit Cell Zone at Booth 537

See the Future of Lab Safety
for Yourself Today



Burner Brake™

When it's on, it's off.

Gas jet safety in laboratories continues to be an ongoing problem. To make your labs safer, use **BurnerBrake** and prevent any accidental tampering.



The Nashville 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.



Setting the Stage: Scientific Literacy

To reach the goal of a scientifically literate population, it is imperative to build an understanding of the nature of science, history of science, inquiry, and the practices of science and engineering. Students need opportunities to learn how scientists “know what they know” and what sound science looks like. In this strand, participants will develop understanding of the nature of science for all learners and explore how science and scientific tools have progressed over time.



Building the Band: Involving Community Stakeholders

To build authentic science experiences, it is necessary to reach outside a school’s walls to form strategic partnerships with informal science education (museums, community resources), Economic and Community Development (ECD), chambers of commerce, institutes of post-secondary education, after-school program providers, and national and local extracurricular groups (e.g., scouts, boys and girls clubs, and environmental education groups). Together, educators and stakeholder organizations can leverage opportunities for grants, outreach, and real-world collaboration for students. Participants in this strand will gain ideas for locating external resources and developing partnerships to strategically support instruction for real-life learning experiences.



Harmonizing Concepts: Integrating Instruction

High-quality instruction demands integration of STEM content with leading initiatives such as the Common Core State Standards, in English language arts and mathematics; CTE (Career and Technical Education); and subject areas, including social studies and the arts in trans-disciplinary approaches to teaching and learning. Authentic science learning requires concepts and skills from across multiple content areas. This strand will allow participants to explore how integrating targeted skills and concepts from other content areas can enhance science instruction and engage learners. Also emphasized will be the power of science to reinforce other content through authentic application tasks.



Stringing It All Together: Three-Dimensional Learning

The NRC *Framework* and the *Next Generation Science Standards* identified best practices from research for today’s learners. Good instruction must incorporate the NGSS three dimensions of crosscutting concepts, disciplinary core ideas, and science and engineering practices. Three-dimensional science learning produces scientifically literate and competent students. This strand will exemplify the intertwining nature of the three dimensions necessary for the highest quality science instruction. This strand will be tied together by accessing the latest research findings regarding science education.

Setting the Stage: Scientific Literacy

Thursday, March 31

8:00–8:30 AM

The CO₂ Culprit: Man vs. (Volcanic) Mountain

8:30–9:00 AM

Creating a NASA-Based Research Environment in a High School Classroom: Mission to Outer Space

12:30–1:30 PM

Visual Literacy: Using Observable and Inferred Evidence to Analyze and Interpret Information

Science By Design: Addressing Science Concepts Through Engineering

1:30–4:30 PM

Short Course: Using Found Objects to Teach Important Science Content and Skills (By Ticket: SC-3)

2:00–3:00 PM

Impactful Implementation of Argument and Inquiry in High School Chemistry and Biological Sciences

3:30–4:30 PM

Featured Presentation: *The Serengeti Rules*: The Quest to Discover How Life Works and Why It Matters (Speaker: Sean Carroll)

Friday, April 1

8:00–8:30 AM

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

8:00 AM–12 Noon

Short Course: What Lies Beneath Our Feet? Using Remote Sensing Technologies to Better Understand the World (and the Ice Sheets) Beneath Us! (By Ticket: SC-5)

8:30–9:00 AM

Open-Ended Inquiry-Based Instruction in Ecology

9:30–10:30 AM

Exploring Engineering Practices

11:00 AM–12 Noon

Teach STEM Content and Spark Science Career Interest with Free Online Games

12:30–1:30 PM

Engaging the Natural Curiosities of Children in the Early Years

2:00–3:00 PM

Let's Go Outside...to the Schoolyard and Beyond

3:30–4:30 PM

Regurgitation and Argumentation: Teaching Science Practices Using Owl Pellets

5:00–6:00 PM

Newton's Nightmare: A Magnetic Mystery!

Saturday, April 2

8:00–8:30 AM

Connecting Interactive Science Notebooks and NGSS Practices: Early Childhood Students Engaging Their Community

8:30–9:00 AM

Little Learners, BIG Ideas: Innovative Thinking in Early Childhood

8:00–11:00 AM

Short Course: Engineering Understanding: Applying Science Concepts and Building Academic Language (By Ticket: SC-6)

9:30–10:30 AM

Students Answer Sustainable Energy Research Questions with Current Science and Engineering Data

11:00 AM–12 Noon

Your Kids Can, Too! Scientific Argumentation for All Students

12:30–1:30 PM

Write to Know Science

2:00–3:00 PM

Designing Animals to Survive Cold Temperatures

3:30–4:30 PM

From Cookbook to Open Inquiry: How to Develop the Necessary Skills

5:00–5:30 PM

Enhanced Exit Ticket: Round-Trip to Greater Student-Teacher Accountability

5:30–6:00 PM

Primary Literature: Students Reading Real Science

Sunday, April 3

8:00–8:30 AM

Using the 2017 U.S. Total Solar Eclipse to Promote Educational Outreach

8:30–9:00 AM

Using Expeditions as Contexts for Teaching Science: Adventure Mississippi River

9:30–10:00 AM

Science Fair: A Learning Progression Across K–5

10:00–10:30 AM

Using Web-Based Resources to Assist Diverse Learners to Learn Scientific Concepts While Engaging in Science Practices

Building the Band: Involving Community Stakeholders

Thursday, March 31

8:00–9:00 AM

From the Farm to the Pond—An Inquiry Unit for Early Childhood Learners

12:30–1:30 PM

Overcoming Geographical Barriers to Engaging with Scientists: I’m a Scientist USA

2:00–3:00 PM

Featured Panel: It Takes a Village: A Panel on Partnerships from Multiple Perspectives (Moderator: J. Wesley Hall; Panelists: Aimee Kennedy, Oliver “Buzz” Thomas, James P. McIntyre, Jr.)

Putting the Green in the NGSS

3:30–4:30 PM

NASA Is Looking for a Few Great Teachers and Their Students!

5:00–6:00 PM

Teachers and NOAA Scientists: A Match Made at Sea

Friday, April 1

8:00–9:00 AM

Bring New Life to the Geosciences: Opportunities for Connecting Student Learning to Real-World Applications

9:30–10:30 AM

See How an NSTA Student Chapter Is Impacting K–6 Science Learning Through an Informal Education Program

11:00 AM–12 Noon

Working in Concert: Successful Collaboration with Informal Centers

12:30–1:30 PM

Outbreak! Partnering CDC Scientists with Science Teachers

2:00–3:00 PM

How to Master Scientists Inside Your Classroom with High Results

3:30–4:30 PM

Developing STEM Partnerships You Can’t Live Without

5:00–6:00 PM

The Smithsonian, STEM, and Your Classroom

Saturday, April 2

8:00–9:00 AM

Students and Teachers Investigating Climate Change and Remote Sensing

8:40 AM–3:30 PM

Short Course: Is It Spring Yet? Field Studies with Middle School Citizen Scientists (By Ticket: SC-14)

9:30–10:30 AM

Science Ambassadors: Partnering Elementary and High Schools for STEM Night Events

11:00 AM–12 Noon

Making STEAM Rise in Your School

12:30–1:00 PM

Empowering Our Students to Be Citizen Scientists!

1:00–1:30 PM

Using Career Academies to Develop Community Partnerships in the Classroom

Sunday, April 3

9:30–10:00 AM

Planting the Seeds to Cultivate Meaningful Science Practices in Garden Classrooms

10:00–10:30 AM

Building a Learning Garden While Integrating Literacy and Science

Harmonizing Concepts: Integrating Instruction

Thursday, March 31

8:00–9:00 AM

Using PBLs to Teach NGSS-Focused Chemistry

12:30–1:30 PM

Creating a Sticky Curriculum: Integrating Science with Core Academic Subjects in the Preschool and Elementary Classroom

1:30–5:30 PM

Short Course: Engineering a Story: Integrating Engineering Practices with Literacy (By Ticket: SC-4)

3:30–4:30 PM

Teaching Argument Writing in the Middle School and High School Science Classroom: Do This, Not That!

5:00–6:00 PM

Science and Superheroes: Integrating Science and Literacy Learning with Active Role Play and Comic Books

Friday, April 1

8:00–9:00 AM

Filters Aren't Only for Coffee! How to Blend Multiple Curricular Materials Together into a Seamless STEM Unit on Water Quality and Filtration

9:30–10:30 AM

Constructing Science Explanations Using Reading and Writing Strategies to Support Grades 6–8 Students

Featured Presentation: The Tinker.Make. Innovate. Program
(Speaker: Jean Kaneko)

11:00 AM–12 Noon

Professional Development to Support Integrated Inquiry-Based Teaching in the Outdoors

12:30–1:00 PM

Developing 21st-Century Reasoning Skills Through an Authentic Interdisciplinary STEM Research Experience

1:00–1:30 PM

Integrating Global STEM Education into All Aspects of the Curriculum

1:30–4:30 PM

Short Course: Geospatial Technology in the STEM Classroom: Integrating Place and Projects for Meaningful Learning Across Content Areas
(SC-9: By Ticket Only)

2:00–3:00 PM

Authentic Interdisciplinary Learning Through Simulation

3:30–4:30 PM

Forces and Motion (PS2): An Integrated K–8 Hands-On Approach Supporting the NGSS and CCSS ELA

5:00–6:00 PM

Photosynthesis and Cellular Respiration (LS1): A Hands-On Approach for Grades 6–12

Saturday, April 2

8:00–9:00 AM

Art and the Cosmic Connection

9:30–10:30 AM

NGSS and CCSS Mashup: Science Museum Transforms Teaching

11:00 AM–12 Noon

Come Fly with Us!

12:30–1:30 PM

Lead with Science: Learn How to Use Science Tasks to Reinforce CCSS for ELA and Mathematics

2:00–3:00 PM

Creating the Curious Learner in STEAM: Using Notebooks as an Integration Tool

5:00–6:00 PM

A Cross-Curricular Contamination Case: Integrating Core Content Through Self-Paced Learning

Sunday, April 3

8:00–9:00 AM

Chapter Books at the Crossroads of the NGSS and CCSS

9:30–10:30 AM

Project-Based Learning: How It Has Changed Teaching and Learning in Our School

11:00 AM–12 Noon

Data Literacy for Science Teachers: Understanding and Integrating CCSS Mathematics Data Standards to Strengthen Your Science Curriculum

Stringing It All Together: Three-Dimensional Learning

Thursday, March 31

8:00–9:00 AM

Analyzing and Interpreting Ice Sheet Data to Determine the Effects of Human Activities on Climate

12:30–1:30 PM

Supporting Three-Dimensional Learning by Spiraling K–12 Students' Engagement with Phenomena

1:30–4:30 PM

Short Course: Juggling It All: Teaching NGSS in Elementary Grades
(By Ticket: SC-1)

2:00–3:00 PM

Using the EQuIP Rubric to Analyze a Digital Lesson for Three-Dimensional Learning with Neurobiology and Clinical Trial Connections

3:30–4:30 PM

Building an NGSS Network: One District's K–12 Journey Toward Three-Dimensional Learning

5:00–6:00 PM

Mappin' It: Vertically Aligning Three-Dimensional Lessons in Earth Science

Friday, April 1

8:00–9:00 AM

Biofuels for the Next Generation of Aviation? An Authentic Problem-Based Learning Experience

8:30–9:30 AM

Featured Presentation: Prions: Discovering a Unifying Etiology for Neurodegenerative Disorders, Including Alzheimer's and Parkinson's Diseases
(Stanley Prusiner)

9:30–10:30 AM

Sound Through the Ages—From Cluckers to Pluckers

11:00 AM–12 Noon

Cellular Respiration: Reducing Confusion Through Collaboration

12:30–1:30 PM

Bioengineering Challenges and Middle School Life Science

2:00–2:30 PM

A Different Type of PPT: Phenomena, Practices, and Teaching

2:30–3:00 PM

Creating and Sharing Three-Dimensional NGSS-Focused High School Chemistry Lessons in a Virtual Professional Learning Community

3:30–4:30 PM

Using NGSS Tools and Resources in Your Classroom

5:00–6:00 PM

Linking Lessons into a Storyline—Making It Happen

Saturday, April 2

8:00–9:00 AM

All Learners and the NGSS: The Importance of Three-Dimensional Learning and Reasoning

8:00–11:00 AM

Short Course: Building Better Lessons: NGSS Classroom (By Ticket: SC-11)

9:30–10:30 AM

Engineering Remotely Operated Vehicles Incorporates Three-Dimensional Learning to Improve Student Achievement

11:00 AM–12 Noon

Revamping Our Best Earthquake Lessons with Argument-Driven Inquiry to Better Target the NGSS

12:30–1:00 PM

Warm the Water to Save Your City: An Engineering and Educational Technology NGSS Student Assessment Task

1:00–1:30 PM

Explaining Population Dynamics Through the Modeling of Long-Term Data on Hurricane Disturbance in Puerto Rico

2:00–3:00 PM

Developing Primary Teachers' Abilities in Science and the NGSS

3:30–4:30 PM

Motivating Modeling with Anchoring Phenomena and Challenge Questions

Sunday, April 3

8:00–9:00 AM

Is Your Beak Stuck? How to Use the Three Dimensions of the NGSS in a Natural Selection Activity

9:30–10:30 AM

From Memorization to Modeling—Reconceptualizing Teaching About Cellular Division

11:00 AM–12 Noon

Orchestrating a Scientific Symphony with the Three Dimensions of the NGSS

11th Annual NSTA Global Conversations in Science Education Conference

Science Goes Global: The Next Generation

Wednesday, March 30, 12 Noon–5:30 PM

Broadway E, Omni

By Preregistration Only (M-1)

NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference begins and ends with plenary talks by distinguished international scholars and includes roundtable discussions on specific topics relevant to the international science educator community and poster presentations providing opportunities for networking and idea exchange. During this event, there will be numerous opportunities for international visitors to network with science educators from various cultures. NSTA is extremely grateful to Google Inc. (“GOOGLE”), Labster, and Northrop Grumman for their generous support and contribution to this event. *For an agenda on Global Conversations Conference events, see pages 80–81.*

Wednesday, March 30

8:00–10:45 AM W-1 Educational Trip: Elementary (off-site)

W-2 Educational Trip: High School (off-site)

12 Noon–5:30 PM Global Conversations Conference (M-1)

Plenary Talks

Interactive Panels

Roundtable Discussions

Poster Session

Closing Remarks: Carolyn Hayes

NSTA President

Meet Me in the Middle Day

Saturday, April 2, 10:00 AM–4:00 PM

Omni

Calling all middle school science teachers! Meet Me in the Middle Day is designed just for you. The day will include 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. Meet Me in the Middle Day is organized by the National Middle Level Science Teachers Association (NMLSTA) and sponsored by Carolina Biological Supply, PASCO scientific, and Texas Instruments.

An agenda follows. *Meet Me in the Middle Day events are described throughout Volume 3.*

10:00–10:15 AM	Registration and Welcome
10:15–10:45 AM	Concurrent Sessions
11:00–11:30 AM	Concurrent Sessions
12:30–1:00 PM	Concurrent Sessions
1:15–1:45 PM	Concurrent Sessions
2:00–4:00 PM	Middle Level Share-a-Thon

NGSS@NSTA Forum

Friday, April 1, 2016
Grand Ballroom C1, Music City Center



The NGSS@NSTA Forum explores resources you can use to implement three-dimensional instruction. Participate in one or more presentations. *See Vol. 2 for details.*

8:00–9:00 AM	How Should Districts and Schools Focus Professional Development When Starting to Implement NGSS?
9:30–10:30 AM	Using Three-Dimensional Standards to Plan Instruction and Assessment
11:00 AM–12 Noon	Supporting Ongoing Changes in Students' Thinking: The Primer
12:30–1:30 PM	Assessing Three-Dimensional Learning
2:00–3:30 PM	Designing or Adapting Curriculum and Instruction to Make It Three Dimensional

NGSS Live Chat

Thursday, March 31, 7:30–9:30 PM
Legends C, Omni

Come to the NGSS Live Chat, presented by Ted Willard, Tricia Shelton, and others as they discuss the NGSS. Join in live or via Twitter...#NGSSchat.

NGSS@NSTA Share-a-Thon

Saturday, April 2, 9:30–10:30 AM
Grand Ballroom C1, Music City Center

At the NGSS@NSTA Share-a-Thon, get even more tips and tools to implement three-dimensional standards from NSTA's NGSS Curators, NGSS writers, and other education experts. Leave with plenty of handouts and ideas you can use in your classroom right away! *See Vol. 3 for details.*



Science in the Community Events

The Science in the Community Forums and events build awareness of the abundance of existing high-quality out-of-school (informal) science education methods, resources, and opportunities available to enhance science teaching and learning. Both out-of-school and in-school science educators 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 participating in the Science in the Community Forums include zoos, museums, media, after-school programs, universities outreach, and others that provide or support out-of-school science education. The Science in the Community events are sponsored by Google Inc. ("GOOGLE").

Thursday, March 31

2:00–4:00 PM Learning Through Failure—Teaching Science Through Tinkering and Tweaking

Friday, April 1 *(See Vol. 2 for details)*

7:30–8:00 AM Science in the Community Breakfast (M-2 ticket)
8:00–9:00 AM Science in the Community Featured Presentation (Andrew Fraknoi)
9:15–11:15 AM Science in the Community Share-a-Thon
2:00–4:00 PM Interactive Forum in Science and Art

Saturday, April 2 *(See Vol. 3 for details)*

2:00–4:00 PM Forum on Family Science Learning

Teacher Researcher Day

Saturday, April 2, 8:30 AM–5:00 PM

East Ballroom, Renaissance Nashville Hotel

Teacher researchers are curious about their students' learning and ask questions to try to better understand what is happening in their classrooms. They also share their findings with colleagues in their schools and elsewhere. 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	12 Noon–12:30 PM	Leading from the Classroom: Science Inquiry Group Network
9:30–11:00 AM	Panel Discussion: <i>Integrating Instruction to Meet Student Needs</i>	12:30–1:00 PM	Concurrent Sessions
11:00 AM–12 Noon	Concurrent Sessions	1:00–1:30 PM	Concurrent Sessions
		2:00–2:30 PM	Concurrent Sessions
		2:30–3:00 PM	Concurrent Sessions
		4:00–5:00 PM	Next Year Planning and Summary

ELEMENTARY EXTRAVAGANZA

Friday, April 1, 2016

8:00–10:00 AM • Grand Ballroom A
Music City Center

- Hands-on activities
- Preview science trade books
- Learn about award and grant programs
- Walk away full of ideas and arms filled with materials
- Door prizes and refreshments—Win an iPad!
- 100+ presenters

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College of Education & Human Services

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.



NSTA National Science Teachers Association

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, March 31

8:00–9:00 AM

Teaching Science for Conceptual Understanding: Exploring the “Big Ideas” of Conceptual Teaching and Learning in Science

Promote Enduring Understanding with Literacy-Infused Units

12:30–1:30 PM

Reimagining the Science Department

2:00–3:00 PM

Uncovering Preservice and K–12 Teachers’ Ideas About Science

Scientific Argumentation for the Classroom

3:30–4:30 PM

Next Time You See...

5:00–6:00 PM

Teaching Science Through Integrating Children’s Literature and Outdoor Investigations

Friday, April 1 (Volume 2)

8:00–9:00 AM

Engaging Students in Predict, Observe, Explain Sequences in Your Science Classroom

9:30–10:30 AM

It’s Debatable: Using Socioscientific Issues to Develop Scientific Literacy, K–12

11:00 AM–12 Noon

Linking the *Uncovering Student Ideas in Science Series* and *Everyday Science Mysteries* to K–5 Language Literacy

12:30–1:30 PM

Doing Good Science in Middle School

2:00–3:00 PM

The Power of Questioning: Guiding Student Investigations

Models and Approaches to STEM Professional Development

3:30–4:00 PM

Beyond the Numbers: Making Sense of Statistics

5:00–6:00 PM

Using Everyday Mysteries to Promote Literacy

Saturday, April 2 (Volume 3)

8:00–9:00 AM

Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry, K–5

Integrating Engineering Practices into a Whole-Class Inquiry Challenge

9:30–10:30 AM

Solar Astronomy Curriculum Resource That Meets the NGSS = Getting Ready for the All-American Eclipse

11:00 AM–12 Noon

Diving into the NGSS Disciplinary Core Ideas: How and Why They are Important for Teaching and Learning

Bringing Outdoor Science In

Learn Strategies to Help You Implement the NGSS Practices!

2:00–3:00 PM

Five E(z), “Elementary” Steps To Next Generation Science Teaching

3:30–4:30 PM

Uncovering Student STEM-Connected Ideas in Science

Sunday, April 3 (Volume 3)

8:00–9:00 AM

CCSS ELA and Literacy + NGSS = Even More Brain-Powered Science

9:30–10:30 AM

What Are They Thinking? Investigating the Moon Through Formative Assessment Probes and Strategies That Link Concepts and Practices

11:00 AM–12 Noon

Forensics in Chemistry



NSTA Professional Learning Institutes

Wednesday, March 30

9:00 AM–4:00 PM

A limited number of PLIs will be available for on-site registration.

Professional Learning Institutes (PLIs) are focused, content-based programs that explore key topics in significant depth. PLIs are presented by experts in science/STEM education, professional learning, standards implementation, assessment, curriculum, and resources/materials development. Institutes require conference registration. Check in between 8:00 and 9:00 AM.



Supporting Conceptual Understanding in Science by Linking Assessment, Instruction, and Learning (PLI-1)

Page Keeley, 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Joyce Tugel, Maine Mathematics and Science Alliance, Augusta

Richard Konicek-Moran, Professor Emeritus, UMass, Amherst, Mass.

Level: K–12

Science Focus: GEN, NGSS

Location: Legends A, Omni

Participants will be guided through the use of a formative assessment framework that links assessment, instruction, and learning targets. Throughout the workshop, core disciplinary ideas, crosscutting concepts, and science practices will be used. A copy of the NSTA Press® book *Teaching for Conceptual Understanding in Science* (Konicek-Moran and Keeley 2015), several formative assessment probes, and a collection of instructional and formative assessment classroom techniques (FACTs) for supporting conceptual understanding will be given to each attendee.

Integrating Science and Literacy with Picture Books (PLI-2)

Karen Ansberry and **Emily Morgan**, Picture-Perfect Science, West Chester, Ohio

Level: K–5

Science Focus: GEN

Location: Legends B, Omni

Participants will take part in several model lessons, learn the benefits and cautions of using children's picture books in science, become familiar with the BSCS 5E learning model, and learn how to incorporate the *Common Core State Standards, ELA* into standards-based science lessons. A copy of the NSTA Press® book *Picture Perfect Science* will be provided to each attendee.



Enriching Your Science Instruction with Three-Dimensional Teaching and Learning (PLI-3)

Eric Brunsell, University of Wisconsin Oshkosh

Level: Grades K–12

Science Focus: GEN, NGSS

Location: Legends C, Omni

Participants will explore example activities, model strategies, and use a variety of tools—from questioning techniques to strategies for helping students use evidence. This will deepen understanding of what NGSS can look like in the classroom. A copy of the NSTA Press® book *Introducing Teachers and Administrators to the NGSS: A Professional Development Facilitator's Guide* will be provided to each attendee.

GreenSTEM: Applying the Engineering Design Process to Community-Based Projects (PLI-4)

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

Laura Arndt, McREL International, Denver, Colo.

Level: K–16

Science Focus: ETS1

Location: Legends D, Omni

Participants will use the lens of GreenSTEM to address a major challenge in STEM curricula by creating a “mental model” of a robust, meaningful STEM learning opportunity (Bybee, 2013) and transform superficial activities into more relevant, engaging, effective, and rigorous multidisciplinary learning experiences. A copy of the NSTA Press® book *Designing Effective Instruction* as well as additional digital and paper resources will be given to each attendee.

McREL Pathway Sessions

All sessions are located in Legends A. See Volume 2 for details.

Friday, April 1

9:00–10:30 AM

GreenSTEM: Transforming Your Existing Lessons to Be Community Relevant and Project Based

11:00 AM–12:30 PM

Curriculum Audit: Where Will You STEMify Your Curriculum?

2:00–3:30 PM

STEM Models: Where Do I Start and How Do I Decide?

Argument-Driven Inquiry: Transforming Laboratory Experiences So Students Can Use Core Ideas, Crosscutting Concepts, and Science Practices to Make Sense of Natural Phenomena (PLI-5)

Victor Sampson and **Ashley Hamill Murphy**, The University of Texas at Austin

Patrick Enderle, Georgia State University, Atlanta

Level: Grades 6–12

Science Focus: GEN, NGSS

Location: Legends E, Omni

Participants will have an opportunity to experience an example of an Argument-Driven Inquiry (ADI) lab investigation to learn about the stages of the ADI instructional model, how it was designed to improve current laboratory experiences, and how it meets the NGSS and the CCSS ELA. As part of the session, the NSTA Press® book—which includes information about ADI, instructional materials (including a reproducible lab handout and checkout questions for students), and teacher notes—will be given to each attendee.

ADI Pathway Sessions

All sessions are located in Legends A. See daily program for details.

Thursday, March 31

12:30–1:30 PM

Helping Students Learn to Argue from Evidence with Argument-Driven Inquiry

2:00–3:00 PM

Helping Students Learn to Obtain, Evaluate, and Communicate Information Through Reading and Writing with Argument-Driven Inquiry

3:30–4:30 PM

Making Science Instruction More Equitable with Argument-Driven Inquiry

Developing Science Literacy-Designed Instruction to Support College and Career Readiness (PLI-6)

Donn Kirkwood, Southern Regional Education Board, Atlanta, Ga.

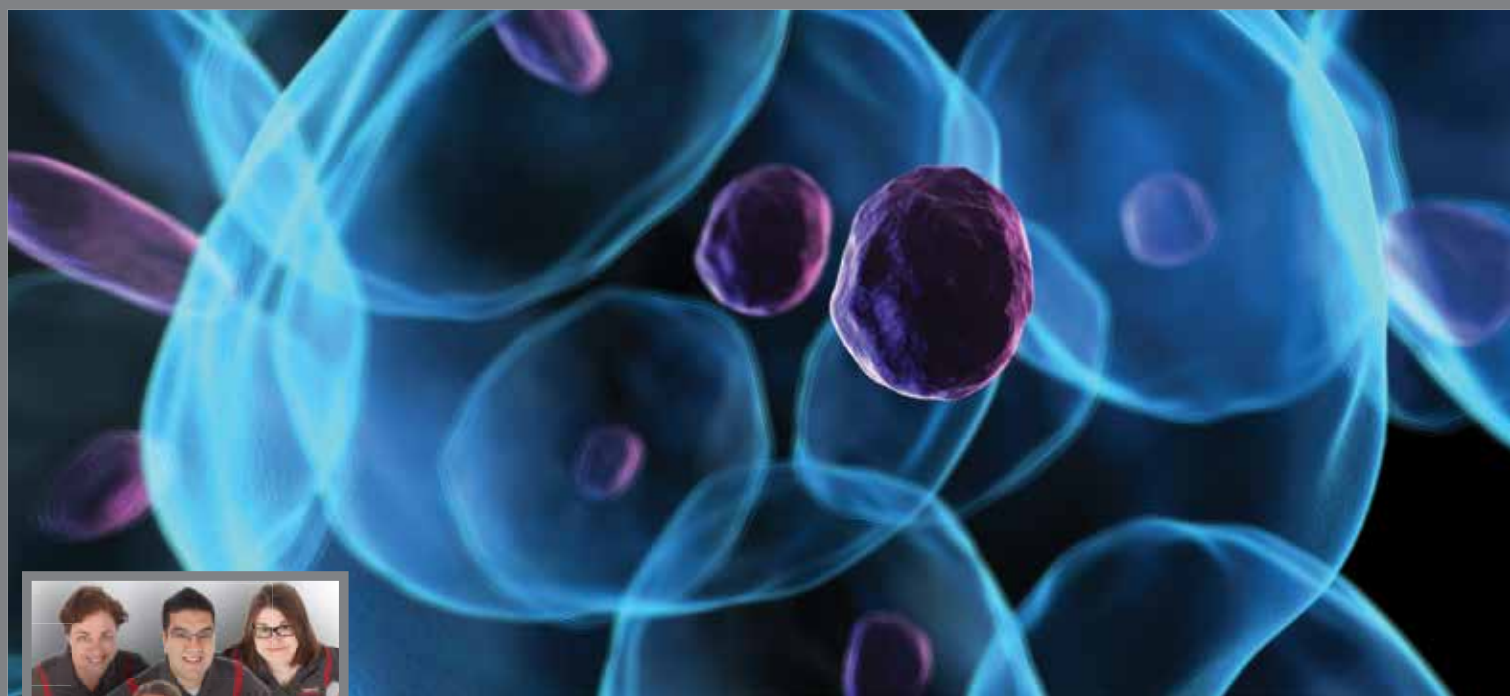
Lindsey Robinson, Mendenhall Junior High School, Mendenhall, Miss.

Level: Grades K–12

Science Focus: GEN

Location: Legends F, Omni

Participants will be given a framework that focuses on alignment to College and Career Readiness Standards, scaffolding of meaningful literacy skills, and student-centered instruction. Participants will learn to use a free resource called CoreTools—which provides teachers with the format to plan instruction that incorporates literacy—to design instruction based on best practices. Participants will also learn how to join a network of teachers creating instruction and how to publish their curriculum to share with others.



Discover the Ward's Science Plus Us in person when you attend our hands-on interactive workshops. You'll learn new teaching techniques, experience innovative new products, talk science with our in-house experts, and much more.

2016 Ward's NSTA Workshop Schedule

Hands-On Training with the Ward's Science Plus Us Team

All Workshops are Located in Ward's Science Workshop Room #207A

Thursday, March 31

- 8:00 – 9:30 a.m. Artificial Selection, it's unnatural!
- 10:00 – 11:30 a.m. Forces, Integrations and Energy, Oh My
- 12:00 – 1:30 p.m. Introduction to BioBuilder
- 2:00 – 3:30 p.m. Lift Weight and Produce Electricity with the Power of Wind
- 4:00 – 5:30 p.m. CTE: Real life Forensics Brought to the Classroom, Solving the Case

Friday, April 1

- 8:00 – 9:30 a.m. Outbreaking Bad!!
- 10:00 – 11:30 a.m. Apply the Science of Energy, Motion, and Friction
- 12:00 – 1:30 p.m. Fracking the CASE
- 2:00 – 3:30 p.m. Grant Writing: Designing for Dollars
- 4:00 – 5:30 p.m. Chemistry of Wine

Saturday, April 2

- 8:00 – 9:30 a.m. Vampire Chronicles: Sink Your Teeth into Genetics and Blood Typing
- 10:00 – 11:30 a.m. Grant Writing: Pipelines, Partnerships, and Finding Funding
- 12:00 – 1:30 p.m. Let physics show how cars may really drive themselves in the future with the ERGOBOT!
- 2:00 – 3:30 p.m. Elementary Science Activity Jamboree
- 4:00 – 5:30 p.m. Physics of Music

Stop by Booth #142 to see our latest products and enter to win science prizes!

**ward's
science+**

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.

3D Juggling It All: Teaching NGSS in Elementary Grades (SC-1)

Carla Zemba-Saul (@czem; czem@psu.edu), Pennsylvania State University, University Park

Kathy Renfrew (kathy.renfrew@vermont.gov), Vermont Agency of Education, Barre

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

Science Focus: GEN, CCC1, CCC6, SEP6

Level: K–5

Date/Time: Thursday, March 31, 1:30–4:30 PM

Location: Capitol 1, Sheraton

Ticket Price: \$28

Through participation in science learning activities, facilitated small and whole group discussion, video observations, and discussions with teacher leaders, participants in this short course will begin to address key shifts fundamental to teaching NGSS in elementary grades. Emphasis will be placed on classroom discourse and talk moves, the Claims-Evidence-Reasoning framework for constructing scientific explanations, KLEWS charts for mapping explanations, visual representations of data, and harmonizing content across the curriculum. Every participant will take home a copy of *What's Your Evidence?* book.

Ocean Plastic Pollution: Issues and Solutions (SC-2)

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

Science Focus: ESS3.C

Level: Grades 6–8

Date/Time: Thursday, March 31, 1:30–4:30 PM

Location: Capitol 2/3, Sheraton

Ticket Price: \$36

Enrich your classroom with NGSS-focused activities surrounding plastic pollution issues and solutions. Activities will highlight plastic's physical and chemical properties, including density and buoyancy. Emphasis will be not just



—SC-2: Ocean Plastic Pollution: Issues and Solutions

—Photo courtesy of Monterey Bay Aquarium

looking at the impacts of prolific plastic use but also exploring solutions to plastic pollution, alternatives to single-use plastics, and empowering students to tackle environmental problems. Door prizes and resources!



Using Found Objects to Teach Important Science Content and Skills (SC-3)

Bob Williams, Consultant, Belmont, Tex.

Mary Hobbs (maryhobbs@utexas.edu), Center for STEM Education, The University of Texas at Austin

Science Focus: LS1.B, PS1.A, PS2.A

Level: PreK–2

Date/Time: Thursday, March 31, 1:30–4:30 PM

Location: Suite 5A, Sheraton

Ticket Price: \$53

This short course is designed for those who work with young learners or those who provide professional development to preK–2 teachers. Activities and assessments were designed during four years of NSF-funded research looking at what young children know and can do in science. Instruction is organized around BIG IDEAS. Three of those—Properties of Matter, Properties of Earth Materials, and Measurement—are the major topics addressed in this course. Everyone attending will take home a collection of natural or found items and ideas for more.

■ ■ ■ **Engineering a Story: Integrating Engineering Practices with Literacy (SC-4)**

Mia Dubosarsky (mdubosarsky@wpi.edu), The STEM Education Center at WPI, Worcester, Mass.

Science Focus: ETS1, SEP1, SEP4, SEP6, SEP7, SEP8

Level: PreK–8

Date/Time: Thursday, March 31, 1:30–5:30 PM

Location: Capitol 4, Sheraton

Ticket Price: \$45

Engineering design practices serve as the heart and the glue of any integrated STEM activity/unit. Receive practical methods for integrating engineering practices with literacy. First, we will unpack the engineering design process (EDP) by exploring a variety of EDP visuals and developing a “problem solving clock” visual that matches students’ level of understanding. Then we will follow the process to solve problems found in a children’s book. Participants should bring a book/text that they teach in their classroom. This does not have to be a science/engineering book—any fiction/nonfiction, chapter, or children’s book will work.



What Lies Beneath Our Feet? Using Remote-Sensing Technologies to Better Understand the World (and the Ice Sheets) Beneath Us! (SC-5)

Susan Bromley Kelly (sbkelly2@illinois.edu), University of Illinois at Urbana–Champaign

Sridhar Anandakrishnan (sak@essc.psu.edu), Pennsylvania State University, University Park

Susan Schwartz (syschwar@ucsc.edu), University of California, Santa Cruz

Science Focus: ESS3.C, SEP1, SEP2, SEP3, SEP4, SEP7, SEP8

Level: Grades 6–12

Date/Time: Friday, April 1, 8:00 AM–12 Noon

Location: Capitol 1, Sheraton

Ticket Price: \$45

See NGSS practices in action as we explore how scientists and engineers know what they know about the world beneath our feet and how that has changed over time. Experience hands-on classroom activities that model the science and engineering practices used to remotely sense and seismically profile Antarctic ice sheets. Inquiry investigations target disciplinary core content in Earth science for middle school and high school learners. While not required, a tablet/laptop would be helpful.

Project-Based Learning Using Case Studies to Teach AP or IB Biology (SC-6)

Kristen Daniels Dotti (kdotti@vvsaz.org), Verde Valley School, Sedona, Ariz.

Science Focus: LS, SEP2, SEP7

Level: High School

Date/Time: Friday, April 1, 8:00 AM–12 Noon

Location: Capitol 2/3, Sheraton

Ticket Price: \$75

We will engage in a game that simulates how a pathogen can evade a drug by directional selection, model the invasion of a cell by HIV, solve a puzzle on the cell signals that regulate the uptake of glucose by insulin, and design a skit to demonstrate how a genetic mutation can lead to cancerous tumors. Leave with lesson plans for each of the activities covered and hundreds of ideas on how to incorporate case studies into your AP or IB biology curriculum.

Garrett A. Morgan Technology and Transportation Education Program (GAMTEP): STEM in Motion (SC-7)

Meiko Thompson (@journee97, meiko.thompson@knoxschools.org), Knox County Schools, Knoxville, Tenn.

Sondra LoRe (sondra@utk.edu), **Karena Ruggiero**, **Jerry Everett** (jeverett@utk.edu), and **Jennifer Richards** (jennifer.richards@utk.edu), The University of Tennessee, Knoxville

Rebecca Sneed (rebecca.sneed@blountk12.org), Blount County Schools, Maryville, Tenn.

Becky Ashe (becky.ashe@knoxschools.org), Chairperson, NSTA Nashville National Conference, and L&N STEM Academy, Knoxville, Tenn.

Science Focus: ESS3.C, ETS, CCC, SEP

Level: K–8

Date/Time: Friday, April 1, 8:00 AM–12 Noon

Location: Capitol 4, Sheraton

Ticket Price: \$35

Have your students ever struggled to make real-world connections with the concepts that you are teaching? Have you found yourself wishing you had the answer for “Why do I need to know this?” Then this STEM in Motion short course is for you. If you join us, you will never view transportation or STEM the same! This course will equip you to help your students make associations in meaningful ways as you enhance skills and bolster your educational tool kit. Please bring recyclable materials, i.e. cereal boxes, shoe boxes, toilet paper rolls, and paper towel rolls, as well as yarn, glue, and scissors. For more information, visit www.gamttep.com.

Retaining Excellent Science Teachers: Finding and Sustaining Teachers' Voices in Science Education (SC-8)

Vicki H. Metzgar (@midtnstem; vicki.metzgar@gmail.com), Middle Tennessee STEM Innovation Hub, Belmont University, Nashville

Sandra Merriam (smerriam@sc.rr.com), Center for Courage & Renewal, North Myrtle Beach, S.C.

Science Focus: GEN

Level: General

Date/Time: Friday, April 1, 8:40 AM–3:30 PM

Location: Off-site: Shelby Bottoms Nature Center

Ticket Price: \$70

States lose up to \$2.2 billion each year on teacher attrition. Science teachers have more options than most to change careers. This interactive short course will focus on building communities of trust within schools to stem the loss of teaching professionals. International facilitators will establish trusting spaces within which participants explore elements of relational trust and learn how implementing these proven practices in schools enables a more holistic approach to education. Participants will learn practices that support shared leadership and promote excellence, while retaining high-performing teachers. This short course will be held at Shelby Bottoms Nature Center. Please dress for

the weather as some of the short course will be outdoors. Boxed lunch included.

Note: Please meet your short course leader at the 5th Avenue entrance of Music City Center 15 minutes prior to departure time.

Geospatial Technology in the STEM Classroom: Integrating Place and Projects for Meaningful Learning Across Content Areas (SC-9)

Patty Stinger-Barnes (@stingerbarnes; pstinger@utk.edu), The University of Tennessee, Knoxville

Brian Smith (bsmith@ortn.edu), Jefferson Middle School, Oak Ridge, Tenn.

Science Focus: GEN, CCC1, SEP4, SEP8

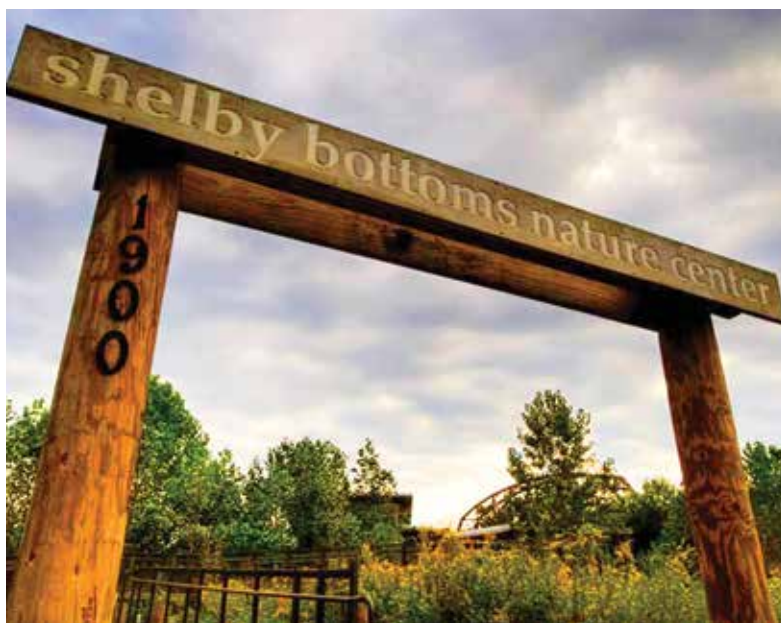
Level: Grades 6–12

Date/Time: Friday, April 1, 1:30–4:30 PM

Location: Suite 5A, Sheraton

Ticket Price: \$33

Participants will learn what GT, GIS, and GPS are and then be immersed in a place-based project using all three. We will collect, organize, input, and analyze data to discover relationships that become apparent when mapping the data is completed using a free online GIS platform. Bring a laptop with an internet connection for accessing the free online GIS mapping platform.



—Photos courtesy of Shelby Bottoms Nature Center

SC-8: *Retaining Excellent Science Teachers: Finding and Sustaining Teachers' Voices in Science Education* and SC-14: *Is It Spring Yet? Field Studies with Middle School Citizen Scientists.*

Using Games and Modeling to Teach Environmental Science (SC-10)

Kristen Daniels Dotti (kdotti@vvsaz.org), Verde Valley School, Sedona, Ariz.

Science Focus: ESS, SEP2

Level: Grades 9–12

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

Location: Capitol 2/3, Sheraton

Ticket Price: \$65

Engage in a game that simulates the dynamics of populations under selection pressure, model the apparent motion of the Sun for use in passive and active solar energy applications, solve a puzzle that applies environmental laws and treaties, and design your own experiment on the cycling of energy within an ecosystem. Leave with lesson plans for each of the activities covered and hundreds of ideas on how to incorporate active learning into your environmental science curriculum.

3D Building Better Lessons: NGSS Classroom Redesign (SC-11)

Zoe Evans (@zoe_evans; zoe.evans@carrollcountyschools.com), Villa Rica High School, Villa Rica, Ga.

Chris Embry Mohr (chrisebry.mohr@olympia.org), Olympia High School, Stanford, Ill.

Jeremy Peacock (jeremy.peacock@negaresa.org), Northeast Georgia RESA, Winterville, Ga.

Julie Olson (julie.olson@k12.sd.us), Mitchell School District, Mitchell, S.Dak.

Science Focus: GEN

Level: K–12

Date/Time: Saturday, April 2, 8:00–11:00 AM

Location: Davidson, Sheraton

Ticket Price: \$28

Major renovations are messy, exhausting, and ultimately extremely satisfying. As teachers, schools, districts, and states renovate their science programs to align to the vision set forth in the *Framework for K–12 Science Education* and the *Next Generation Science Standards*, they will be faced with decisions about what to keep, what to remodel, and what will need to be built from scratch. In this course, members of the NGSS writing team and NGSS educators will guide participants through this process as they “redesign” lessons or units in order to “translate” the NGSS into classroom practice. We will engage in three-dimensional learning through model lessons, hands-on activities, and interactive presentations in order to experience the importance of this type of learning and the role it plays in transformational classroom practice. Participants will bring copies of units or lessons they currently use in their classrooms that they wish to renovate to ensure alignment with the NGSS. Working collaboratively with

their peers and presenters, participants will modify and re-write these lessons or units using a series of support documents such as lesson planning templates, NGSS evidence statements, and the EQulP rubric for assistance.

Models: Key to Making Thinking Visible (SC-12)

Diana Velez (@dbvelez; dvelez@berkeley.edu), The Lawrence Hall of Science, Berkeley, Calif.

Claudio Vargas (claudio.vargas@ousd.org), Oakland Unified School District, Oakland, Calif.

Science Focus: ETS1, PS1.A, PS3.B, PS3.C, CCC1, CCC2, CCC4, CCC5, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Level: Grades 3–8

Date/Time: Saturday, April 2, 8:00–11:00 AM

Location: Suite 5A, Sheraton

Ticket Price: \$31

We will explore how developing and using models is central to making sense of science phenomena by beginning with an engaging discrepant event. After discussing the goals of models for student learning as envisioned by the *Framework*, participants will develop a model to explain their own understanding of the observed phenomenon. Through hands-on explorations—together with rich scientific discourse—participants will gather more evidence to revise/change their initial models as they arrive at a normative understanding of the physics that explains the phenomenon. Discussion includes the critical relationship between modeling and the other practices, how the use of models supports equity in the classroom, and how students’ models serve as artifacts for formative assessment.



Tennessee Wildfire Prevention for K–8 Teachers Presented by the Tennessee Division of Forestry (SC-13)

Martha M. Day (martha.day@wku.edu), Western Kentucky University, Scottsville

Science Focus: GEN

Level: K–8

Date/Time: Saturday, April 2, 8:00 AM–12 Noon

Location: Capitol 1, Sheraton

Ticket Price: \$28

Join the Tennessee Division of Forestry for a fun-filled short course on the topic of wildfire prevention. Learn about forest ecology and forestry careers and experience inquiry-based forestry lessons suitable for classroom use. Smokey Bear will also be on hand to demonstrate responsible forestry practices. All participants will receive a \$50 cash stipend for classroom supplies and a resource notebook and CD. Enjoy refreshments, courtesy of Interactive Training Media. *Open to Tennessee teachers only.*

Is It Spring Yet? Field Studies with Middle School Citizen Scientists (SC-14)

Candyce Johnson (cjohnson@bbg.org), Brooklyn Botanic Garden, Brooklyn, N.Y.

Judith Hutton (jhutton@nybg.org), The New York Botanical Garden, Bronx

Deborah Sarria (dsarria@schools.nyc.gov), Andries Hudde School, Brooklyn, N.Y.

Science Focus: INF, LS1, LS2, CCC1, CCC6, CCC7, SEP1, SEP3

Level: K–12

Date/Time: Saturday, April 2, 8:40 AM–3:30 PM

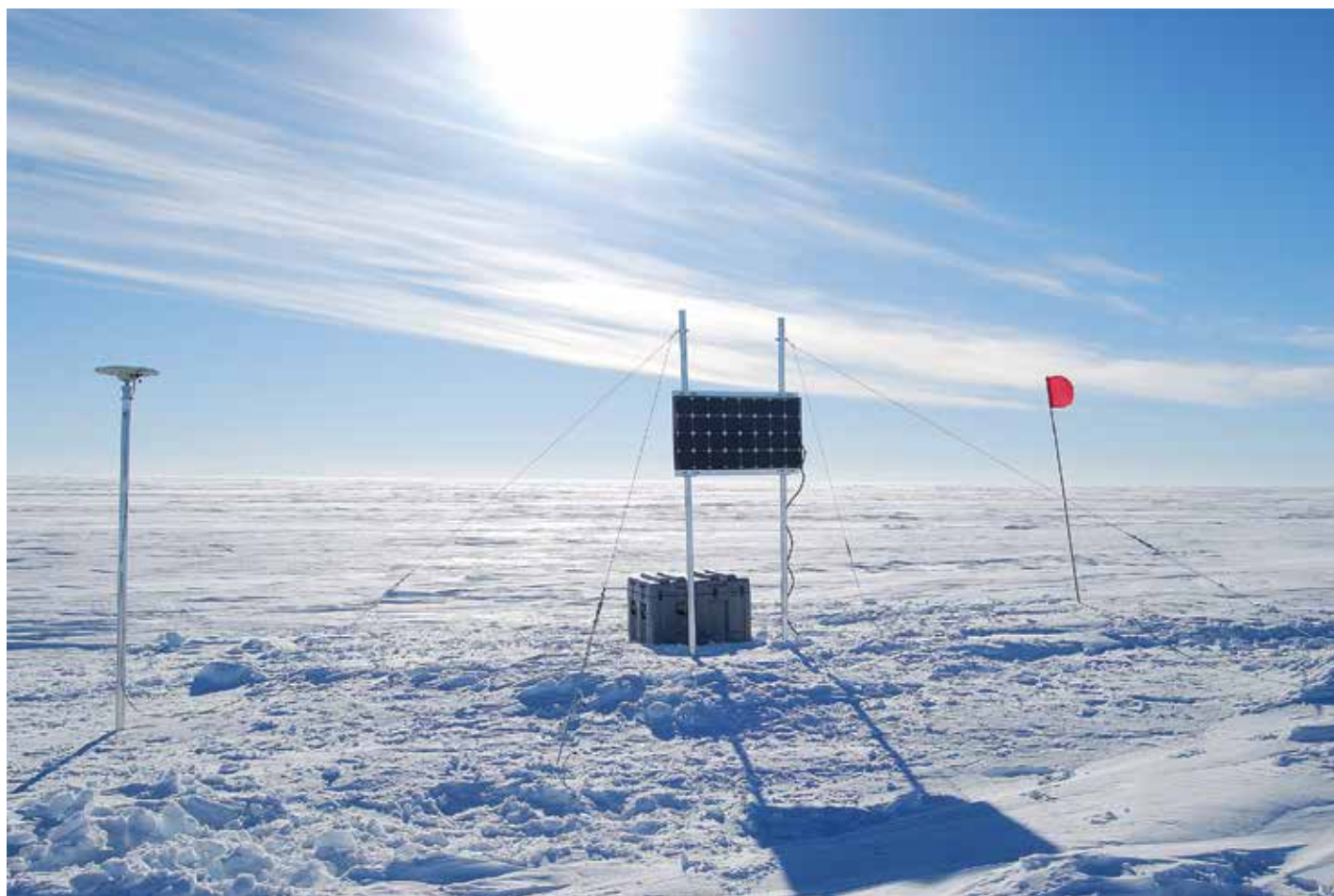
Location: Off-site, Shelby Bottoms Nature Center

Ticket Price: \$55

This off-site short course introduces a model for using native plant collections at botanical gardens to learn about the impact of climate change on native plant communities

and ecosystems. Participants will work indoors and outdoors to explore some of the strategies used by the Urban Advantage program, a collaboration among eight science-rich cultural institutions and the New York City Department of Education. Introduce your students to phenology and field work while enlisting them as allies in the fight for maintaining biodiversity in native plant communities and ecosystems. Boxed lunch included. Cameras/camera phones are optional. Be sure to wear comfortable shoes and dress for the weather as part of this short course takes place outside.

Note: Please meet your short course leader at the 5th Avenue entrance of Music City Center 15 minutes prior to departure time.

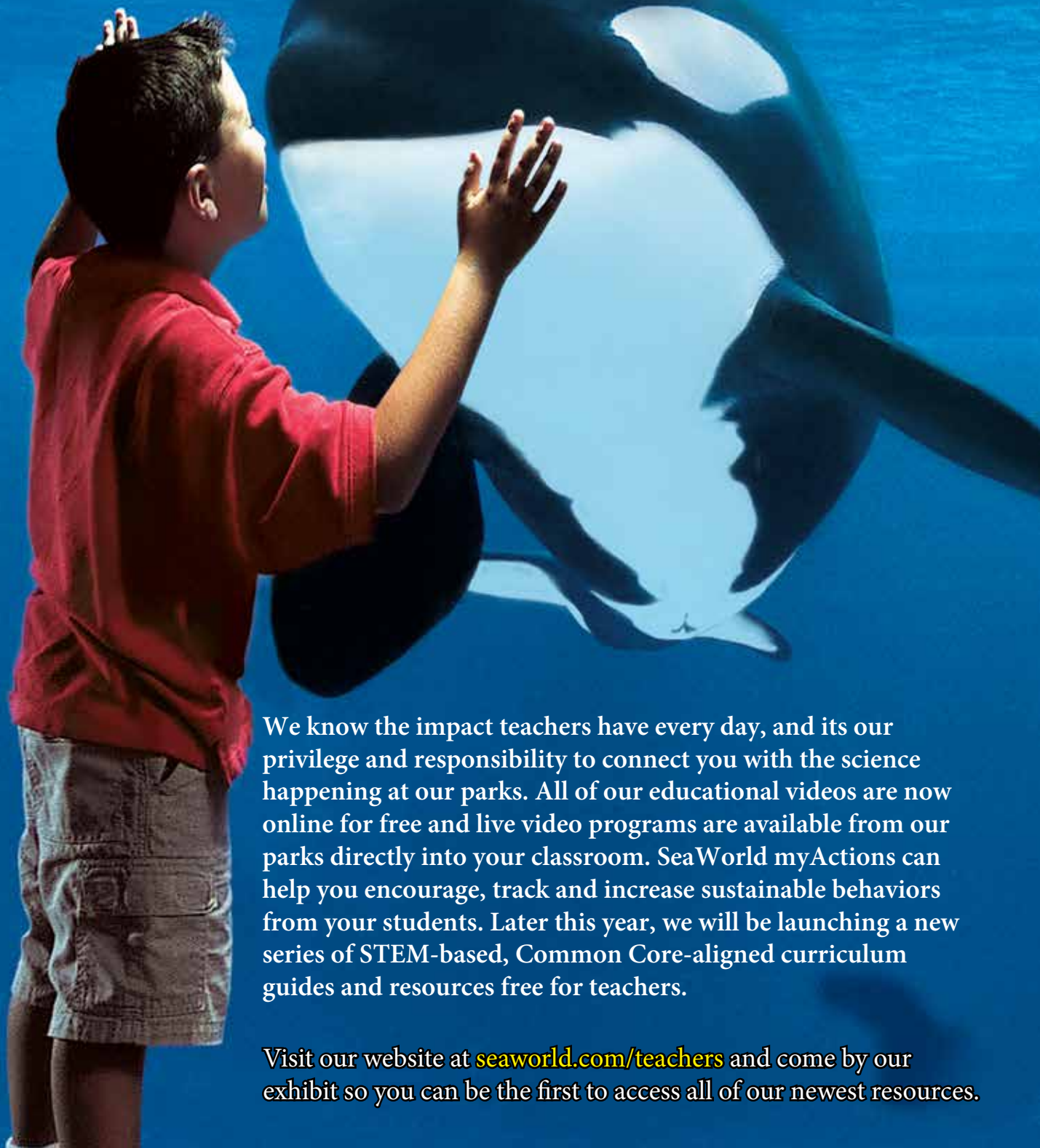


—Photo courtesy of WISSARD Project

SC-5: What Lies Beneath Our Feet? Using Remote-Sensing Technologies to Better Understand the World (and the Ice Sheets) Beneath Us!

Science teachers are our heroes.

Every animal we rescue, every person we educate, and every species we help to protect were the result of teachers inspiring us to celebrate wildlife and wild places. Thank you.



We know the impact teachers have every day, and it's our privilege and responsibility to connect you with the science happening at our parks. All of our educational videos are now online for free and live video programs are available from our parks directly into your classroom. SeaWorld myActions can help you encourage, track and increase sustainable behaviors from your students. Later this year, we will be launching a new series of STEM-based, Common Core-aligned curriculum guides and resources free for teachers.

Visit our website at seaworld.com/teachers and come by our exhibit so you can be the first to access all of our newest resources.

Tickets for educational trips can be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your trip leader at the 5th Avenue entrance of Music City Center at least 15 minutes prior to departure time (except for W-1 and W-2).



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Global Conversations, Welcome to My Classroom: Elementary **\$30; by preregistration only**

W-1 Wednesday, March 30 8:00–10:45 AM

Welcome to My Classroom is a program sponsored by the International Advisory Board intended primarily for our international participants to view a science or STEM classroom. This year's program is cosponsored by Hattie Cotton STEM Magnet Elementary School and Stratford STEM Magnet High School, both located in Nashville. W-1 participants will tour Hattie Cotton STEM Magnet Elementary School, which promotes high academic achievement and a positive school culture and climate. Time includes a visit to a classroom to see how students learn through exciting hands-on lessons and real work experience.

Note: This trip will board the bus at the Omni Nashville Hotel. Please meet in the lobby 15 minutes prior to educational trip.

Global Conversations, Welcome to My Classroom: High School **\$30; by preregistration only**

W-2 Wednesday, March 30 8:00–10:45 AM

Welcome to My Classroom is a program sponsored by the International Advisory Board intended primarily for our international participants to view a science or STEM classroom. This year's program is cosponsored by Hattie Cotton STEM Magnet Elementary School and Stratford STEM Magnet High School, both located in Nashville. W-2 participants will tour Stratford STEM Magnet High School, whose mission is to create postsecondary opportunities for all students to better prepare them to actively engage in STEM-related careers.

Time includes a visit to a classroom to see how students learn through an inquiry- and project-based STEM curriculum.

Note: This trip will board the bus at the Omni Nashville Hotel. Please meet in the lobby 15 minutes prior to educational trip.

Nissan North America Tour, Maker of All-Electric Leaf **\$25**

T-1 Thursday, March 31 12 Noon–3:30 PM

Located in Smyrna, Tennessee, Nissan's first U.S. manufacturing operation is widely recognized as one of the most productive vehicle assembly plants in the world. The Smyrna plant, which covers more than 6 million square feet, has the capacity to produce over half a million vehicles annually. The plant produces the Nissan Altima, Maxima, Rogue, Pathfinder, Infiniti QX60, and the 100% electric Nissan Leaf, "the first in a range of forthcoming Nissan electric vehicles being heralded as the world's first affordable, mass-produced, zero emission car." On our visit to the plant, we'll see a short video and then load onto trams. We'll tour the stamping and body assembly plants, learn about the paint plants, tour the trim and chassis plant, and finish in the company store. Lunch will not be provided—so be sure to eat before the trip (*bag lunch allowed on bus*).

Note: For safety reasons, children under 10 are not permitted on the tour. No cell phones, cameras, or recording devices are allowed. You must wear long pants, shirts with at least a four-inch sleeve, and shoes with closed toes. Participants must be able to walk moderate distances.

Exploration of Limestone Cedar Glades/Cedars of Lebanon State Park \$35

T-2	Thursday, March 31	12 Noon–5:00 PM
F-3	Friday, April 1	12 Noon–5:00 PM

SOLD OUT

The Central Basin of Tennessee is home to the limestone cedar glades. Join us for a visit to Cedars of Lebanon State Park and Couchville Cedar Glade State Natural Area to explore this unique environment, hosted by the Center for Cedar Glades Studies at Middle Tennessee State University (www.mtsu.edu/glade-center). Glades form where the surface rock is pure limestone, which is rich in marine fossils. Little soil in open glades and poor water drainage create a harsh environment that is wet and cold in winter with hot desert-like conditions in summer. The glades are home to beautiful plant species adapted to survive in these conditions, several of which are rare and exist nowhere else in the world. Our trip will begin with a look at exhibits in the Visitor's Nature Center that show images of the rare plants of the glades. We'll then take an easy hike at each location to explore the geology, the spring plants, and ecology of the area. Lunch will not be provided so be sure to eat before the trip (*bag lunch allowed on*

bus). For more information, visit bit.ly/1pdwjdd. Travel time is approximately one hour each way.

Note: Wear shoes appropriate for hiking and dress for the weather.

Trip to the Stars: A Visit to Adventure Science Center \$35; by preregistration only

T-3	Thursday, March 31	2:00–5:20 PM
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Join Adventure Science Center (www.adventuresci.com) staff for an afternoon of interactive (and educational) exploration. The adventure begins with a meet and greet, followed by free exploration of 45,000 square feet of exhibits. Experience a moonwalk or find out what you weigh on Jupiter at the Space Chase exhibit. Spend a day in the life of your body at Body-Quest. Get ready to climb, slide, explore, and discover at Adventure Tower, seven levels of amazing interactive exhibits. Enjoy a special showing of *STARS*, an IMAX film focusing on the lives of the stars, including how they are born, how they die, and how human understanding of the stars has changed over time.

F-2: Discovering the Science Behind Scrap Recycling



—Courtesy of the Institute of Scrap Recycling Industries, Inc.

Discovering the Science Behind Scrap Recycling \$15

F-2 Friday, April 1 9:00 AM–12 Noon

Each year more than 165 billion metric tons of scrap metal, paper, plastics, and electronics, and other scrap commodities are processed by the U.S. scrap recycling industry, providing raw materials to manufacturers and making a significant contribution to the environment and economy. Get a behind-the-scenes look at the operations of PSC Metals, a scrap metal recycling company located in Nashville, and bring back what you learn to your classes.

Scrap recycling companies manufacture scrap materials into valuable specification-grade commodities that are used to make new products. This manufacturing process has a wealth of science behind it, providing teachers with a number of very relatable lesson plan ideas in science and technology, physical science, and Earth science. Tour participants will also receive a complimentary K–12 recycling curriculum binder, developed by JASON Learning and the Institute of Scrap Recycling Industries.

Note: Safety equipment such as hard hats, provided at the site to all participants, will need to be worn during the tour. Participants are also required to wear closed-toe shoes.

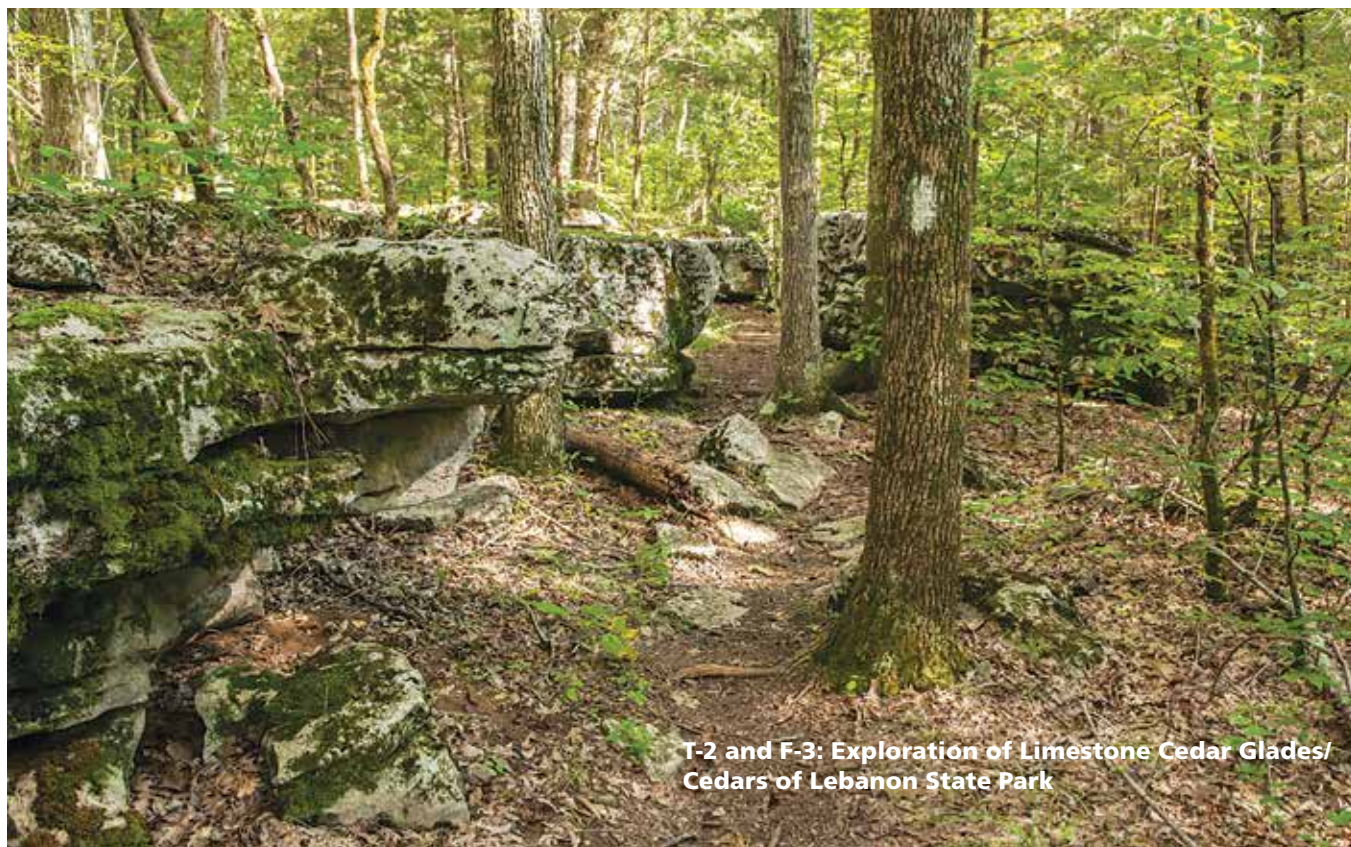
Tomorrow's Science, Today's Classroom: Oak Ridge National Laboratory \$45; by preregistration only

F-4 Friday, April 1 7:00 AM–5:30 PM

Famously born as part of the Manhattan Project in 1943, Oak Ridge National Laboratory (ORNL) (www.ornl.gov) turned from producing Pu-239 to peacetime research after the war, shifting its scientific expertise to nuclear medicine, biological systems, materials sciences, computing, and physics. The Graphite Reactor evolved from its wartime role to produce the world's first medical radioisotopes. Following the creation of the Department of Energy in 1977, ORNL's research expanded to include energy, national security, and the environment. As the world seeks new ways of providing sustainable energy, ORNL's role as America's largest facility for science and energy takes on new significance.

On this educational trip to the laboratory, we'll tour the historic Graphite Reactor, the supercomputing center, the Spallation Neutron Source, and the High Flux Isotope Reactor. Lunch is on your own at the facility's cafeteria. Dress for the weather and wear comfortable shoes. Photos are permitted except outside the Graphite Reactor. Travel time is 2.5 hours each way.

Note: All participants are required to have a photo ID. Foreign nationals must have a passport and visa.



T-2 and F-3: Exploration of Limestone Cedar Glades/
Cedars of Lebanon State Park

Courtesy of Margie Hunter, Tennessee Naturalist Program

Tuesday, March 29

NSELA Board of Directors Meeting

By Invitation Only

Cumberland 1, Omni.....8:00 AM–6:00 PM

Wednesday, March 30

NSELA Leadership Summit Breakfast

By Invitation Only

Broadway A/B, Omni.....7:30–8:30 AM

NSELA Leadership Summit

By Registration Through NSELA

Broadway C/D, Omni.....8:30 AM–6:00 PM

SESD Preconference Meeting

Old Hickory, Omni.....9:00 AM–4:00 PM

NSELA Leadership Summit Luncheon

By Invitation Only

Broadway A/B, Omni.....11:30 AM–1:00 PM

NSTA Global Conversations in Science Education Conference

By Preregistration Only (M-1 ticket required)

Broadway E, Omni.....12 Noon–5:30 PM

SESD Board Meeting

Old Hickory, Omni.....4:00–6:00 PM

Teaming Up for STEM: Welcome Reception

By Invitation Only, *sponsored by Vulcan Inc.*

Broadway F, Omni.....5:00–7:00 PM

NSELA/CSSS Reception

By Invitation Only

Legends D, Omni.....6:00–8:00 PM

NSTA New Science Teacher Academy Reception

By Invitation Only

Broadway G/H, Omni.....6:30–8:00 PM

International Advisory Board Meeting

Gibson Boardroom, Omni.....7:30–8:30 PM

Thursday, March 31

NSELA Membership Breakfast

By Invitation Only

Broadway A/B, Omni.....7:30–8:30 AM

DuPont Breakfast

By Invitation Only

Cumberland, Omni.....7:30–9:00 AM

Welcome to Your First NSTA Conference

Davidson C, Music City Center.....8:00–9:00 AM

NSELA Annual Membership Meeting

By Invitation Only

Broadway A/B, Omni.....8:30–10:00 AM

Science Safety Advisory Board Meeting

Old Hickory, Omni.....8:30–11:00 AM

NSTA International Lounge

Mockingbird 1, Omni.....9:00 AM–5:00 PM

GLBT Science Teachers Association Annual Meeting

Electric, Omni.....11:00 AM–12 Noon

Science & Children Advisory Board Meeting

Broadway E/F, Group 1, Omni.....12:30–2:30 PM

Science Scope Advisory Board Meeting

Broadway E/F, Group 2, Omni.....12:30–2:30 PM

The Science Teacher Advisory Board Meeting

Broadway E/F, Group 3, Omni.....12:30–2:30 PM

Journal of College Science Teaching Advisory Board Meeting

Broadway E/F, Group 4, Omni.....12:30–2:30 PM

NSTA *Reports* Advisory Board Meeting

Broadway E/F, Group 5, Omni.....12:30–2:30 PM

Professional Development in Science Education Committee Meeting

Broadway E/F, Group 6, Omni.....12:30–2:30 PM

Preservice Teacher Preparation Committee Meeting

Broadway E/F, Group 7, Omni.....12:30–2:30 PM

Multicultural/Equity in Science Education Committee Meeting

Broadway E/F, Group 8, Omni.....12:30–2:30 PM

Coordination and Supervision of Science Teaching Committee Meeting

Broadway E/F, Group 9, Omni.....12:30–2:30 PM

Awards and Recognitions Committee Meeting

Electric, Omni.....12:30–2:30 PM

Informal Science Committee Meeting

Mockingbird 4, Omni.....12:30–2:30 PM

Teaming Up for STEM: District Leaders Session

By Invitation Only, *sponsored by Chevron*

101 A/B, Music City Center.....1:00–4:30 PM

Conference Program • Meetings and Social Functions

Thursday, March 31, cont.

- Chapter and Associated Group Leader Roundtable
By Invitation Only
Mockingbird 2, Omni 2:30–3:30 PM
- Preschool–Elementary Science Teaching Committee Meeting
Broadway E/F, Group 1, Omni 3:00–4:30 PM
- Middle Level Science Teaching Committee Meeting
Broadway E/F, Group 2, Omni 3:00–4:30 PM
- High School Science Teaching Committee Meeting
Broadway E/F, Group 3, Omni 3:00–4:30 PM
- College Science Teaching Committee
Broadway E/F, Group 4, Omni 3:00–4:30 PM
- Research in Science Teaching Committee Meeting
Broadway E/F, Group 5, Omni 3:00–4:30 PM
- Nominations Committee Meeting
Electric, Omni 3:00–4:30 PM
- Retired Members Advisory Board Meeting
Broadway E/F, Group 7, Omni 3:00–4:30 PM
- Special Needs Advisory Board Meeting
Broadway E/F, Group 8, Omni 3:00–4:30 PM
- Technology Advisory Board Meeting
Broadway E/F, Group 9 3:00–4:30 PM
- NGSS Advisory Board Meeting
Broadway E/F, Group 10, Omni 3:00–4:30 PM
- Association of Multicultural Science Education Board of Directors Meeting
By Invitation Only
Mockingbird 4, Omni 3:00–6:00 PM
- Science Matters Advisory Board Meeting
Old Hickory, Omni 3:30–5:00 PM
- NSTA Young Professional and New Teacher Reception
Broadway B, Omni 4:00–5:30 PM
- Outstanding Science Trade Books Committee Meeting
By Invitation Only
Mockingbird 3, Omni 4:15–5:15 PM
- NSTA Board/Council Meet & Greet
By Invitation Only
Broadway A, Omni 4:30–6:00 PM

- APAST Board of Directors Meeting
By Invitation Only
Gibson Boardroom, Omni 4:30–6:30 PM
- Northrop Grumman Foundation Presents: *Into the Unknown*
By Reservations Only
Off-site, Adventure Science Center 5:30–9:00 PM
- HHMI BioInteractive Night at the Movies
Grand Blrm. C1, Music City Center 6:00–8:00 PM
- TSTA 40th Anniversary Gala
By Invitation Only
Broadway J/K, Omni 6:30–9:00 PM
- DuPont Welcome to Nashville and NSTA Dinner
By Invitation Only
Broadway E, Omni 6:30–10:30 PM
- NGSS Live Chat
Legends C, Omni 7:30–9:30 PM

Friday, April 1

- Science in the Community Breakfast
(M-2 Ticket Required: \$18)
Broadway E, Omni 7:30–8:00 AM
- AMSE Alice J. Moses Breakfast
By Invitation Only, *sponsored by Pearson*
Legends F, Omni 7:30–9:30 AM
- Aerospace Programs Advisory Board Meeting
Gibson Boardroom, Omni 8:30–10:30 AM
- NSTA International Lounge
Mockingbird 1, Omni 9:00 AM–5:00 PM
- Development Advisory Board Meeting
Executive Brdrm., Music City Center 9:30–10:30 AM
- Polar Educators International Open Meeting
Mockingbird 3, Omni 10:00 AM–12 Noon
- Urban Science Education Advisory Board Meeting
Gibson Boardroom, Omni 10:30 AM–12 Noon
- Association of Science Materials Centers (ASMC) Advisors Meeting
Mockingbird 2, Omni 10:30 AM–1:00 PM
- NSELA/ASTE Celebration Luncheon
(Tickets Required Through NSELA)
Broadway A/B, Omni 12 Noon–2:00 PM

Friday, April 1, cont.

SEPA Luncheon

By Invitation Only

Legends E, Omni 12 Noon–2:00 PM

“Meet and Greet” the Presidents and Board/Council

Exhibits (Hall B) Entrance, Music City Center ... 12:45–1:30 PM

NSTA District Director and Chapter/Associated Group Social in Honor of Wendell Mohling

Hall B, Music City Center 1:30–2:30 PM

SEPA Board Meeting

By Invitation Only

Mockingbird 3, Omni 2:00–3:30 PM

SCST Business Meeting

Ryman One, Renaissance 3:30–5:00 PM

NSTA Recommends Meeting

Mockingbird 3, Omni 4:00–5:00 PM

Tennessee Science Education Leadership Association (TSELA) Meeting

Mockingbird 2, Omni 4:00–5:30 PM

National Geographic Channel Film Screening: *Breakthrough: More Than Human*, directed by Paul Giamatti

Grand Blrm. C2, Music City Center 4:30–6:30 PM

CESI Membership Meeting

105A, Music City Center 4:45–5:45 PM

Shell Reception

By Invitation Only

Music City Ballroom, Renaissance 5:00–5:45 PM

APAST Business Meeting and Social

By Invitation Only

Broadway B, Omni 5:00–7:00 PM

Learning Center Reception

By Invitation Only

Broadway E, Omni 5:30–7:00 PM

National Middle Level Science Teachers Association Members' 25th Anniversary Celebration

By Invitation Only

Legends D, Omni 6:00–8:00 PM

NSTA Teacher Awards Gala

(M-3 Ticket Required: \$80)

East/Center Blrm., Renaissance 6:00–8:45 PM

NESTA Friends of Earth Science Reception

Skyline Jr. Ballroom, Hilton Garden Inn 6:30–8:00 PM

SCST Poster Session and Dessert Social

Fisk, Renaissance 7:00–9:00 PM

President's Mixer

West Ballroom, Renaissance 9:00 PM–12 Mid.

Saturday, April 2

APAST Breakfast Meeting

By Invitation Only

Broadway K, Omni 7:00–9:00 AM

NSTA Past Presidents' Breakfast

By Invitation Only

Legends A, Omni 7:30–8:15 AM

Science Matters State Coordinators Meeting

By Invitation Only

Music Row 4, Omni 8:00–9:30 AM

Past Presidents Advisory Board Meeting

Legends A, Omni 8:15–9:15 AM

Shell Breakfast Meeting

By Invitation Only

Ryman One, Renaissance 8:30–10:00 AM

Teaming Up for STEM: Team Discussion and Planning Meeting

By Invitation Only

Grand Blrm. A1, Music City Center 9:00–11:00 AM

AMSE Board Meeting

By Invitation Only

Boardroom 5, Hyatt 9:00 AM–12 Noon

NSTA International Lounge

Mockingbird 1, Omni 9:00 AM–5:00 PM

NSTA Committee, Advisory Board, and Panel Chairs Meeting

By Invitation Only

Mockingbird 2, Omni 9:30–10:30 AM

AMSE General Membership Meeting

Broadway K, Omni 10:30 AM–12:30 PM

NSTA Council Roundtable

By Invitation Only

Legends A, Omni 2:00–4:00 PM

CESI Board Meeting

By Invitation Only

Gibson Boardroom, Omni 3:00–6:00 PM

Conference Program • Meetings and Social Functions

Saturday, April 2, cont.

Teacher Scientist Partnerships Reception

Broadway A, Omni 4:30–6:00 PM

NESTA Annual Membership Meeting

Davidson B, Music City Center 5:00–6:00 PM

LinkEngineering Reception

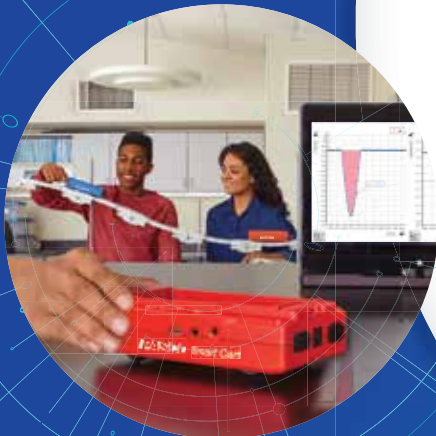
Legends F, Omni 6:30–7:30 PM

Boot Scootin' Boogie!

Off-site, Frontier Room 8:00–10:00 PM

Reimagine the classroom

FREE PASCO WORKSHOPS



8:00–10:00 Engineering Bumpers and NGSS: Hands-on Physics with PASCO's new Wireless Smart Cart. **6 attendees will win a Smart Cart!**

9:30–10:30 Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration and Reaction Kinetics. **3 attendees will win a Wireless Spectrometer!**

11–Noon Project-based Activities with Wireless Sensors to Meet Gas Laws and Stoichiometry Chemistry Standards. **25 attendees will win a wireless sensor!**

12:30–1:30 Environmental Science using PASCO's Wireless Sensors. **25 attendees will win a wireless sensor!**

2:00–3:00 Using Wireless Sensors in Enzyme Activity and Cellular Respiration Labs. **25 attendees will win a wireless sensor!**

3:30–4:30 Sensor-based Labs to Address NGSS for Middle School Life, Earth and Physical Sciences. **25 attendees will win a wireless sensor!**

**Are you ready to
unleash imagination?
Room #206 A/B**



The NSTA Alliance of Affiliates (AoA) includes nine science education organizations working together with NSTA to advance their mutual missions by providing advice and recommendations on science education policy, creating public position statements on key legislative issues, and designing programs and professional development for members (both affiliate and NSTA). The AoA facilitates communication and collaboration among affiliates by working with the NSTA Board and Council and other NSTA-related units, including Division Committees and Chapters and Associated Groups.

Alliance of Affiliates

Saturday, April 2

2:00–4:00 PM	The 3Rs: Research, Resources, and Relationships	Broadway K, Omni
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Association for Multicultural Science Education (AMSE)

President: Robert Ferguson

Thursday, March 31

8:00–9:00 AM	English Language Development Opportunities for ELLs Through Meaningful Integration of the NGSS and CCSS	Legends E, Omni
11:00 AM–12 Noon	Opening the Gateway to Success Using Case Studies to Help Implement Scientific Concepts	Music Row 3, Omni
12:30–1:30 PM	How the Science of Polymers and the Making of Tires Roll into the <i>Next Generation Science Standards</i>	Music Row 3, Omni
2:00–3:00 PM	Implementing Pathways for Student Success in Science Education	Music Row 3, Omni
3:00–6:00 PM	Association for Multicultural Science Education Board of Directors Meeting By Invitation Only	Mockingbird 4, Omni

Friday, April 1

7:30–9:30 AM	AMSE Alice J. Moses Breakfast By Invitation Only; <i>sponsored by Pearson</i>	Legends F, Omni
12:30–1:30 PM	Rediscovering High-Yield, Underutilized Tools for Culturally Diverse Student Learning	Music Row 3, Omni
2:00–3:00 PM	Creating Positive School/Home Partnerships with Diverse Families	Music Row 2, Omni

Saturday, April 2

8:00–9:00 AM	Opportunities to Improve Equity in Your Classroom	Music Row 2, Omni
9:30–11:30 AM	George W. Carver Conversations Series on Diversity and Equity	Broadway J, Omni
10:30 AM–12:30 PM	AMSE General Membership Meeting	Broadway K, Omni
12:30–1:30 PM	Differentiating Instruction to Help All Students Reach Their Potential	Music Row 2, Omni

Conference Program • Affiliate Sessions

Association for Science Teacher Education (ASTE)

President: Lisa Martin-Hansen

Thursday, March 31

12:30–1:30 PM	Integrated Middle Grades STEM Instruction	Fisk One, Renaissance
2:00–3:00 PM	STEM Professionals Who Became Teachers: Why Did They Do That?	Fisk One, Renaissance
3:30–4:30 PM	To Teach or Not to Teach: Examining Why Teachers Avoid Evolution	Fisk One, Renaissance
5:00–5:30 PM	Science and Literacy: Practicing Proficient Classroom Talk in Elementary Science	Fisk One, Renaissance

Friday, April 1

8:00–9:00 AM	Are You Smarter Than a Rocket Scientist? Design a Spaceship	Fisk Two, Renaissance
9:30–10:30 AM	The 50 Cent Microscope/Foldscope	Fisk Two, Renaissance
11:00 AM–12 Noon	Using Backwards Design to Identify Instructional Sequences That Prepare Students for NGSS Assessments	Fisk Two, Renaissance
12 Noon–2:00 PM	NSELA/ASTE Celebration Luncheon Tickets Required	Broadway A/B, Omni
12:30–1:30 PM	Activities and Strategies for Teaching Difficult to Understand Plant Processes	Fisk Two, Renaissance
2:00–3:00 PM	Energize Your STEM Classroom!	Fisk Two, Renaissance
3:30–4:30 PM	Using Hands-On Performance Assessment in K–12 Classrooms	Fisk Two, Renaissance

Association of Science-Technology Centers (ASTC)

President: Anthony Rock

Thursday, March 31

12:30–1:30 PM	Sparkling STEM Innovation with Arts-Based Learning	Legends E, Omni
2:00–3:00 PM	Building Informal/Formal Partnerships Between Schools, Science Museums/Centers, and Scientists to Create Effective PD	Legends E, Omni
3:30–4:30 PM	Science Beyond the Classroom—Strategies for Developing Community Partnerships to Enrich STEM Learning Opportunities	Legends E, Omni
5:00–6:00 PM	The All-American Total Solar Eclipse (August 21, 2017): Get Prepared for This Community-Wide Experience	Legends E, Omni

Friday, April 1

9:30–10:30 AM	Carnegie STEM Excellence Pathway: Journey to STEM Success	Cumberland 1, Omni
12:30–1:30 PM	Engineering for Animals: A Powerful Way to Engage Students and Teachers in STEM Learning at the Zoo and in the Classroom	Music Row 4, Omni
2:00–3:00 PM	Battle of the Brains: A Community STEM Initiative	Music Row 4, Omni
3:30–4:30 PM	Catalyzing Energy Education	Music Row 3, Omni

Association of Science-Technology Centers (ASTC), continued

Saturday, April 2

8:00–9:00 AM	Beyond the Classroom Walls—Tapping into Informal Science Centers to Support Student-Driven Investigations	Music Row 3, Omni
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Council for Elementary Science International (CESI)

President: James T. McDonald

Thursday, March 31

8:00–9:00 AM	Modeling Evidence Circles and Formative Assessment to Develop Three-Dimensional Learning	105A, Music City Center
12:30–1:30 PM	Building Towers and Structures! Using the Engineering Design Process with Young Children	105A, Music City Center
2:00–3:00 PM	I'll Do It My Way	105A, Music City Center
3:30–5:30 PM	Using Digital Literacies and Place-Based Learning to Engage Students in Inquiry-Based Science	105A, Music City Center

Friday, April 1

11:00 AM–12 Noon	Calling All K–5 STEM Competitors	105A, Music City Center
12:30–1:30 PM	Presenting the Best New Children's Books to Use When Teaching Science in the Elementary Grades	105A, Music City Center
2:00–3:00 PM	Biographies: Trade Books That Conceptualize the Nature of Science	105A, Music City Center
3:30–4:30 PM	Web 2.0 Tools for Science Teaching	105A, Music City Center
4:45–5:45 PM	CESI Membership Meeting	105A, Music City Center

Saturday, April 2

3:00–6:00 PM	CESI Board Meeting By Invitation Only	Gibson Brdrm., Omni
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Council of State Science Supervisors (CSSS)

President: Matt Krehbiel

Wednesday, March 30

6:00–8:00 PM	NSELA/CSSS Reception By Invitation Only	Legends D, Omni
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Thursday, March 31

8:00–9:00 AM	Short Science Lesson Exemplars Blending Content, Practices, and Crosscutting Concepts	Legends F, Omni
2:00–3:00 PM	The Next Generation of Science Leaders: What Does It Take to Prepare and Support Them?	Cumberland 2, Omni
3:30–5:30 PM	Aligning Classroom Instruction and Formative Assessment to NGSS Performance Expectations	Cumberland 2, Omni

Council of State Science Supervisors (CSSS), continued

Friday, April 1

8:00–9:00 AM	How Do I Demonstrate That My Students Are Showing Growth?	Music Row 4, Omni
11:00 AM–12 Noon	Panel Discussion: Going Ahead with the NGSS	Cumberland 1, Omni
12:30–1:30 PM	Deep Curriculum Alignment—A Pathway to Results	Cumberland 2, Omni
2:00–3:00 PM	Outstanding Science Tradebooks in the Classroom	Music Row 3, Omni
3:30–5:30 PM	Are Crosscutting Concepts Intentional in Your Classroom? Building CCC Progression K–12	Cumberland 2, Omni

National Association for Research In Science Teaching (NARST)

President: Mary M. Atwater

Thursday, March 31

12:30–1:30 PM	Writing-to-Learn Activities to Support Argumentation Skills of Undergraduate Biology Students	Fisk Two, Renaissance
2:00–3:00 PM	Modeling Tools, Engineering Practices, and Invasive Species	Fisk Two, Renaissance
3:30–4:30 PM	How to Make Science Instruction Compelling to Students: Designing Formative Assessments to Build on Learners’ Interests AND Knowledge	Fisk Two, Renaissance
5:00–6:00 PM	Bringing Computational Thinking into Science Classrooms	Fisk Two, Renaissance

Friday, April 1

8:00–9:00 AM	Engaging in the Formative Assessment Design Cycle for the NGSS	Fisk Two, Renaissance
9:30–10:30 AM	Implementing STEM Design Challenges at the Middle School Level	Fisk One, Renaissance
11:00 AM–12 Noon	Does Your Professional Development Make a Difference? Teachers’ Retention of Discipline-Specific Science Content	Fisk One, Renaissance
12:30–1:30 PM	Supporting Students to Make Connections Using the Crosscutting Concepts	Fisk One, Renaissance

National Middle Level Science Teachers Association (NMLSTA)

President: Diana Cost

Friday, April 1

6:00–8:00 PM	National Middle Level Science Teachers Association Members’ 25th Anniversary Celebration By Invitation Only	Legends D, Omni
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Saturday, April 2

10:00 AM–4:00 PM	Meet Me in the Middle Day See page 47	Broadway E/F, Omni
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National Science Education Leadership Association (NSELA)

President: Elizabeth Mulkerrin

Tuesday, March 29

8:00 AM–6:00 PM	NSELA Board of Directors Meeting By Invitation Only	Cumberland 1, Omni
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Wednesday, March 30

7:30–8:30 AM	NSELA Leadership Summit Breakfast By Invitation Only	Broadway A/B, Omni
8:30 AM–6:00 PM	NSELA Leadership Summit By Registration Through NSELA	Broadway C/D, Omni
11:30 AM–1:00 PM	NSELA Leadership Summit Luncheon By Invitation Only	Broadway A/B, Omni
6:00–8:00 PM	NSELA/CSSS Reception By Invitation Only	Legends D, Omni

Thursday, March 31

7:30–8:30 AM	NSELA Membership Breakfast By Invitation Only	Broadway A/B, Omni
8:30–10:00 AM	NSELA Annual Membership Meeting By Invitation Only	Broadway A/B, Omni
12:30–1:30 PM	Leadership Strategies for Ensuring Each Student Has a STEM Future	Music Row 4, Omni
3:30–4:30 PM	Helping Teachers Build a Foundation for Scientific Literacy in Elementary	Music Row 4, Omni
5:00–6:00 PM	Improving Preparation of Elementary Teachers for Science Teaching Through Faculty Collaboration	Music Row 4, Omni

Friday, April 1

8:00–9:00 AM	Building School and District Capacity for Understanding Student Thinking Through Formative Assessment	Cumberland 1, Omni
9:30–10:30 AM	Bring the Practice into Your Science Classrooms!	Music Row 4, Omni
11:00 AM–12 Noon	Conductors of Change—How Science Leaders Can Facilitate Harmony Among the Three Components of the NGSS	Cumberland 2, Omni
12 Noon–2:00 PM	NSELA/ASTE Celebration Luncheon By Ticket Through NSELA	Broadway A/B, Omni
12:30–1:30 PM	Equity, Leadership, and Change	Broadway C, Omni
3:30–4:30 PM	NGSS Engineering: How to Help Every Science Teacher Move from Panic to Plan	Music Row 4, Omni
5:00–6:00 PM	Essential Elements of STEM Education: A Large Urban District's Journey to STEM Success	Music Row 4, Omni

National Science Education Leadership Association (NSELA), continued

Saturday, April 2

11:00 AM–12 Noon	Tools for Science Leaders	Legends A, Omni
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Society for College Science Teachers (SCST)

President: Murray Jensen

Thursday, March 31

8:00–8:20 AM	Teaching Creativity in the Science Classroom	Ryman One, Renaissance
8:20–8:40 AM	Assessing Nonscience Majors' Learning in General Education Courses by Using Their Disciplinary Talents and Interests	Ryman One, Renaissance
12:30–12:50 PM	Growing a Writing-Across-the-Curriculum (WAC) Movement Through an Innovative STEM Collaboration	Ryman One, Renaissance
12:50–1:10 PM	Incorporating Reflective Journals in College Science Classrooms to Effectively and Harmoniously Bridge Science and Religion	Ryman One, Renaissance
1:10–1:30 PM	Altering Students' Alternative Conceptions About Science and Scientific Theories	Ryman One, Renaissance
2:00–2:20 PM	Assessing the Effect of Instructional Strategies on Student Engagement in a Flipped Classroom	Ryman One, Renaissance
2:20–2:40 PM	Does the Group Assessment of Logical Thinking (GALT) Predict Success?	Ryman One, Renaissance
2:40–3:00 PM	Predicting Performance in the Flipped Classroom—Does Active Participation Matter?	Ryman One, Renaissance
3:30–3:50 PM	What Else Should They Know? Training Students to Be Effective Peer Educators in Biology, Chemistry, and Physics	Ryman One, Renaissance
3:50–4:10 PM	Exploring Pedagogical Content Knowledge of Graduate Teaching Assistants Through Their Participation in Lesson Study	Ryman One, Renaissance
4:10–4:30 PM	Assisting Students in Large Lecture Courses: An Alternative Learning Center Model	Ryman One, Renaissance
5:00–5:20 PM	Using Graduate Learning Communities as a Tool for Student Achievement and Retention in Graduate-Level Science Programs	Ryman One, Renaissance
5:20–5:40 PM	Year One Results of an Introductory Biology Inquiry Lab	Ryman One, Renaissance
5:40–6:00 PM	Rewards and Challenges of Developing an Online College Chemistry Course That Includes a Hands-On Lab Component	Ryman One, Renaissance

Society for College Science Teachers (SCST), continued

Friday, April 1

8:00–8:20 AM	Completing the Circle: Using Innovative Co-Teaching Collaborations to Unite University Scientists, Science Teachers, and Their Middle School Students	Ryman One, Renaissance
8:20–8:40 AM	STEM Research Experiences for Preservice Science Teachers	Ryman One, Renaissance
8:40–9:00 AM	Creating an Authentic Research Experience in a General Biology Lab Using the Experience of Publishing	Ryman One, Renaissance
9:30–9:50 AM	How Prepared Are First-Year College Students to Learn About Cellular Respiration in Introductory Biology?	Ryman One, Renaissance
9:50–10:10 AM	Creating the Chemistry in Cellular Respiration Concept Inventory: Our Progress	Ryman One, Renaissance
10:10–10:30 AM	Building an Extended Inquiry Laboratory to Create a More Authentic Research Experience for First-Year Students	Ryman One, Renaissance

NSTA Teacher Awards Gala

Friday, April 1, 6:00–8:45 PM

By ticket only: #M-3

Cost: \$80

**East/Center Ballroom,
Renaissance Nashville Hotel**

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.

*All Conference Attendees are invited
to the President's Mixer—*

*Friday, April 1, 9:00 PM–12 Midnight
West Ballroom, Renaissance Nashville Hotel
(DJ and cash bar)*



Society for College Science Teachers (SCST), continued

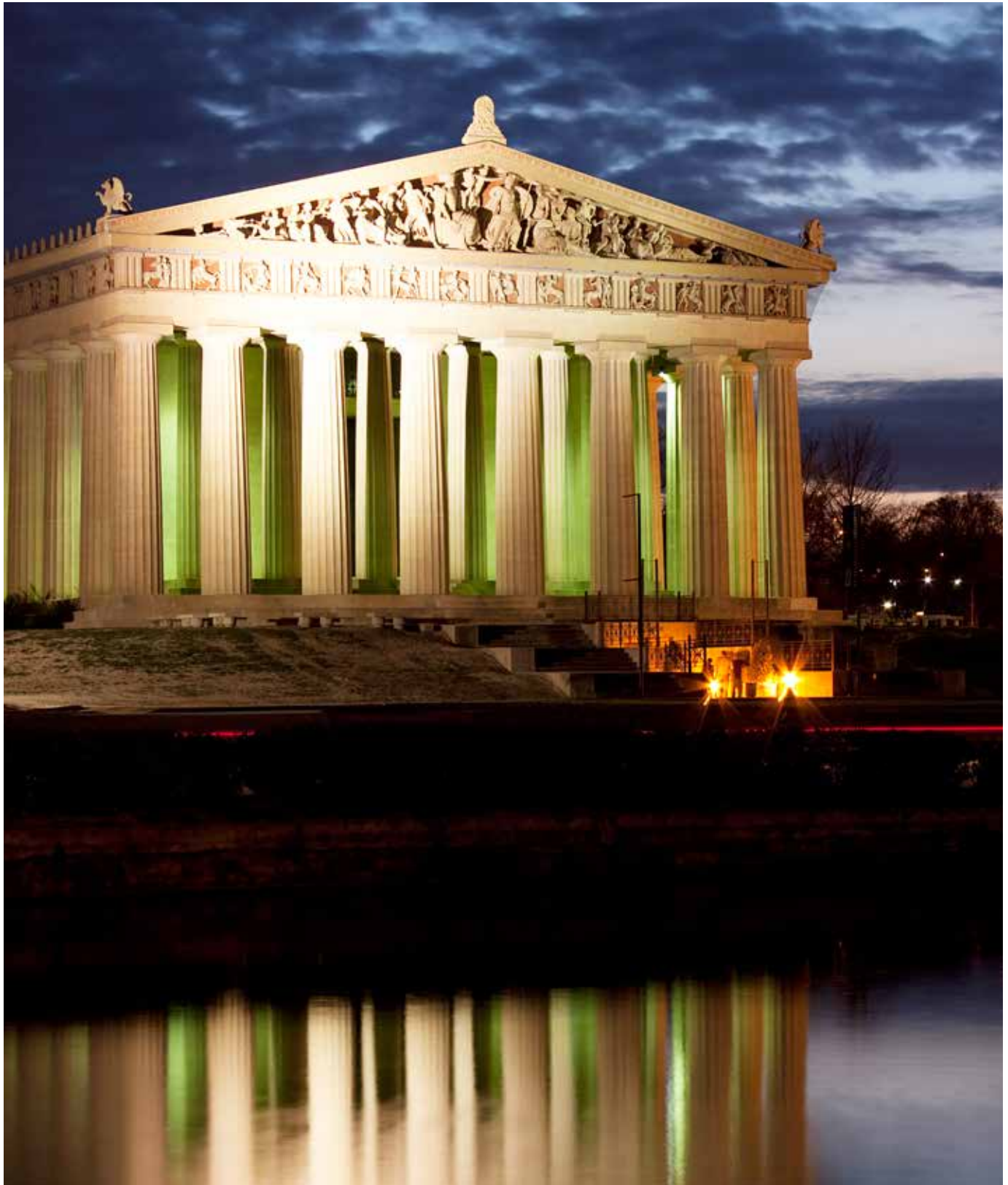
11:00–11:20 AM	Undergraduate Biology Students’ Conceptions of Extreme Spatial Scales	Ryman One, Renaissance
11:20–11:40 AM	Simple Mechanical Devices to Help Students Learn the Principles of Human Anatomy and Physiology	Ryman One, Renaissance
11:40 AM–12 Noon	Spatial Ability and STEM Courses —Why Mental Manipulation Matters	Ryman One, Renaissance
12:30–1:30 PM	SCST Marjorie Gardner Lecture: Assessment of Laboratory Skills Through Badging (Speaker: Marcy Towns)	Ryman One, Renaissance
3:30–5:00 PM	SCST Business Meeting	Ryman One, Renaissance
7:00–9:00 PM	SCST Poster Session and Dessert Social	Fisk, Renaissance

Three Dimensions of the Next Generation Science Standards (NGSS)

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

Disciplinary Core Ideas

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



Located in Centennial Park, the Parthenon was built in 1897 as a full-scale replica of the original in Athens, Greece. Currently an art museum, a reproduction of the Athena Parthenos statue, completed in 1990, stands inside.

7:30–8:30 AM Networking Opportunity

NSELA Leadership Summit Breakfast

(By Invitation Only)

Broadway A/B, Omni

Visit www.nsela.org for more information.

8:30 AM–6:00 PM Meeting

NSELA Leadership Summit

(By Registration Through NSELA)

Broadway C/D, Omni

The NSELA Leadership Summit (NLS) offers a rich array of experiences that focus on key topics in leadership and science education. Join us in Nashville and network with other national, regional, and district leaders for an informative day. The NLS is followed by an evening of connecting with your colleagues at the NSELA/CSSS Reception. Visit www.nsela.org for more information.

9:00 AM–4:00 PM Professional Learning Institutes

Supporting Conceptual Understanding in Science by Linking Assessment, Instruction, and Learning (PLI-1)

(Grades K–12)

Legends A, Omni

Science Focus: GEN, NGSS

By Preregistration Only

Page Keeley, 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Joyce Tugel, Maine Mathematics and Science Alliance, Augusta

Richard Konicek-Moran, Professor Emeritus, UMass Amherst, Mass.

For description, see page 51.

Integrating Science and Literacy with Picture Books (PLI-2)

(Grades K–5)

Legends B, Omni

Science Focus: GEN

By Preregistration Only

Karen Ansberry and **Emily Morgan**, Picture-Perfect Science, West Chester, Ohio

For description, see page 51.

Enriching Your Science Instruction with Three-Dimensional Teaching and Learning (PLI-3)

(Grades K–12)

Legends C, Omni

Science Focus: GEN, NGSS

By Preregistration Only

Eric Brunsell, University of Wisconsin Oshkosh

For description, see page 52.

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

Science Area

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 176, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

NGSS

See page 75 for a complete list of the NGSS codes used in this program.

Strands

The Nashville 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 42.



Setting the Stage: Scientific Literacy



Building the Band: Involving Community Stakeholders



Harmonizing Concepts: Integrating Instruction



Stringing It All Together: Three-Dimensional Learning

The following icons will be used throughout this program.



NSTA Press® Sessions



Professional Learning Institutes



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

GreenSTEM: Applying the Engineering Design Process to Community-Based Projects (PLI-4)

(Grades K–16)

Legends D, Omni

Science Focus: ETS1

By Preregistration Only

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

Laura Arndt, McREL International, Denver, Colo.

For description, see page 52.

Argument-Driven Inquiry: Transforming Laboratory Experiences So Students Can Use Core Ideas, Crosscutting Concepts, and Science Practices to Make Sense of Natural Phenomena (PLI-5)

(Grades 6–12)

Legends E, Omni

Science Focus: GEN, NGSS

By Preregistration Only

Victor Sampson and **Ashley Hamill Murphy**, The University of Texas at Austin

Patrick Enderle, Georgia State University, Atlanta

For description, see page 52.

Developing Science Literacy–Designed Instruction to Support College and Career Readiness (PLI-6)

(Grades K–12)

Legends F, Omni

Science Focus: GEN

By Preregistration Only

Donn Kirkwood, Southern Regional Education Board, Atlanta, Ga.

Lindsey Robinson, Mendenhall Junior High School, Mendenhall, Miss.

For description, see page 52.

9:00 AM–4:00 PM Meeting
SESD Preconference Meeting

Old Hickory, Omni

Science educators, special education teachers, parents, and administrators—come learn and share information and strategies on teaching science to students with disabilities. For more information and to register, please contact Rachel Zimmerman-Brachman at rachel.zimmerman-brachman@jpl.nasa.gov.

11:30 AM–1:00 PM Networking Opportunity
NSELA Leadership Summit Luncheon

(By Invitation Only)

Broadway A/B, Omni

Visit www.nsela.org for more information.





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Association



12 Noon–5:30 PM 11th Annual NSTA Global Conversations in Science Education Conference

Science Goes Global: The Next Generation (M-1)

Broadway E, Omni

By Preregistration Only

NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference begins and ends with plenary talks by distinguished international scholars and includes roundtable discussions on specific topics relevant to the international science educator community, a panel discussion, and poster presentations providing opportunities for networking and idea exchange.

NSTA is grateful to Northrop Grumman Foundation, Labster, and Goggle Inc. ("GOOGLE") for sponsoring this event.

12 Noon	Lunch	12:50 PM	Presentation Session 1
12:15 PM	Welcome Carolyn Hayes, NSTA President, and Retired Educator, Greenwood, Ind. Oliver Grundmann, NSTA International Advisory Board Chair, 2015–2016, University of Florida, Gainesville U.S. NSTA International Advisory Board Members		The GAIA Project: Student, Crowd Sourced, Environmental Science Research Speaker: Stuart A. Fleischer, Walworth Barbour American International School in Israel
12:30 PM	Opening Speaker <i>Teaching Science with a Global Citizenship Approach: The Association for Science Education</i> Speaker: Shaun Reason, Chief Executive, The Association for Science Education, Hatfield, Herts, U.K. <i>The session will focus on creating relevant contexts and creative hooks for science lessons using global contexts with reference to successful Association for Science Education (ASE) projects and activities for students aged 518 in the U.K. and internationally. The science-based themes of the United Nations' "Sustainable Developments Goals" aim to make our planet fair, healthy, and sustainable by 2030. Science plays a crucial role in meeting these targets to end poverty, fight inequality and injustice, and tackle climate change. Global Citizenship provides a wealth of real-life contexts for learning science.</i>		A Comparative Study of the Standards for High School Chemistry in the United States and in China Speakers: Yi Li and Ann Rivet, Teachers College, Columbia University, New York N.Y.
		1:30 PM	Participant Break and Roundtable Discussion 1
		1:50 PM	Presentation Session 2 Mothers Talking Everyday Science in Bangladesh Speaker: Sue Dale Tunnicliffe, University of London, U.K. Using Fictional Storybooks in Understanding French Children's Ideas of Animal Metamorphosis Speakers: Catherine Bruguier, University of Lyon, France; Sue Dale Tunnicliffe, University of London, U.K. Chemistry–The Life We Live: Teaching Chemistry from "Known" to "Unknown" (Songs and Drama) Speaker: Margaret Enedoh, Imo State University, Owerri, Nigeria Linking Local Wisdom and Place-Based and Environmental Education in Southeast Asia (Isan, Thailand) Speaker: Parichat Saenna, Khon Kaen University, Thailand
		3:10 PM	Participant Break and Poster Presentations

12 Noon–5:30 PM 11th Annual NSTA Global Conversations in Science Education Conference, cont.

- | | |
|--|--|
| <p>3:40 PM Panel Discussion
 K–12 Global Collaborative Science Teaching from Policy to Practice
 Panelists: Walter S. Smith, Daniel Carpenter, Meredith Bell, Linda Cook, Jill Nugent, Camille Stegman, and Terry Sutton, Texas Tech University, Lubbock</p> | <p>4:05 PM Presentation Session 3
 The Flipped Lab: Reviving Science Education with Virtual Reality Simulations
 Speaker: Maaroo Fakhri, Labster, Denmark
 Measuring the Angular Speed of Venous Using a DSLR Device
 Speaker: Mohammad Alshahrani, Bisha College of Technology, Saudi Arabia</p> |
| | <p>4:45 PM Roundtable Discussion 2</p> |
| | <p>5:15 PM Closing
 Carolyn Hayes, NSTA President, and Retired Educator, Greenwood, Ind.</p> |

Global Conversations in Science Education Conference Poster Sessions 3:10 PM

A Mixed Methods Exploration of Global Education Among International Baccalaureate Schools of the Americas

Linda Cook (linda.cook@ttu.edu), Coppell ISD, Coppell, Texas

Cultivating the Science Classroom Culture

Faiza Abdul Qayyum (drfaizaqs@outlook.com), Riyadh, Saudi Arabia

Developing STEM Academies to Develop the Next Generation of Scientists and Engineers

Michael Odell (modell@uttyler.edu) and **Teresa Kennedy** (tkennedy@uttyler.edu), University of Texas at Tyler

Dramatic Inquiry: Using Theatrical Pedagogies to Inspire Children's Investigative Thinking

Deb McGregor (dmcgregor@brookes.ac.uk), Oxford Brookes University, U.K.

Engaging High School Students with "Big Data": Societal Implications, Analytic Practices, and Classroom Activities

G. Michael Bowen (gmbowen@yahoo.com), Mount Saint Vincent University, Halifax, N.S., Canada

Donna Governor (dgovernor@windstream.net), Forsyth County Schools, Cumming, Ga.

Eric Brunsell (brunsele@uwosh.edu), University of Wisconsin–Oshkosh

Engineering in K–12 Teaching and Learning Environment: Experiences from ENGINEER Project in Turkey

Bulent Cavas (bulentcavas@gmail.com), **Jack Holbrook** (jack@ut.ee), and **Miia Rannikmae** (miia@ut.ee), International Council of Associations for Science Education (ICASE)

Ilhan Silay (ilhan.silay54@gmail.com), Dokuz Eylul University, Turkey

Enhancing Middle School Science Learning Through Exploration Curriculum and Service Learning

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

Mao-Cheng Lin (cctai.etsu@gmail.com), Guang Wu Junior High School, Taiwan

Global School Reform of Professional Learning Communities and the Collaborative Culture: The Intellectual and Physical Shared Workspace Model

Daniel Carpenter (daniel.carpenter@ttu.edu) and **Brenda Bartlett**, Texas Tech University, Lubbock

Introducing Biology Undergraduates to Authentic Research Through Grand Challenges in Global Health

Kathleen A. Marrs (kmarrs@iupui.edu) and **James A. Marrs**, Indiana University–Purdue University Indianapolis (IUPUI)

Philosophical Toys

Richard Frazier (richard_frazier@hotmail.com), American Embassy School, India

Stories of Symbiosis: An Appealing Path to Dynamic Systems

Richard Frazier (richard_frazier@hotmail.com), American Embassy School, India

Switching Traditional to Student-Based Teaching in a High School Chemistry Curriculum

Martha P. Pérez (mpatty_p@hotmail.com) and **Oralia Ramirez**, Universidad de Monterrey, Mexico

Three Nations: An Engaged Global Engineering Collaboration

Walter Smith (walter.smith@ttu.edu), Texas Tech University, Lubbock

Kuen-Yi Lin, National Taiwan Normal University, Taiwan

Tarah McDonald and **Thalia Micklewhite**, College of the Bahamas

Polar Educator International: Educators from All Around the World Bringing Polar Sciences into Classrooms

Alessia Cicconi (alessia.cicconi@unicam.it), University of Camerino, Italy
Sarah Bartholow (sbartholow@arcus.org), Arctic Research Consortium of the United States, Fairbanks, Alaska

Louise Huffman (louise.t.huffman@dartmouth.edu), Thayer School of Engineering at Dartmouth, Hanover, N.H.

Special Science Programs for Students in Taiwan

Kate Fraser (kate.fraser@perkins.org), Perkins School for the Blind, Watertown, Mass.; and Changhua National Education University, Taiwan

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

Old Hickory, Omni

The annual business meeting of Science Education for Students with Disabilities, an associated group with NSTA. Open to everyone—please join us!

5:00–7:00 PM Networking Opportunity
Teaming Up for STEM: Welcome Reception

(By Invitation Only)

Broadway F, Omni

NSTA is grateful to Vulcan Inc. (www.AllenDistinguishedEducators.org) for sponsoring this reception.

6:00–8:00 PM Networking Opportunity
NSELA/CSSS Reception

(By Invitation Only)

Legends D, Omni

Visit www.nsela.org for more information.



6:00–8:00 PM The Planetary Society Lecture
If the Dinosaurs Had a Space Program

(General)

Grand Ballroom B/C, Music City Center

Science Focus: ESS

Sponsored by The Planetary Society



Bill Nye (@BillNye), CEO, The Planetary Society, Pasadena, Calif.

President: Margie Hawkins, Program Coordinator, NSTA Nashville National Conference, and Winfree Bryant Middle School, Lebanon, Tenn.

In his talk, Bill Nye probes scientific efforts to find ice and rocks in space and then nudge them out of the way of Earth's atmosphere. Achieving this could save us all—and the technological advances along the way will enrich the lives of Earth's citizens everywhere.

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 CEO of The Planetary Society. Well known for his Emmy Award–winning show Bill Nye the Science Guy®, he is also host of the series The 100 Greatest Discoveries and Solving for X, a DVD series where he shows how to do algebra along with the P, B, & J (passion, beauty, and joy) of math.

In between creating shows, he has written several books about science, including Unstoppable: Harnessing Science to Change the World and Undeniable: Evolution and the Science of Creation. Bill, the inventor, has a few patents, such as a magnifier made of water and an abacus that does arithmetic like a computer—with only binary numbers. On Earth Day 2015, Bill met with President Obama to visit the Everglades National Park in Florida and discuss climate change as well as science education..

6:30–8:00 PM Networking Opportunity
NSTA New Science Teacher Academy Reception

(By Invitation Only)

Broadway G/H, Omni

7:30–8:30 PM Meeting
International Advisory Board Meeting

Gibson Boardroom, Omni

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National Association for the
Education of Young Children



Known for its vibrant music scene, Nashville's downtown area called "the District" is filled with music clubs and honky-tonks.

Thursday, March 31

	Featured Speakers	Featured Speakers	Special Events
8:00 AM			
9:00 AM			First-Timers' Session 8:00–9:00 AM Davidson C, Music City Center <i>sponsored by Ward's Science</i>
10:00 AM	General Session 9:15–10:30 AM Grand Blrm. B/C, Music City Center Speaker: Tyraine "Grand Hank" Ragsdale		
11:00 AM			
12 Noon			
1:00 PM			
2:00 PM	Featured Panel 2:00–3:00 PM 102 A/B, Music City Center Moderator: J. Wesley Hall Panelists: Aimee Kennedy, Oliver "Buzz" Thomas, and James P. McIntyre Jr.		Science in the Community Forum: Learning Through Failure—Teaching Science Through Tinkering and Tweaking 2:00–4:00 PM 104A, Music City Center <i>sponsored by Google Inc. ("GOOGLE")</i>
3:00 PM			
4:00 PM	Featured Presentation 3:30–4:30 PM 102 A/B, Music City Center Speaker: Sean Carroll book signing to immediately follow talk	Mary C. McCurdy Lecture 3:30–4:30 PM Davidson A1, Music City Center Speaker: Christine Cunningham <i>sponsored by Shell</i>	
5:00 PM			
6:00 PM			Northrop Grumman Foundation Presents: Into the Unknown 5:30–9:00 PM Off-site, Adventure Science Center <i>By Reservation Only, e-mail kim.essex-roland@ngc.com or visit Booth #442</i>
7:00 PM		HHMI BioInteractive Night at the Movies 6:00–8:00 PM Grand Blrm. C2, Music City Center	
8:00 PM	NGSS Live Chat 7:30–9:30 PM Legends C, Omni Presenters: Ted Willard, Tricia Shelton, and others Join live or via Twitter using #NGSSchat		
9:00 PM			

7:30–8:30 AM Networking Opportunity

NSELA Membership Breakfast

(By Invitation Only)

Broadway A/B, Omni

Visit www.nsela.org for more information.

7:30–9:00 AM Networking Opportunity

DuPont Breakfast

(By Invitation Only)

Cumberland 6, Omni

8:00–8:20 AM Presentation

SCST Session: Teaching Creativity in the Science Classroom

(Grades 9–College)

Ryman One, Renaissance

Science Focus: ETS, CCC1, CCC2, SEP3, SEP4, SEP8

Lynn Diener (dienerl@mtmary.edu) and **Terri Holzen** (@tmholzen; holzent@mtmary.edu), Mount Mary University, Milwaukee, Wis.

Join us as we share our experience infusing creativity into the science classroom. We'll discuss both student and professor gains.

8:00–8:30 AM Presentations



The CO₂ Culprit: Man vs. (Volcanic) Mountain

(Grades 7–12)

101E, Music City Center

Science Focus: ESS

Renee Clary (rclary@geosci.msstate.edu), Mississippi State University, Mississippi State, Miss.

Can humans affect climate more—when volcanoes belch massive CO₂? Your students use authentic data, graph CO₂ contributions, and reach their own conclusions! Examples/resources provided.

Sweet Sound of Integration

(Grades 1–8)

106A, Music City Center

Science Focus: GEN, NGSS

Erin Eckholt (@eckzoo; eckholt@cbcsd.org), College View Elementary School, Council Bluffs, Iowa

Jessica Rosenberg (@MrsRosenberg12; jrosenberg@cbcsd.org), Wilson Middle School, Council Bluffs, Iowa

Merging science with literacy and math can seem like a daunting challenge. We will give teachers the tools necessary to purposefully integrate science across disciplines.

Science Area

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 176, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

NGSS

See page 75 for a complete list of the *NGSS* codes used in this program.

Strands

The Nashville 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 42.



Setting the Stage: Scientific Literacy



Building the Band: Involving Community Stakeholders



Harmonizing Concepts: Integrating Instruction



Stringing It All Together: Three-Dimensional Learning

The following icons will be used throughout this program.



NSTA Press® Sessions



Professional Learning Institutes



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

Incorporating Arts in a Science and Technology Fair Program

(Grades 6–12)

Music Row 1, Omni

Science Focus: GEN, SEP

Cristiana Mattos Assumpção (@crismattos; cmattos@colband.com.br), College Bandeirantes, São Paulo, Brazil

Learn how to organize a STEAM program involving more than 300 students and understand how to incorporate arts in a science and technology fair program.

Creation and Evaluation: Sharing STEM Tasks and Student Work

(Grades 6–8)

Music Row 4, Omni

Science Focus: GEN

Laura Campion (lcampion@m322.org), **Whitney Reizner** (wreizner@gmail.com), and **Lauren Pak** (lpak@m322.org), Middle School 322, New York, N.Y.

Presider: Erica Zigelman (ezigelman@m322.org), Middle School 322, New York, N.Y.

Join us for a closer look at the development of quality STEM projects. We will focus on planning integrated lessons, differentiating assignments for ALL students (students with disabilities and English language learners), and creating rubrics for assessment.

8:00–9:00 AM Presentations



NSTA Press® Session: Teaching Science for Conceptual Understanding: Exploring the “Big Ideas” of Conceptual Teaching and Learning in Science

(General)

101D, Music City Center

Science Focus: GEN

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

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

What does it really mean to teach science for conceptual understanding? Interactively explore a resource that can transform K–16 teachers’ beliefs and practices about teaching science, including a framework for linking instruction, assessment, and learning.

Help! It’s My First Year Teaching Science!

(Grades 1–5)

104A, Music City Center

Science Focus: GEN

Rachael Sheridan (rsheridan@hydebronxny.org), Hyde Leadership Charter School, Bronx, N.Y.

You’re not on an island by yourself! Receive strategies, resources, and best practices to help you navigate your first year teaching science.

Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success

(Grades P–6)

104B, Music City Center

Science Focus: LS, PS, CCC, SEP

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

Receive an overview of the components of differentiation in the K–6 science classroom, and hear ways to differentiate effectively to maximize student participation and learning. Handouts!

Harry Potter’s Amazing World of Science and Magic

(Grades K–9/College)

Davidson A1, Music City Center

Science Focus: ETS1, PS

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

Curious episodes from Harry Potter stories will be used to creatively launch exciting lessons focused on matter, static electricity, heat, and design engineering.

3D Analyzing and Interpreting Ice Sheet Data to Determine the Effects of Human Activities on Climate

(Grades 6–College)

103A, Music City Center

Science Focus: ESS2, ESS3, CCC7, SEP4

David Randle (drandle@amnh.org), American Museum of Natural History, New York, N.Y.

Use GRACE (Gravity Recovery and Climate Experiment) satellite ice sheet data with resources that incorporate data analysis and literacy strategies to teach about the causes and effects of climate change.

A Model for Immersive STEM Learning in Diverse Urban Middle Schools

(Grades 4–8)

Davidson A2/3, Music City Center

Science Focus: GEN, SEP

Kristin Sargianis (kristin@i2learning.org) and **Melissa Higgins** (melissa@i2learning.org), i2 Learning, Boston, Mass. Learn about a pilot program in which 18 urban middle schools (public and private) replace a week of regular instruction with a week of immersive hands-on STEM learning.

Welcome to Your First NSTA Conference

(General)

Davidson C, Music City Center

Science Focus: GEN

NSTA Board and Council

It's huge. It's daunting. But it's also a treasure trove of resources. This session is for conference first-timers and those who haven't come for a while. Join us for tips on navigating and how to make the most of the amazing opportunities. NSTA is grateful to Ward's Science for sponsoring this session.

Managing Your Science Classroom: Lessons Learned from Teaching in Unconventional Learning Environments

(Grades 6–12)

Acoustic, Omni

Science Focus: GEN

Jeremy Friedman (jefriedman@walderlab.org), The Martin & Gertrude Walder Science Learning Center, Skokie, Ill. Join the conversation about how to promote a safe and productive science classroom and discuss tools used in alternative schools and other sometimes challenging environments.

Cell Phone Physics

(Grades 10–12)

Broadway D, Omni

Science Focus: PS, SEP5

John Clark (@johnedwclark; johnedw@cfl.rr.com), Deltona High School, Winter Springs, Fla.

How does SIRI work? How does GPS know where I am? Where does that sound come from? What is a cell anyway? Let the real-world applications from digital signal processing engage your students as they learn about sound, waves, light, and optics. Multiple lessons will be offered.



First-timers, Preservice Teachers and New Teacher Session

Are you an experienced teacher attending your very first NSTA conference? Or a new (or preservice) teacher anxious about the vast number of sessions and would like some guidance? Join us for this interactive session, including breakfast and opportunities to win prizes.

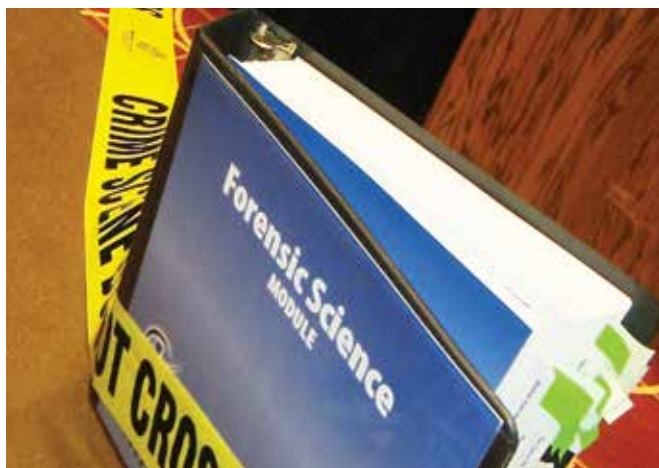
Welcome to Your First NSTA Conference

Thursday, March 31

8:00–9:00 AM

Music City Center, Davidson C





Climate Change, Evolution, and Bears: Oh My!

(Grades 9–12)

Broadway G, Omni

Science Focus: ESS3.C, ESS3.D, LS4, PS3, CCC2, CCC5, SEP1, SEP3, SEP6, SEP7, SEP8

Kimi Fellers (@kfellers06; vballer06@yahoo.com), Carmel High School, Carmel, Ind.

Learn how to plan and implement a three-dimensional Project-Based Learning unit on thermal physics, with cross-cutting concepts from life and Earth space sciences.

Strategies for Using NGSS-Focused Physical Science Assessment Tasks Formatively in Classrooms

(Grades 6–8)

Broadway J, Omni

Science Focus: PS1.A, PS1.B, PS3.A, PS3.B, CCC, SEP

Kevin McElhaney (kevin.mcelhaney@sri.com) and **Christopher Harris** (christopher.harris@sri.com), SRI International, Menlo Park, Calif.

Deborah Peek-Brown (dpbrown@msu.edu), CREATE for STEM Institute, Michigan State University, East Lansing
Brian Gane (bgane@uic.edu), University of Illinois at Chicago
Daniel Damelin (ddamelin@concord.org), The Concord Consortium, Concord, Mass.

Explore classroom-based approaches for using NGSS-focused physical science assessment tasks to diagnose and support students' progress toward meeting middle grades NGSS performance expectations.

Cross-Curricular Project-Based Learning

(Grades 7–12)

Music Row 2, Omni

Science Focus: ETS2, PS1, PS3, SEP

Letta Meyer (lmeyer@musd.org) and **Renee Roche** (rroche@musd.org), Milpitas High School, Milpitas, Calif.

Come learn how to integrate cross-curricular Project-Based Learning from a chemistry and an English teacher (and sometimes a world history teacher) living the dream.

Science Olympiad Urban Schools Initiative Kick Starter

(Grades 3–12)

Music Row 3, Omni

Science Focus: GEN

Kelly Price-Colley (@kpricega; kellyrprice@comcast.net), NSTA Director, Coordination and Supervision of Science Teaching, and Forsyth County Schools, Cumming, Ga.

Jennifer Kopach (@SOAlumniNetwork; jrkopach@soinc.org), Science Olympiad, Oakbrook Terrace, Ill.

Do you wonder how to engage underserved populations/districts with K–12 STEM outreach? Science Olympiad has a solution for you. Attend this session to learn more about the success of the Science Olympiad Urban Schools Initiative.

50 Years of Field Science

(General)

Center Ballroom, Renaissance

Science Focus: ESS1.C, ESS2.C, ESS2.E, ESS3.A, ESS3.B, LS1.A, LS1.B, LS2.A, LS3.B, LS4.C, CCC3

Terry Logue (tjlogue@una.edu) and **Dana Van Burgh Jr.** (vbbison@wyoming.com), Retired Educators, Casper, Wyo.

Hear how to teach biology, geology, and history using local and regional sites and numerous individuals and organizations to learn about and better understand our environment.

Science Through Service: Connecting Science with Community Needs

(Grades 6–College)

East Ballroom, Renaissance

Science Focus: GEN, NGSS

Kristine Denton (kristine.denton@ops.org), Omaha (Neb.) Public Schools

Lee Ann Stover (lee.stover@ops.org), Burke High School, Omaha, Neb.

We will share two examples of service learning projects that connected students' understanding of science with meeting the needs of their community while partnering with non-profit organizations and local university leaders.

Atmospheric and Earth Observations Using Sensors

(Grades 6–College)

West Ballroom, Renaissance

Science Focus: ESS, SEP4, SEP5

David Bydlowski (@k12science; davidbydlowski@me.com), Science Consultant, Livonia, Mich.

Paul Henry (henrya@resa.net), Wayne County Regional Educational Service Agency, Wayne, Mich.

Acquire and share airborne and ground-based Earth observations and data using cameras, assorted electronics (Arduino, Raspberry Pi), 3D printing, and NASA AEROKATS (kites/Aeropods).

8:00–9:00 AM Hands-On Workshops



NSTA Press® Session: Promote Enduring Understanding with Literacy-Infused Units

(Grades 3–8)

101C, Music City Center

Science Focus: GEN, CCC1, CCC2, SEP1, SEP3, SEP4, SEP7, SEP8

Jessica Gaither (@ElemSciTchr; jfriesgaither@gmail.com), Columbus School for Girls, Columbus, Ohio

Terry Shiverdecker (tshiverdecker.1@gmail.com), Ohio Resource Center, Columbus

Join the authors of *Inquiring Scientists*, *Inquiring Readers* for an investigation integrating literacy and inquiry. Discuss the application of this powerful approach in your classroom.



From the Farm to the Pond—An Inquiry Unit for Early Childhood Learners

(Grades P–1)

103B, Music City Center

Science Focus: GEN, NGSS

Kristen Poindexter (@fuzzlady77; fuzzlady77@hotmail.com) and **Cindy Moore** (cmoore@msdwt.k12.in.us), Spring Mill Elementary School, Indianapolis, Ind.

Hatch new learning as the barnyard is brought into the preK–1 classroom. We will share our six-week inquiry unit on the farming community. Make-and-takes will be available!



Using PBLs to Teach NGSS-Focused Chemistry

(Grades 7–11)

103C, Music City Center

Science Focus: ETS, PS

Maria Thurmond (maria_thurmond@gwinnett.k12.ga.us), Peachtree Ridge High School, Lawrenceville, Ga.

Beth Feustel (beth_feustel@gwinnett.k12.ga.us), Discovery High School, Lawrenceville, Ga.

Teaching NGSS-focused chemistry to high school students requires the teaching of STEAM as well. Explore how to incorporate Project-Based Learning into your chemistry curriculum using engineering design practices.

Exploring Force and Motion: It Will Be a Moving Experience

(Grades P–2)

104C, Music City Center

Science Focus: INF, PS

Bob Williams, The University of Texas at Austin

Move along with us as we share ideas for involving early learners in force and motion studies.

Creating Teachable Moments for Elementary Classrooms

(Grades K–4)

104D, Music City Center

Science Focus: ESS1, ESS2.C, ESS2.D, ETS1, PS1, PS3, PS4, SEP3, SEP8

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

Encounter effective ways to engage lower elementary students in learning key science concepts through self-guided reading and science investigation stations.

And They All Lived Scientifically Ever After!

(Grades K–3)

104E, Music City Center

Science Focus: ETS, SEP

Elizabeth Kersting-Peterson (@supersciencefri; elizabeth.kersting-peterson@isd709.org) and **Heidi Mlynarczyk** (heidimlynarczyk@isd709.org), Homecroft Elementary School, Duluth, Minn.

Presider: Ross Peterson, Minnesota Dept. of Human Services, Cloquet

Use literature, common household materials, science, engineering, and inquiry to engage K–3 students in creative adventures.

CESI Session: Modeling Evidence Circles and Formative Assessment to Develop Three-Dimensional Learning

(Grades K–8)

105A, Music City Center

Science Focus: GEN, SEP1, SEP7

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

Samantha Burko (burkolisk@cmich.edu), Central Michigan University, Mount Pleasant

Using moon phases, participants will learn how to use evidence circles, formative assessment, and the claim, evidence, and reasoning framework to get students to think critically.

Force and Motion—Deeper and Cheaper

(Grades 4–9)

105B, Music City Center

Science Focus: ETS1, PS2, SEP

Gene Easter (gleaster@sbcglobal.net), Retired Educator, Tallmadge, Ohio

Experience a researched-based learning progression on force and motion using cheap and familiar materials. Learn to “teach the laws for less” and leave with effective, captivating activities and strategies. Included are interactive demos and assessment activities that develop deeper understanding using claims, evidence, reasoning, and rebuttal for sense-making.

Reimagine the classroom

Create learning environments where science is brought to life and reveals otherwise invisible phenomena. Open opportunities for students to think and act like scientists, ask questions and explore new ideas that can ultimately change the world. Start a journey of science discovery with **PASCO wireless solutions**.

pH 7.72

Reveal the invisible



Imagine wireless

Wireless Pressure: \$69

Measure pressure changes in real time to understand cause and effect relationships.



Wireless Temperature: \$39

Measure small but significant temperature changes produced by chemical reactions, convection currents and even skin temperature with this durable high-resolution sensor.



Wireless pH: \$59

Capture high accuracy continuous or point measurements.



Wireless Force/Acceleration: \$99

Simultaneously measure force, acceleration in 3-axis, and rotation with no cables to introduce friction.



Smart Cart: \$159

This revolutionary cart is an entirely wireless physics lab all by itself. Includes 3-axis accelerometer, 3-axis gyroscope, force sensor and motion encoder.



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Wireless Current
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Are you ready to unleash imagination?

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Spectrometer: \$399

Use this one apparatus in your Chemistry, Biology, and Physics labs. Compatible with your iPads, tablets, and computers.



STEM EDUCATOR AWARD



Using Modeling to Teach Grade 5 Students About Natural Systems

(Grades 4–6)

106B, Music City Center

Science Focus: ESS

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

Explore ways to use real-world experiences and three-dimensional learning to teach elementary students about the interactions of Earth's systems.

Show Me the Data

(Grades K–8)

106C, Music City Center

Science Focus: GEN, SEP4

Deborah Vannatter (davanna1203@gmail.com), University of Evansville, Ind.

Mary Anne Feller (mfeller@evdio.org), Sts. Peter and Paul Catholic School, Haubstadt, Ind.

Kimberly Elpers (kelpers77@hotmail.com), Vogel Elementary School, Evansville, Ind.

Create 3-D interactive tables, graphs, charts, and graphic organizers that students can quickly construct to organize data from science and engineering investigations. All materials provided.



NMEA Session: Whale of a Tale Share-a-Thon

(General)

Davidson B, Music City Center

Science Focus: ESS, LS3, CCC7, SEP6, SEP7, SEP8

Mellie Lewis, NOAA Climate Stewards Education Project, Silver Spring, Md.

Dale Stanley (dale.stanley@ncc.edu), Nassau Community College, Garden City, N.Y.

Carol Steingart (info@coastencounters.com), Coast Encounters, LLC, Wells, Maine

Jessica Kastler (jessica.kastler@usm.edu), Gulf Coast Research Laboratory, Ocean Springs, Miss.

Jaime Thom (jthom@scaquarium.org), South Carolina Aquarium, Charleston

Kathy Fuller, NMEA Chapter Representative (MAMEA), Baltimore, Md.

Kaitlin Gannon (@WetlandsSHNJ), The Wetlands Institute, Stone Harbor, N.J.

Celia Cackowski (@celiacackowski; ccackowski@vims.edu), Virginia Institute of Marine Science, Gloucester Point

Paula Leeann Wampler, Whitwell Middle School, Whitwell, Tenn.

The National Marine Educators Association invites you to engage in hands-on activities and take home resources for your classroom. 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!

Mathematical Modeling: STR Systems Used for DNA Identification

(Grades 9–12)

Broadway C, Omni

Science Focus: LS3.A, LS3.B

Brian Bollone (@ForensicSciNerd; bbollone@nvps.net), Northview High School, Grand Rapids, Mich.

Learn about STR systems that are used for DNA identification of human tissue/remains and how mathematical modeling is used to compute random match probabilities. (HS-LS3-2 and HS-LS3-3: Heredity: Inheritance and Variation of Traits).

From Students to Investigators—Igniting Students' Use of Data Analysis and Interpretation

(Grades 7–12)

Broadway H, Omni

Science Focus: ETS2, SEP

Dionysius Gnanakkan (dgnanakk@hawk.iit.edu), **Judith Lederman** (ledermanj@iit.edu), **Norman Lederman** (ledermann@iit.edu), and **Selina Bartels** (sbartels@hawk.iit.edu), Illinois Institute of Technology, Chicago

Join us as we employ a number of introductory activities to ground students in science practices and nature of science.

WOW! Words of Wisdom: Ways to Make Your Students Scientifically Literate

(Grades 6–8)

Broadway K, Omni

Science Focus: GEN, NGSS

Susanne Teague (@S2TEMCentersSC; teagues@winthrop.edu), S2TEM Centers SC, Spartanburg, S.C.

Amy Threatt (@S2TEMCentersSC; athreatt@s2temsc.org), Lowcountry STEM Collaborative, Goose Creek, S.C.

Experience the WOW of classroom-tested disciplinary literacy strategies through participation and virtual field trips. Leave with strategies that incorporate reading, writing, and dialogue into the science classroom.

Analysis of Variance Visualized

(Grades 4–College)

Cumberland 1, Omni

Science Focus: GEN, SEP4

Daniel Carroll (@EdTech2061; thedancarroll@hotmail.com) and **Michael Zito**, Yorktown High School, Arlington, Va. Come see how a simple math skill that students learn can be used to examine experimental data for statistical significance. The Box-and-Whisker to the rescue! Learn how to make one in three easy steps.

Argumentation by Design: Integrating Evidence-Based Arguments with STEM Design Tasks

(Grades K–12)

Cumberland 2, Omni

Science Focus: ESS3.A, ETS1.C, ETS2.A, PS3.B, CCC5, CCC6, SEP2, SEP6, SEP7

Amy Peacock (@peacock_science; peacocka@clarke.k12.ga.us), Clarke County School District, Athens, Ga.

Jeremy Peacock (@jeremy_peacock; peacock.jeremy@gmail.com), Northeast Georgia RESA, Winterville

Paul Blais (blaisp@clarke.k12.ga.us), Burney-Harris-Lyons Middle School, Athens, Ga.

Design. Build. Now what? This workshop will demonstrate how to engage students in evidence-based argumentation as they evaluate solutions within the engineering design cycle.

Using Copper Tape, LEDs, and Stickers to Prototype and Explore Electrical Circuits

(Grades 6–12)

Cumberland 3, Omni

Science Focus: ETS1, PS3

Samantha Lindgren (salindgr@illinois.edu) and **Jana Sebestik** (@MSTEOffice; sebestik@illinois.edu), University of Illinois at Urbana-Champaign

Forget the alligator clips! Use LEDs, stickers, and copper tape to investigate concepts in electricity. Explore circuits as systems. Take home a classroom-ready NGSS-focused activity booklet.

Making Sense of Phenomena Through Three-Dimensional Learning

(Grades 6–12)

Legends C, Omni

Science Focus: ESS, CCC5, SEP2, SEP4

Emily Weiss (weisse@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

Examine and engage in an exemplar lesson that uses science practices and crosscutting concepts to support sense-making around a phenomenon. Take home a sample lesson.

AMSE Session: English Language Development Opportunities for ELLs Through Meaningful Integration of the NGSS and CCSS

(General)

Legends E, Omni

Science Focus: GEN, SEP

Jerry Valadez (@samacademymaker; jdvscience@yahoo.com), NSTA Director, Multicultural/Equity, and California State University, Fresno

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

Get the tools to support English language learners in developing science identities using the NGSS science and engineering practices.

CSSS Session: Short Science Lesson Exemplars Blending Content, Practices, and Crosscutting Concepts

(Grades 6–12)

Legends F, Omni

Science Focus: GEN, CCC1, CCC2

Juan-Carlos Aguilar (jaguilar@doe.k12.ga.us), Georgia Dept. of Education, Atlanta

Brett Moulding (mouldingb@ogdensd.org), Partnership for Effective Science Teaching and Learning, Ogden, Utah

Engage in analyzing these series of three-dimensional lessons developed around the classroom sample tasks created by Achieve.

STEM Infographic Use, Analysis, and Production for Higher Scientific Literacy in the Classroom

(Grades 4–College)

Legends G, Omni

Science Focus: GEN, CCC1, CCC2, CCC3, CCC4, CCC6, SEP4

Rob Lamb (@Lambchop1998; rlamb@psdr3.org), Pattonville High School, Maryland Heights, Mo.

Experience how to incorporate infographics into the science classroom as a way of increasing scientific literacy. Several lessons will be discussed along with takeaway resources.

Games: Hands-On Review Activities

(Grades 6–12)

Music Row 5, Omni

Science Focus: GEN, SEP2, SEP5, SEP8

Maricar Harris (mharris@wcsks.com), Wichita Collegiate School, Wichita, Kans.

Seeking engaging ways to review concepts to ensure mastery? Come play! See several hands-on activities appropriate for different learning styles and levels. Leave this session with ideas you can use in your classroom on Monday, for any grade or discipline!

8:00–9:00 AM Exhibitor Workshops

Engineering Bumpers and NGSS: Hands-On Physics with PASCO's New Wireless Smart Cart!

(Grades K–12)

206 A/B, Music City Center

Science Focus: ETS1, PS

Sponsor: PASCO scientific

Dan Burns (dburns@lgsuhsd.org), Los Gatos High School, Los Gatos, Calif.

Use PASCO's Smart Cart to explore the relationship between momentum and impact forces in collisions, using engineering design to create a solution to a problem. You will design your own bumper for the Smart Cart to minimize the collision force. Six attendees will win a free Smart Cart!

Teaching STEM Using Agarose Gel Electrophoresis

(Grades 6–College)

210, Music City Center

Science Focus: ETS, LS

Sponsor: Edvotek Inc.

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

Explore four hot topics in biotechnology using gel electrophoresis: DNA fingerprinting, paternity testing, medical diagnostics, and GM organisms. Brightly colored dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving valuable classroom time! Results are analyzed using a semi-logarithmic plot, which fosters critical-thinking skills and STEM learning techniques. Receive a free gift for attending!

8:00–9:30 AM Exhibitor Workshops

STEM and Literature

(Grades K–4)

107A, Music City Center

Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP5

Sponsor: SAE International—A World In Motion Program

Amy Smith, SAE International, Warrendale, Pa.

Feeling overwhelmed as a primary teacher having to incorporate STEM in your classroom? Look no further than this hands-on workshop where SAE's A World In Motion staff will show you how to use literature as a springboard to introduce STEM through basic everyday materials.

Navigating the Shifts of the NGSS with Leaders from The Lawrence Hall of Science

(Grades 1–8)

107B, Music City Center

Science Focus: GEN, NGSS

Sponsor: Amplify

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

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

Assessment Writers Workshop

(General)

109, Music City Center

Science Focus: GEN

Sponsor: Accelerate Learning—STEMscopes

Whitney Dove, Accelerate Learning, Houston, Tex.

Come learn about and use the Test Item Checklist (TIC)! This is a simple tool to help teachers and teacher-leaders evaluate the most common form of assessment: multiple-choice test items. The TIC provides a simple, systematic approach to evaluating these test items based on a number of criteria.

Zombie Apocalypse!

(Grades 6–12)

110A, Music City Center

Science Focus: LS

Sponsor: Texas Instruments

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

Become part of a zombie apocalypse as brains will be served (while supplies last). Learn about disease-spread modeling using simulations and fun storylines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies into learning how exciting Hollywood themes can be used to teach science concepts.

Using Problem-Based Learning to Up Your NGSS Game

(Grades 1–8)

110B, Music City Center

Science Focus: GEN, NGSS

Sponsor: Pearson Education

Michael Padilla, 2005–2006 NSTA President, and Professor Emeritus, Clemson University, Clemson, S.C.

The NGSS seeks to incorporate more scenario-based and Problem-Based Learning. To help prepare students in school and beyond, students need to be doing science and seeing how it fits into their daily lives. Join Pearson author Mike Padilla as he brings PBL into the science classroom to help prepare students for future science and technology careers.

CPO's Chemistry Models Link™ Learning Module: Fun with Atom Building Games

(Grades 6–12)

201A, Music City Center

Science Focus: PS

Sponsor: CPO Science/School Specialty Science

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

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

CALLING ALL MIDDLE SCHOOL EDUCATORS

SATURDAY, APRIL 2, 2016 | 10:00 AM–4:00 PM | OMNI NASHVILLE

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 2016 National Conference in Nashville!**

The day's events will include a networking session, more than a dozen presentations specifically for middle school educators, and an afternoon share-a-thon featuring more than 100 presenters. You'll walk away with ideas you can put to use in your classroom next week!

Organized by the
National Middle Level Science Teachers Association (NMLSTA)

Attend for a
chance to win
an iPad mini and
other door prizes!



#NSTA16

www.nsta.org/nashville

Sponsored by





Ten Minutes to Improving Science Achievement

(Grades 3–8)

201B, Music City Center

Science Focus: GEN

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

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

Engineering Design—Will It Sink or Float?

(Grades 1–6)

202A, Music City Center

Science Focus: ETS1

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Delta Education Specialist, Midway, Ky.

Delta Education can help you send your students on a mission to answer this question. During the workshop, you will learn about buoyancy and whether the shape of an object can determine if it will sink or float. We will show how it connects to the NGSS performance expectations K-2-ETS1-1, 2, 3, Engineering Design.

Awesome, Engaging, and Motivating STEM Activities

(Grades 6–8)

202B, Music City Center

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

Sponsor: Houghton Mifflin Harcourt

Michael DiSpezio, Author and STEM Specialist, North Falmouth, Mass.

Join Michael for an entertaining, motivating, and practical hands-on workshop that offers a variety of classroom activities in STEM. Profile science and engineering practices as you gather, analyze, and interpret data that explores grade-band concepts in dynamic Earth processes, basic chemical reactions, and DNA extractions.

Development of a Science Maker Kit for Inquiry-Based Teaching: Ideation and Feedback

(Grades 6–12)

202C, Music City Center

Science Focus: GEN

Sponsor: Microsoft

Todd Beard (v-tobear@microsoft.com), Microsoft Innovative Educator Fellow, Detroit, Mich.

Participate in a set of Project-Based Learning activities to help inform the development of a tool kit for STE(A)M. BYOD for this hands-on session and share your current practices and unmet needs integrating tools into curriculum design. Your great ideas are instrumental in the creation of this tool kit.

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

(Grades 9–12)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

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

(Grades K–5)

205A, Music City Center

Science Focus: INF, GEN

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Spark student interest and improve outcomes! Master teacher Harvey Bagshaw demonstrates engaging science instruction using Tigttag Science real-world STEM videos, interactive content, and a hands-on activity. Harvey's blend of compelling online learning tools with hands-on fun is guaranteed to delight you and your students! “Watch out! It might get messy.”

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

(Grades 9–12) 205B, Music City Center

Science Focus: PS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

Calling All Carbons

(Grades 9–12) 205C, Music City Center

Science Focus: ESS2.D

Sponsor: LAB-AIDS®, Inc.

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

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

Artificial Selection, It's Unnatural!

(Grades 9–12) 207A, Music City Center

Science Focus: LS

Sponsor: Ward's Science

Michelle Pagani and **Robert Geroux**, VWR Science Education, Rochester, N.Y.

Watch evolution happen in your classroom. We'll explore a variety of models and use simple bean beetles as model organisms to mathematically demonstrate how traits can change in just a few weeks. Teacher developed and student approved.

HHMI BioInteractive's Evolution Resources in Your NGSS Classroom

(Grades 9–12) 207B, Music City Center

Science Focus: LS4, CCC1, CCC2, SEP2, SEP5, SEP7

Sponsor: HHMI BioInteractive

Melissa Csikari, Colonial Forge High School, Stafford, Va.
James Clark and **Samantha Johnson**, Arroyo High School, San Lorenzo, Calif.

Engage in an NGSS-focused evolution activity "The Beak of the Finch." We will focus on the SEP of arguing from evidence, modeling, and mathematical/computational thinking and crosscutting concepts of patterns and cause and effect. All participants will receive lesson plans, sorting cards, and the DVD *Origin of Species*.

Environmental Science with Vernier

(Grades 7–College) 207C, Music City Center

Science Focus: ESS

Sponsor: Vernier Software & Technology

Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct a variety of environmental science experiments from our lab books in this engaging hands-on workshop. Collect and analyze data using LabQuest 2, Logger Pro computer software, and mobile devices. Explore the wide range of tools from Vernier that promotes understanding of environmental science concepts.

Middle School Science with Vernier

(Grades 6–8) 207D, Music City Center

Science Focus: GEN, NGSS

Sponsor: Vernier Software & Technology

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

Use Vernier sensors, including our Go Wireless sensors, to conduct a variety of age-appropriate experiments in this engaging hands-on workshop. Experience data collection using LabQuest 2, Logger Pro computer software, Chromebook, and mobile devices. Explore the wide range of tools from Vernier that promotes understanding of middle school science concepts.

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

(Grades 9–College) 208A, Music City Center

Science Focus: LS2, CCC1, SEP

Sponsor: Bio-Rad Laboratories

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

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

Investigate Photosynthesis and Cellular Respiration with Algae Beads

(Grades 6–College) 208B, Music City Center

Science Focus: LS, SEP

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Use algae beads in a colorimetric assay to study both photosynthesis and cellular respiration in authentic inquiry investigations (AP Biology Big Idea 2: Labs 5 and 6). Extend this lab to study the effects of light intensity, light color, temperature, and other organisms on these processes.

Project-Based STEM/Engineering

(Grades 5–College)

209B, Music City Center

Science Focus: ETS

Sponsor: WhiteBox Learning

Graham Baughman, WhiteBox Learning, Louisville, Ky. Engage your students in STEM/Engineering Curriculum for grades 6–12, the complete engineering design process. WhiteBox Learning is a standards- and activity-based turn-key STEM Learning System. Students can research, design, analyze, and simulate their designs, and compete “virtually,” 24/7, all around the world, from any browser. Integrated LMS included as well as hands-on activities.

Active Chemistry: The Leading Project-Based High School Chemistry Program Capturing the Essence of the NGSS and STEM

(Grades 9–12)

209C, Music City Center

Science Focus: ETS1, PS

Sponsor: It's About Time

Arthur Eisenkraft (arthur.eisenkraft@umb.edu), 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass. Learn from author Arthur Eisenkraft how you can implement STEM and NGSS in your chemistry/physical science classroom. This embedded engineering design cycle was designed by chemists, chemical engineers, and science educators to engage ALL students and increase student performance. New resources include an Active Chemistry 24/7 online support site for teachers.

Teaching Chemistry Effectively with Visualization and Simulation at the Molecular Level

(Grades 7–College)

212, Music City Center

Science Focus: PS

Sponsor: Wavefunction

Paul Price (sales@wavefun.com), Wavefunction, Inc., Irvine, Calif.

Do you notice persistent misconceptions in your students' understanding of molecular phenomena? Would your classroom benefit from models and simulations that convey core ideas with sound science practices? Bring your laptop (Windows or OS X) to this hands-on workshop and learn how to improve student comprehension with *ODYSSEY* Molecular Explorer.

Hominid Evolution Activity

(Grades 9–12)

214, Music City Center

Science Focus: LS4.A, LS4.D

Sponsor: Bone Clones Inc.

Michelle Tabencki (michelle@boneclones.com), Bone Clones, Inc., Canoga Park, Calif.

This anthropological activity uses Bone Clones® replica skulls to begin the discussion of human origins. It's a great way to introduce students to anthropometric measurements and discover hominid skeletal variation. Conducted in a laboratory-style setting, you will handle replica skulls and engage in taking measurements of homologous structures to compare and contrast the results.

Engaging Students in Authentic Science Experiences Using Digital Tools

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Silver Spring, Md.

In a student-centered learning environment, we want students to ask deep, meaningful questions; collaborate with their peers; arrive at meaningful conclusions; and solve real-world problems. Join us to learn about a variety of digital resources and instructional strategies to engage all students in authentic science experiences.



8:00–11:00 AM Hands-On Workshop

NGSS Toolkit Pathway Session: Using a Tool and the NGSS to Plan a Unit of Instruction

(Grades 6–College)

Legends B, Omni

Science Focus: GEN, NGSS

James Short (jshort@amnh.org) and **Dora Kastel** (@dora_AMNH; dkastel@amnh.org), American Museum of Natural History, New York, N.Y.

Plan for instruction using a tool and NGSS card sets to deepen your understanding of the three dimensions and consider what students need to know.

8:20–8:40 AM Presentation

SCST Session: Assessing Nonscience Majors' Learning in General Education Courses by Using Their Disciplinary Talents and Interests

(Grades 11–College)

Ryman One, Renaissance

Science Focus: GEN, CCC1, CCC2

Kerry Cheesman (kcheesma@capital.edu), Capital University, Columbus, Ohio

Students majoring in the humanities learn science better when we encourage them to create art, poetry, plays, and music to demonstrate their understanding of science topics.

8:30–9:00 AM Presentations



Creating a NASA-Based Research Environment in a High School Classroom: Mission to Outer Space

(Grades 9–12)

101E, Music City Center

Science Focus: ESS2.A, ESS3.C, LS2.A

Matthew Pollard (mjpollard@gmail.com), Paradise Creek Regional High School, Moscow, Idaho

Brant Miller (bgmiller@uidaho.edu), University of Idaho, Moscow

Discussion centers on the development and implementation of an inquiry-based STEM curriculum unit based on an ongoing NASA-based research project.

Teaching to Learn: An Elementary/Postsecondary Collaboration to Improve K–16 Science Teaching and Learning

(Grades K–7)

106A, Music City Center

Science Focus: GEN

Jean Bacon (jbacon@napsk12.org), North Adams (Mass.) Public Schools

Explore a tool kit developed to engage liberal arts undergraduates in K–7 science co-teaching, improving science outcomes for K–7 teachers and students, college undergraduates, and faculty.

INF Becoming WISE: A Year in the Life of a Girls' Science and Engineering Club

(Grades 8–12)

Music Row 1, Omni

Science Focus: ETS, INF

Caryn Meirs (@caryn_meirs; caryn.meirs@gmail.com), Half Hollow Hills Central School District, Dix Hills, N.Y. I'll share a how-to guide for getting young women involved in science and engineering through school day and after-school activities.

Dissonance to Harmony: How to Create Beautiful Educational Music with non-STEM Teachers

(Grades 6–8)

Music Row 4, Omni

Science Focus: ESS2.D, ESS3, ETS2, LS4, PS1.B

Karen Clark (clarkk@icdurham.org) and **William Healy** (healyb@live.com), Immaculata Catholic School, Durham, N.C.

Every teacher, designated STEM or not, is a vital resource to expand STEM concepts. We will cover the intricacies of engaging non-STEM teachers to present topics from alternative points of view using a variety of learning styles and methods.



8:30–9:30 AM Exhibitor Workshop
Build, Program, and Control with K’NEX Education’s New Robotics Building System

(Grades 5–10) *108, Music City Center*

Science Focus: ETS

Sponsor: K’NEX Education®

Robert Jesberg, K’NEX Education, Hatfield, Pa.

This dynamic hands-on building system teaches students how to apply programming skills to operate various built models. You’ll be the student in this workshop as you write your own computer program to control a vehicle model built out of K’NEX! Space limited: 24 working, 20 observing. Arrive early!

8:30–10:00 AM Meeting
NSELA Annual Membership Meeting

(By Invitation Only) *Broadway A/B, Omni*

The NSELA Annual Membership Meeting offers an up-to-date glimpse of NSELA by its officers and committee chairs. The recognition of our Outstanding Leadership in Science Education Award is celebrated. Come network with other key leaders from across the country. Visit www.nsela.org for more information.

8:30–11:00 AM Meeting
Science Safety Advisory Board Meeting

Old Hickory, Omni

9:00 AM–5:00 PM Networking Opportunity
NSTA International Lounge

Mockingbird 1, Omni

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
Energize Science

(General)

Grand Ballroom B/C, Music City Center

Science Focus: GEN



Tyraine “Grand Hank” Ragsdale (@Grandhank), Grandmaster of Science and President, Grand Hank Productions, Inc., Philadelphia, Pa.

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

Platform Guests: Tyraine “Grand Hank” Ragsdale; Carolyn Hayes; Juliana Texley, NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.; Mary Gromko, NSTA President-Elect, Colorado Springs, Colo.; David Crowther, NSTA President-Elect-Elect, and University of Nevada, Reno; Gale Stanley, President, Tennessee Science Teachers Association (TSTA), and Campbell County Schools, Jacksboro, Tenn.; Manley Midgett, NSTA Director, District VI, and Meredith College, Raleigh, N.C.; David L. Evans, NSTA Executive Director, Arlington, Va.; Becky Ashe, Chairperson, NSTA Nashville National Conference, and L&N STEM Academy and Knox County Schools, Knoxville, Tenn.; Margie Hawkins, Program Coordinator, NSTA Nashville National Conference, and Winfree Bryant Middle School, Lebanon, Tenn.; Tanisha Wesby, Local Arrangements Coordinator, NSTA Nashville National Conference, and Shwab Elementary School, Nashville, Tenn.

Use the superpowers of hip-hop music and kinesthetic learning to inspire students to achieve their maximum learning potential in science. This creative out-of-the-box approach provides teachers with firsthand strategies and techniques on how to use “Event-Based Instruction” (a term coined by Grand Hank) to pique the interest of students and create a winning formula for success in science.

Founder and president of Grand Hank Productions, Tyraine Ragsdale is a former research chemist for the Johnson & Johnson Family of Companies. Since founding Grand Hank Productions in 1989, Tyraine (aka Grand Hank) has had a profound impact on STEM education, reaching more than 10 million students, parents, and teachers across the United States and South Africa. Currently, the national “Grand Hank STEM Road Show Tour” has visited more than 25 cities across the United States exposing students to career opportunities in the areas of STEM and energy.

9:30–10:30 AM Presentation

NMEA Session: Oil Spill Research—A Microcosm for Understanding the Process of Science

(Grades 7–College)

Davidson B, Music City Center

Science Focus: ESS, SEP7, SEP8

Jessica Kastler (jessica.kastler@usm.edu), Gulf Coast Research Laboratory, Ocean Springs, Miss.

Use a jigsaw to explore published research emerging from the 2010 Deepwater Horizon oil spill and how it illustrates the process of science.

9:30–10:30 AM Exhibitor Workshops

Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics!

(General)

206 A/B, Music City Center

Science Focus: LS, PS

Sponsor: PASCO scientific

Jason Lee (mrlee3@att.blackberry.net), East Georgia State College—Statesboro

Use PASCO's award-winning Wireless Spectrometer and free Spectrometry software to perform introductory spectroscopy experiments for chemistry, biology, and physics on computers as well as Android tablets and iPads. In this hands-on session, you'll analyze emission spectra, absorbance/transmittance spectra, solution concentration data, and reaction kinetics. Three attendees will win a Spectrometer!

AMS DataStreme Professional Development Courses

Free to K-12 Teachers!

The American Meteorological Society, through a cooperative agreement with the National Oceanic and Atmospheric Administration, offers fall and spring semester courses in weather, ocean, and climate science to in-service K-12 teachers. Participating teachers take the courses primarily online with Internet-based learning materials focused on current science, and in most states are eligible to receive free graduate credits upon course completion. DataStreme courses strongly support teachers in states implementing the Next Generation Science Standards.



DataStreme Atmosphere - focuses on the study of the atmospheric environment

DataStreme Ocean - explores the ocean in the Earth system

DataStreme Earth's Climate System (ECS) - emphasizes contemporary climate science perspectives

For more information and to sign up – email the AMS Education Program at amsedu@ametsoc.org



Case of the Missing Records

(Grades 9–College)

210, Music City Center

Science Focus: ETS, LS

Sponsor: Edvotek Inc.

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

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

10:00–11:00 AM Exhibitor Workshop

Off to the Races with K’NEX Education’s Forces, Energy, and Motion Set!

(Grades 5–9)

108, Music City Center

Science Focus: PS

Sponsor: K’NEX Education®

Robert Jesberg, K’NEX Education, Hatfield, Pa.

Start your engines! Join the K’NEX building experience as you build gravity, rubber band, and spring power racers to test physical science concepts. Build models just like your students and investigate, experiment, collect data, graph, and analyze results. We will explore potential and kinetic energy, average speed, and much more.

10:00–11:30 AM Exhibitor Workshops

Stream Ecology: Slimy Leaves for Healthy Streams

(Grades 4–College)

107A, Music City Center

Science Focus: ESS3.C, ETS1.A, ETS1.B, LS2.A, SEP3, SEP4, SEP5, SEP6, SEP8

Sponsor: LaMotte Co.

Tara Muenz (tmuenz@stroudcenter.org), 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. Come learn from a Stroud Water Research Center scientist. Takeaways and a door prize!

Engineering Design in the Middle School Classroom

(Grades 6–9)

107B, Music City Center

Science Focus: ETS1

Sponsor: AEOP eCYBERMISSION

Matthew Hartman, eCYBERMISSION Content Manager, and **Cheryl Long**, eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

Learn about the engineering design process and how to help students become engineers in the science classroom. Also, hear about the free online STEM competition eCYBERMISSION and how you and your students can participate.

Successful Use of Argumentation in the STEM Classroom

(Grades 1–12)

109, Music City Center

Science Focus: GEN, NGSS

Sponsor: Accelerate Learning–STEMscopes

Pamela Caffery (pcaffery0217@gmail.com), Hillsborough County Public Schools, Tampa, Fla.

“Engaging in argument from evidence” is a practice of scientists and engineers that is a vital part of a STEM classroom. Join us in this interactive session where we will model protocols and structures that you can use for successful implementation of consensus building and evidence-based argumentation into your classroom.

Use Robots to Engage Elementary/Middle School Students with Hands-On Project Based Learning

(Grades K–8)

110A, Music City Center

Science Focus: ETS, SEP

Sponsor: FIRST®

Kim Wierman (kwierman@firstinspires.org), **Betsy Daniels** (bdaniels@firstinspires.org), **Denise Lewis** (dlewis@firstinspires.org), and **Dana Aucoin** (daucoid@firstinspires.org), FIRST, Manchester, N.H.

Working in small groups, you’ll learn how to guide students in building and programming a LEGO® EV3 robot, research and solve a real-world problem, develop core values, and practice collaboration and presentation skills. Explore the FIRST® LEGO® League Program and learn how to bridge classroom learning into after-school enrichment.

Welcome to the Anthropocene: Using Global Change to Teach NGSS Crosscutting Concepts and Core Ideas in Biology and Earth Science

(Grades 9–12)

110B, Music City Center

Science Focus: ESS, LS, CCC

Sponsor: Pearson Education

Joseph Levine, Author, Boston, Mass.

Human activity has become the most powerful driver of global change. Which human activities cause global change? How do those changes affect the biosphere and society? Emphasis will be placed on addressing these questions using narrative to increase understanding, exploring the value of system models, relating the structure of the global climate system to its function, and underscoring the importance of time scale. Online resources will be shared.

Inquiry Investigations into Environmental Issues

(Grades 5–11)

201A, Music City Center

Science Focus: ESS

Sponsor: Frey Scientific/School Specialty Science

Kathleen Mills, Waterloo High School, Waterloo, N.Y.

With Frey Scientific Inquiry Investigations, students can explore real-life environmental problems such as water treatment processes, chemicals in landfills, effects of radiation on plants, bioremediation techniques for oil spills, climate change, as well as airborne, soil, and water pollutants. Participants will do a hands-on experiment and see how the program's uses meet NGSS and state standards.

What Does Argumentation Look Like in an Elementary Classroom?

(Grades K–5)

201B, Music City Center

Science Focus: GEN, SEP7

Sponsor: Delta Education/School Specialty Science–FOSS

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

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

PEASE in Our Time: Memory Lanes of the Brain

(Grades 1–6)

202A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Delta Education/School Specialty Science

John Cafarella, Retired Teacher/Administrator, Canadensis, Pa.

Retrieved memories are the only proof we have that learning

has taken place. Where is knowledge/understanding stored in the brain? How does it get in? How does it get out? We'll look at the PEASE (procedural, episodic, automatic, semantic, and emotional) lanes of the brain through a Delta/FOSS STEM (NGSS) lens.

Engaging Students Effectively: The BIOZONE Solution for Grades 9–12

(Grades 9–12)

202B, Music City Center

Science Focus: ESS, LS, CCC, SEP

Sponsor: BIOZONE International Ltd.

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

Find out how and why teachers of NGSS biology/Earth and space sciences, AP biology, environmental science, and anatomy/physiology are using BIOZONE's workbooks to significantly improve student outcomes. BIOZONE's unique 3-in-1 solution is part textbook/study guide/activity workbook. Fabulous graphics matched to critical-thinking questions enhance student engagement. Take home free books.

Bringing Real Neuroscience and Neural Engineering into Your Classroom

(Grades 6–College)

202C, Music City Center

Science Focus: ETS, LS

Sponsor: Backyard Brains, Inc.

Timothy Marzullo (info@backyardbrains.com), Backyard Brains, Inc., Ann Arbor, Mich.

Would you like to show your students the electrical impulses of hearts, muscles, and neurons? Interested in controlling robots and humans with this same electrical activity? Want to teach comparative electrophysiology between insects, humans, and even plants? Learn and experience live demos of such wonderful science at our workshop.

Introduction to Wisconsin Fast Plants®

(Grades K–12)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

Modeling Beyond a Flashlight and Beach Ball

(Grades 6–8)

205A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Modeling makes it easier to understand, define, quantify, and visualize the world...or simulate accepted knowledge. Diagrams, simulations, analogies, and mathematical and graphical representations are some of the many types of models used in the Smithsonian STC3 program. Experience a variety of modeling examples through hands-on lessons.

They Come in Pairs: Using Socks to Identify and Address Student Misconceptions About Chromosomes

(Grades 6–College)

205B, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Understanding the stages of meiosis and clarifying chromosome behavior has always been a challenge for students. What if those concepts were as easy to understand as folding laundry? This workshop will help you identify and address student misconceptions by using ChromoSocks®. This workshop is presented in partnership with HudsonAlpha.

Prospecting for Mineral Ore

(Grades 9–12)

205C, Music City Center

Science Focus: ESS2.A

Sponsor: LAB-AIDS®, Inc.

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

How do geologists look for mineral ore? In this activity from *EDC Earth Science*, participants search for a layer of rock that contains a valuable mineral called molybdenum by testing sediments collected in strategic spots along river systems, gathering data to decide where the deposit is located. This is no cookie mining activity!

Forces, Interactions, and Energy, Oh My!

(Grades 2–6)

207A, Music City Center

Science Focus: PS

Sponsor: Ward's Science

Patty Muscatello, VWR Science Education, Rochester, N.Y.

Don't let teaching elementary physical science and using technology be scary! Join us for this interactive workshop where we will share some fun, easy activities to take back to your classroom that incorporate NGSS and Ward's Single Probeware. Activities do not require use of probeware.

BioInteractive's Free Resources to Teach Math, Statistics, and Data Analysis

(Grades 9–College)

207B, Music City Center

Science Focus: GEN, SEP4, SEP5, SEP6, SEP7

Sponsor: HHMI BioInteractive

Satoshi Amagai, HHMI BioInteractive, Chevy Chase, Md.

Paul Strode, Fairview High School, Boulder, Colo.

Valerie May, Woodstock Academy, Woodstock, Conn.

Join us to find out about *BioInteractive.org*'s free resources to teach fundamentals skills in math, statistics, and data analysis. Examples include a statistics teacher's guide, exercises in data analysis and graphing using real biological data, and self-paced tutorials on how to use a spreadsheet to analyze data.

Chemistry with Vernier

(Grades 9–College)

207C, Music City Center

Science Focus: PS, SEP

Sponsor: Vernier Software & Technology

Jack Randall (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Use Vernier sensors to conduct a variety of chemistry experiments from our popular lab books in this engaging hands-on workshop. Collect and analyze data using LabQuest 2 and Logger Pro computer software. Explore the wide range of tools from Vernier that promotes understanding of chemistry concepts.

Integrating Chromebook with Vernier Technology

(Grades 3–College)

207D, Music City Center

Science Focus: GEN, NGSS

Sponsor: Vernier Software & Technology

Verle Walters (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Learn how to use Chromebooks with Vernier technology in this workshop featuring experiments from Vernier lab books. See how engaging experiments like "Boyle's Law" or "Grip Strength Comparison" teach students about data collection and analysis—practices that promote science inquiry and boost test scores.

FLINN Workshops

Hands-On Experience Today . . . Classroom Experience Tomorrow



All workshops are located in Room 209A of the Music City Convention Center

Thursday, March 31

10:00 a.m. – 11:30 a.m.
12:00 p.m. – 1:30 p.m.
2:00 p.m. – 3:30 p.m.
4:00 p.m. – 5:30 p.m.

Flinn Favorite Biology Lab Activities and Games
Year-Round Solutions for Success in AP Chemistry
Teaching Forensics with Real Crime Scene Investigation Techniques
Building or Renovating a Laboratory? Get Your Questions Answered

Friday, April 1

8:00 a.m. – 9:30 a.m.
10:00 a.m. – 11:30 a.m.
12:00 p.m. – 1:30 p.m.
2:00 p.m. – 3:30 p.m.
4:00 p.m. – 5:30 p.m.

Fantastic Physical Science Demonstrations
Infusing Inquiry and Demonstrations into AP Biology
STEM *Design Challenge*™ “Build-it-Yourself” Lab Project
Exploring Chemistry™—Connecting Content Through Experiments
New Inquiry Investigations for AP Physics 1

Saturday, April 2

10:00 a.m. – 11:30 a.m.
12:00 p.m. – 1:30 p.m.

Enhance Your AP Chemistry Course with POGIL™ Activities
Hands-On Integrated Science Activities for Middle School



FLINN

Morning of Chemistry

Taking Over the Music City with Science

Presented by: Paul Price and Jesse Bernstein

Friday, April 1 10:00 a.m. – 11:45 a.m.

Music City Convention Center

Davidson Ballroom C

Improve Student Engagement Using Pop Culture in Your Life Science Class

(Grades 9–College)

208A, Music City Center

Science Focus: LS3, SEP

Sponsor: Bio-Rad Laboratories

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

Use popular science to engage high school and college students in your classroom. See how popular TV and movies can be connected to real-world discoveries and issues. Then learn how to use a fun hands-on lab to increase student involvement and understanding.

Enzymes: Technology Inspired by Nature

(Grades 9–College)

208B, Music City Center

Science Focus: LS1, SEP

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

With rising greenhouse gases, scientists look to nature for a biofuel solution. The star of this hands-on workshop is the cellobiase enzyme, an engine for cellulosic biofuel production. Use the inquiry-based approach to extract enzyme, test activity, and design experiments to study how pH, temperature, and concentrations affect reaction rates.

Flinn Favorite Biology Lab Activities and Games

(Grades 9–12)

209A, Music City Center

Science Focus: LS

Sponsor: Flinn Scientific, Inc.

Jodi Bauer, Flinn Scientific, Inc., Batavia, Ill.

Students learn faster and better when involved in fun hands-on activities that create learning opportunities. Join Flinn as we share biology-based inquiry labs, demonstrations, and games you can use to motivate your students. You're sure to find a Flinn Favorite that works for you! Handouts for all activities!

Plate Tectonics: Continents on the Move

(Grades 6–12)

209B, Music City Center

Science Focus: ESS2.B

Sponsor: Simulation Curriculum Corp.

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

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

Active Physics: The Leading Project-Based High School Physics Program Capturing the Essence of the NGSS and STEM

(Grades 9–12)

209C, Music City Center

Science Focus: ETS1, PS

Sponsor: It's About Time

Arthur Eisenkraft (arthur.eisenkraft@umb.edu), 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.

Learn from author Arthur Eisenkraft how you can implement STEM and NGSS in your physics/physical science classroom. This embedded engineering design cycle was designed by physicists and science educators to engage ALL students and increase student performance. New resources include an Active Physics 24/7 online support site for teachers.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

Understanding Muscle Concepts of Human Anatomy: Building It in Clay

(Grades 6–College)

212, Music City Center

Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

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

In this workshop, participants will learn human musculature by applying clay onto accurate, realistic scale human models. 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.

Integrating Literacy and Science—The Wow Factor

(Grades P–5)

214, Music City Center

Science Focus: GEN

Sponsor: Activate Learning

Ellen Mintz, Charleston County School District, Charleston, S.C.

Come engage in a hands-on investigation where your students explore, read, write, talk, and think critically about science. Address reading, writing, and math through science investigations. Create data tables and argue from evidence as you give your students a reason to write beyond just “fill in the blank.”

Personalizing Your Science Instruction

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Renee Cartier, Discovery Education, Silver Spring, Md.

What is personalized learning and how can you implement it in the science classroom to meet the needs of all learners? In this workshop, participants will explore the different aspects of personalized learning and engage in practical ways to bring this learning to the science classroom.



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

Entrance to Hall B, Music City Center

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

Welcoming Remarks: Becky Ashe, Chairperson, NSTA Nashville National Conference, and L&N STEM Academy and Knox County Schools, Knoxville, Tenn.

Musical Entertainment: “Audacity” of DuPont-Hadley Middle School, under the direction of Michael H. Walton

Special Guests: Juliana Texley, NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.; Mary Gromko, NSTA President-Elect, Colorado Springs, Colo.; David Crowther, NSTA President-Elect-Elect, and University of Nevada, Reno; Gale Stanley, President, Tennessee Science Teachers Association (TSTA), and Campbell County Schools, Jacksboro, Tenn.; Manley Midgett, NSTA Director, District VI, and Meredith College, Raleigh, N.C.; David L. Evans, NSTA Executive Director, Arlington, Va.; Margie Hawkins, Program Coordinator, NSTA Nashville National Conference, and Winfree Bryant Middle School, Lebanon, Tenn.; Tanisha Wesby, Local Arrangements Coordinator, NSTA Nashville National Conference, and Shwab Elementary School, Nashville, Tenn.; Jason Sheldrake, NSTA Assistant Executive Director, Sales, Arlington, Va.

11:00 AM–12 Noon Meeting

GLBT Science Teachers Association Annual Meeting

Electric, Omni

The Gay, Lesbian, Bisexual, and Transgender Science Teachers Association’s annual meeting offers a voice for you! Plans for a meal together will be announced. More information? Contact srichlatl@yahoo.com.

11:00 AM–12 Noon Presentation

AMSE Session: Opening the Gateway to Success Using Case Studies to Help Implement Scientific Concepts

(Grades 11–12)

Music Row 3, Omni

Science Focus: GEN, CCC2, SEP4, SEP5, SEP7

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.

11:00 AM–12 Noon Exhibitor Workshops

Project-Based Activities with Wireless Sensors to Meet Gas Laws and Stoichiometry Chemistry Standards

(General)

206 A/B, Music City Center

Science Focus: PS, SEP

Sponsor: PASCO scientific

Jason Lee (mrlee3@att.blackberry.net), East Georgia State College—Statesboro

Incorporate science and engineering practices as students develop an understanding of gases and stoichiometric calculations using SPARKvue and Wireless Temperature and Pressure sensors. Project-based STEM activities integrate chemistry concepts that can aid in designing, testing, and evaluating student-built airbags. Twenty-five attendees will win a free wireless sensor!

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

(Grades 9–College)

210, Music City Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

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

12 Noon–1:30 PM Exhibitor Workshops

Stream Ecology: Slimy Leaves for Healthy Streams

(Grades 4–College)

107A, Music City Center

Science Focus: ESS3.C, ETS1.A, ETS1.B, LS2.A, SEP3, SEP4, SEP5, SEP6, SEP8

Sponsor: LaMotte Co.

Tara Muenz (tmuenz@stroudcenter.org), 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. Come learn from a Stroud Water Research Center scientist. Takeaways and a door prize!

11:05 AM–6:00 PM Exhibits

Hall B, Music City Center

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

11:30 AM–12:30 PM Exhibitor Workshop Build, Program, and Control with K'NEX Education's New Robotics Building System

(Grades 5–10)

108, Music City Center

Science Focus: ETS

Sponsor: K'NEX Education®

Robert Jesberg, K'NEX Education, Hatfield, Pa.

This dynamic hands-on building system teaches students how to apply programming skills to operate various built models. You'll be the student in this workshop as you write your own computer program to control a vehicle model built out of K'NEX! Space limited: 24 working, 20 observing. Arrive early!

What Is Amplify Science? Learn About the Newest K–8 Curriculum from The Lawrence Hall of Science

(Grades 1–8)

107B, Music City Center

Science Focus: GEN, NGSS

Sponsor: Amplify

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

Get a peek at concrete examples of what NGSS-designed instruction looks like and imagine how your classroom can be transformed through this technology-enhanced program.

Engineering Solutions in the STEM Classroom

(Grades 1–12) 109, Music City Center

Science Focus: ETS1

Sponsor: Accelerate Learning–STEMscopes

Pamela Caffery (pcaffery0217@gmail.com), Hillsborough County Public Schools, Tampa, Fla.

The E in STEM is about using the Engineering Design Process (EDP) to solve problems. Use the EDP to innovate a solution using consensus and collaboration. Join us for this interactive, engaging, and hands-on workshop where the EDP is investigated for implementation in your classroom.

Body of Evidence: A Forensic Science Mystery!

(Grades 6–12) 110A, Music City Center

Science Focus: LS

Sponsor: Texas Instruments

Diane France, Human Identification Laboratory of Colorado, Fort Collins

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

What can we learn from decomposing corpses? A lot! Join us for a hands-on lesson developed by Texas Instruments and

the National Academy of Sciences with help from forensic anthropologist Dr. Diane France. This lesson combines science, Hollywood, and STEM careers into one easy-to-follow lesson and is part of the STEM Behind Hollywood program—free at www.stemhollywood.com.

Using the Pearson Virtual Laboratories to Implement the NGSS

(Grades 9–12)

110B, Music City Center

Science Focus: LS, PS

Sponsor: Pearson Education

Brian Woodfield, Brigham Young University, Provo, Utah
Discover new research that demonstrates how the Pearson Virtual Laboratories are highly effective in satisfying the NGSS core requirements. These labs teach students how to actually DO science. Examples will be discussed on how to implement the virtual labs for chemistry, biology, physics, and physical science.

NSTA District Director and Chapter/Associated Group Social

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.



Friday, April 1
1:30–2:30 PM
Music City Center Exhibit Hall

NSTA National
Science
Teachers
Association

Building an Electric Motor the STEM Way with CPO's Link™ Learning Module

(Grades 6–12)

201A, Music City Center

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

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

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

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

(Grades 5–8)

201B, Music City Center

Science Focus: ESS3

Sponsor: Delta Education/School Specialty Science—FOSS

Virginia Reid and **Jessica Penchos**, The Lawrence Hall of Science, University of California, Berkeley

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

Crosscutting Concepts and Argumentation Using Magnets and Electromagnetism

(Grades 3–7)

202A, Music City Center

Science Focus: PS2, PS3, CCC

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Delta Education Specialist, Midway, 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 doing activities using magnets and electromagnetism. The activities in this workshop relate to the NGSS performance expectation 3-PS2-3, Motion and Stability: Forces and Interaction.

Awesome, Engaging, and Motivating STEM Activities

(Grades P–2)

202B, Music City Center

Science Focus: ESS, PS, CCC, SEP

Sponsor: Houghton Mifflin Harcourt

Michael DiSpezio, Author and STEM Specialist, North Falmouth, Mass.

Join Michael for an entertaining, motivating, and practical hands-on workshop that offers a variety of classroom activities in STEM. Model processes and structures as you gather, analyze, and interpret data that explores grade-band concepts in motion, magnetism, sky objects, and weather.

No Great Science Student (NGSS) Left Behind with NexGen Inquiry™

(General)

202C, Music City Center

Science Focus: GEN, NGSS

Sponsor: Van Andel Education Institute Science Academy

Jim Nicolette (jim.nicolette@vai.org) and **William Dinkelmann** (bill.dinkelmann@vai.org), Van Andel Education Institute Science Academy, Grand Rapids, Mich.

Learn how NexGen Inquiry's affordable, intuitive, and powerful software supports your curriculum and three-dimensional learning called for in the NGSS. Built by teachers for teachers, our web-based platform supports implementation of a research-based instructional model. Drawings for free subscriptions included. Bring your device, create your account, and get started.

Genetics Brought to Life: Gene-ius Model Organisms

(Grades 9–College)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Looking to breathe new life into your genetics activities, but not sure where to start? Combine model organisms such as *Drosophila*, corn, and Wisconsin Fast Plants® with hands-on activities to create engaging and impactful lessons. Demonstrate key concepts and prevent misconceptions.

EQuIP Your District for NGSS

(Grades K–8)

205A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Making the transition to the new science standards is not as simple as implementing a different curriculum. A process must be designed and implemented for a district to move to the new NGSS—whether they are traditional textbook, inquiry based, or kit users. Carolina and content partners at the Smithsonian Science Education Center will share outlines

of what districts should consider as they make the paradigm shift as well as how to evaluate appropriate instructional materials using the EQuIP rubric. Join us for this “How to Get Started” guide, participate in NGSS model lessons, and practice evaluating.

Strawberry Milkshakes: DNA and Lactose Intolerance
(Grades 6–12) 205B, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Introduce middle school students to the fascinating world of molecular biology through age-appropriate hands-on activities. They’re designed to make challenging abstract concepts (including DNA, genes, and enzymes) more concrete—and to make biology fun. This workshop is presented in partnership with the DNA Learning Center.

Using Climate Proxies to Learn About Earth’s Climate History

(Grades 9–12) 205C, Music City Center

Science Focus: ESS2.D

Sponsor: LAB-AIDS®, Inc.

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

How can scientists tell what Earth’s climate was like thousands of years before human measurements? This activity simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Your students will analyze and graph samples of replicas of these organisms, and use this information to determine relative warm and cold periods in the past 200,000 years. This activity is from *EDC Earth Science*, a new NSF-supported high school Earth science program from LAB-AIDS that uses an active, data-oriented approach to the study of Earth science and Earth systems.

Introduction to BioBuilder

(Grades 9–12) 207A, Music City Center

Science Focus: ETS, LS

Sponsor: Ward’s Science

Michelle Pagani, VWR Science Education, Rochester, N.Y.

Get a firsthand look at BioBuilder, the real-world learning kits founded in 2007 at MIT in response to requests from policy-makers, environmental groups, and the media for a resource that teaches basic biology and engineering concepts used for solving real-world problems with science.

Use Free Biointeractive Resources to Build Evolutionary Trees from DNA Sequence Data

(Grades 9–College) 207B, Music City Center

Science Focus: LS4.A, LS4.B, LS4.C, SEP4, SEP6, SEP7

Sponsor: HHMI BioInteractive

Satoshi Amagai, HHMI BioInteractive, Chevy Chase, Md.

Cindy Gay, Steamboat Springs High School, Steamboat Springs, Colo.

Mark Eberhard, St. Clair High School, St. Clair, Mich.

At *BioInteractive.org*, you can find free resources to introduce the concept of how to compare DNA sequences, explain how DNA fingerprinting works, and include exercises that use real DNA sequences from different species in order to generate an evolutionary tree that illuminates the evolutionary history of those species.

Biology with Vernier

(Grades 9–College) 207C, Music City Center

Science Focus: LS, SEP

Sponsor: Vernier Software & Technology

Rick Rutland (*info@vernier.com*), Five Star Education Solutions, Stockdale, Tex.

Use Vernier sensors to conduct a variety of biology experiments from our popular lab books in this engaging hands-on workshop. Collect and analyze data using LabQuest 2, Logger Pro computer software, and mobile devices. Explore the wide range of tools from Vernier that promotes understanding of biology concepts.

iPad and Wireless Sensors with Vernier

(Grades 3–College) 207D, Music City Center

Science Focus: GEN, SEP

Sponsor: Vernier Software & Technology

Verle Walters (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data helps students learn critical science concepts that increase test scores and promote science inquiry. This workshop will address data collection with iPads and Vernier technology, including our Go Wireless sensors. Experiments from Vernier lab books will be covered, including “Boyle’s Law” and “Grip Strength Comparison.”

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

(Grades 9–12)

209A, Music City Center

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

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

Join Flinn as we present new guided-inquiry experiments that support the learning objectives and skills your students need. Discover the benefits of preparing students for the first day of class with FlinnPREP™, a new online review of foundational chemistry concepts.

CONNECTIONS: Three-Dimensional Learning by National Geographic Explorers

(Grades 1–5)

209B, Music City Center

Science Focus: GEN, NGSS

Sponsor: National Geographic Learning

Tom Hinojosa, National Geographic Learning/Cengage Learning, Littleton, Colo.

See how National Geographic provides your students with new, relevant, and natural examples of the NGSS three dimensions of crosscutting concepts, disciplinary core ideas, and science and engineering practices through the research being done by explorers all around the world. Learn how to incorporate these models to guide your instruction and energize student interest in science.

Engineering in the NGSS: New Curricula for New Standards

(Grades 9–12)

209C, Music City Center

Science Focus: ETS1, CCC4, CCC5, CCC6, SEP1, SEP3, SEP6

Sponsor: It's About Time

Cary Sneider (csneider@pdx.edu), Portland State University, Portland, Ore.

The NGSS breaks from previous documents by including engineering design alongside scientific inquiry. Led by Cary Sneider, NGSS lead author, this workshop will illustrate how an innovative, project-based high school curriculum—Engineering the Future: Science, Technology, and the Design Process—is being revised and pilot tested to inspire students to pursue further learning in STEM and meet performance expectations in the NGSS.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

Orthopaedics In Action

(Grades 6–College)

212, Music City Center

Science Focus: ETS, LS, PS, INF

Sponsor: The Perry Initiative

Amy Trauth-Nare, University of Delaware, Newark

Jenni Buckley, The Perry Initiative, Newark, Del.

Orthopaedics In Action (OIA) is a set of unique stand-alone lessons for middle school and high school STEM classrooms that integrate concepts in biology, mathematics, physical science, and engineering. Lessons consist of hands-on biomechanics experiments and mock orthopaedic surgeries and include extensive NGSS-aligned lesson plans, slides, and student worksheets.

Discourse Tools for Equitable and Rigorous Talk

(Grades 5–8)

214, Music City Center

Science Focus: GEN

Sponsor: Activate Learning

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

The *Framework* promotes learning as a fundamentally social endeavor supported by collaborative and communicative norms. Yet, sustaining these norms requires all members to articulate, make sense of, and evaluate each other's ideas, making discourse tools vitally important. Walk away with ready-to-use tools that foster productive talk around big science ideas!

Bringing NGSS to the Classroom with Discovery Education

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN, SEP

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Silver Spring, Md.

One of the most important aspects of a quality NGSS curriculum is the opportunity for students to develop science and engineering practices. These types of skills are not explicitly taught, but must be developed by experience. Learn how the Discovery Education Science Techbook brings these experiences to the forefront.

12:30–12:50 PM Presentation

SCST Session: Growing a Writing-Across-the-Curriculum (WAC) Movement Through an Innovative STEM Collaboration

(College)

Ryman One, Renaissance

Science Focus: GEN, CCC1, CCC2, SEP2, SEP6

Kimberlee Daus (kim.daus@belmont.edu) and **Bonnie Smith-Whitehouse** (bonnie.smith@belmont.edu), Belmont University, Nashville, Tenn.

A multidisciplinary faculty group will describe their work on a mini-WAC initiative at their institution that focused on quantitative literacy, written communication, and critical thinking.



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WESTERN MICHIGAN UNIVERSITY
Online Education

12:30–1:00 PM Presentations

She Inspired Me with Science: A Theme-Based, Science-Inspired Curriculum in Elementary School

(Grades P–5) *104A, Music City Center*
Science Focus: GEN, SEP

Stephanie DiFrancesco (sdifrancesco@riverschool.net), The River School, Washington, D.C.

Inspire learning by creating an engaging classroom environment and cross-curricular activities based on science themes like River Monsters, Engineering Lab, or Train Like an Astronaut.

The Living Classroom: Turning Your Curriculum into an Outdoor Adventure Through Learning Gardens

(Grades P–4) *104B, Music City Center*
Science Focus: ESS, ETS, LS, PS, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7

Kristen Scrivens, Stony Lane School, Paramus, N.J.

What we can teach in the elementary classroom can be more meaningful when seen in the context of an outdoor environment. Discover how to turn your current curriculum into learning opportunities in an outdoor laboratory.

High-Adventure Science: Free Simulations Exploring Earth's Systems and Sustainability

(Grades 7–12) *106A, Music City Center*
Science Focus: ESS2, ESS3, CCC4, SEP7

Amy Pallant (apallant@concord.org) and **Sarah Pryputniewicz** (spryputniewicz@concord.org), The Concord Consortium, Concord, Mass.

Stephanie Harmon (@StephHarmon41; stephanie.harmon@rockcastle.kyschools.us), Rockcastle County High School, Mount Vernon, Ky.

Explore free classroom-tested secondary school curricula on climate change, freshwater sustainability, air pollution, land use, and hydraulic fracturing while exploring uncertainty as part of scientific argumentation.

Supporting Students with Learning Disabilities in the Middle School Science Classroom

(Grades 6–8) *Broadway J, Omni*
Science Focus: PS2.A

Gregory Taylor (email.gregory.taylor@gmail.com), Thurgood Marshall High School, Dayton, Ohio

I'll share findings from a qualitative analysis of a speed and velocity lesson and suggest research-validated instructional supports that help students with learning disabilities succeed.

Creating a Semi Self-Paced Classroom Without Killing the Teacher

(Grades 9–College) *Music Row 1, Omni*
Science Focus: GEN, NGSS

Christa Graham (@Grahamama5; cg4273@gmail.com), Knightdale High School of Collaborative Design, Knightdale, N.C.

Structure a mastery classroom and reduce your daily grading without changing your instructional approach. Organizational suggestions and samples of challenges and successes will be presented.

INF From the Classroom to the Community—How Informal Science Education Provides Opportunities for Teachers to Partner with Education Stakeholders in the Community

(General) *West Ballroom, Renaissance*
Science Focus: INF

Lawrence Perretto (@thestemcenter; lawrence@stemcenter.org), STEM Leadership Center, White Plains, N.Y.

Find out how science teachers are successfully partnering with education stakeholders in government, higher education, business, and nonprofit communities to transform informal science education.



12:30–1:00 PM Exhibitor Workshop**The Solid Earth***(Grades 5–8)**Booth #1114, Exhibit Hall*

Science Focus: ESS

Sponsor: Science First®/STARLAB®

Summer Price (summer.price@sciencefirst.com), Science First/STARLAB, Yulee, Fla.

Using the immersive learning environment of the portable dome and a lesson from the Earth science software *The Layered Earth*, we will discuss topics such as Earth's interior layers and surface features.

**12:30–1:30 PM Presentations****A Demo a Week Makes Science Class the Peak***(Grades 1–9)**101D, Music City Center*

Science Focus: PS1.A, PS1.B, PS2.A

Vinay Dulip (vdulip@yahoo.com), Foy H. Moody High School, Corpus Christi, Tex.

Robert Carter, Victoria Chavez, Mauricia Gallegos, Julissa Lopez, Andrew Macias, and Rushi Patel, Students, Foy H. Moody High School, Corpus Christi, Tex.

Thirty simple demonstrations will be performed with materials obtained locally. The selected demos will excite students' interest and challenge them to do higher-level thinking.

**Overcoming Geographical Barriers to Engaging with Scientists: I'm a Scientist USA***(Grades 4–12)**103B, Music City Center*

Science Focus: GEN, SEP1, SEP8

Tristan MacLean (@DrTristanMcLean; tristan@keepon-questioning.org), Keep on Questioning, Ithaca, N.Y.

Find out how to overcome geographical barriers and connect your students with scientists across America via an exciting and effective STEM engagement event.

**Visual Literacy: Using Observable and Inferred Evidence to Analyze and Interpret Information***(Grades P–12)**104C, Music City Center*

Science Focus: GEN

Julie Jackson (@ScienceToolkit; jj32@txstate.edu), Texas State University, San Marcos

Leave with strategies that support using observable and inferred evidence to analyze and interpret information.

Flipped Class 101: A User's Manual*(General)**106C, Music City Center*

Science Focus: GEN, NGSS

James Schreiner (jschreiner@bbchs.org) and **Tony Swafford** (@Mr_T_Swafford; tswofford@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, Ill.

Using our framework and software suggestions, you'll leave with the ability to begin flipping your classroom. With five years of experience, we'll get you started.

Magical Illusions and Scintillating Simulations for Science: It's Showtime!*(Grades 3–College)**Davidson A1, Music City Center*

Science Focus: GEN

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

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

A Neuroscience STEM Program for Middle School Students*(Grades 5–8)**Davidson A2/3, Music City Center*

Science Focus: LS, CCC, SEP

Nancy Moreno (nmoreno@bcm.edu), **Barbara Tharp** (btharp@bcm.edu), **Greg Vogt** (vogt@bcm.edu), **Beatriz Perez-Sweeney** (perezswe@bcm.edu), and **Christopher Burnett** (@tophb), Baylor College of Medicine, Houston, Tex.

By learning about their brains, students gain insights into learning. Learn how to “train your brain” and how this approach works in a STEM school.

NMEA Session: Starting a STEM Program in Your School on Next to Nothing

(Grades 6–8)

Davidson B, Music City Center

Science Focus: GEN, NGSS

Lisa Wininger (*lwininger@plainwellschools.org*), Plainwell Middle School, Plainwell, Mich.

Teacher-led STEM programs can offer students a wide range of learning experiences without a huge influx of cash. Find out how one program lets student fly, build underwater rovers, and create GIS projects, with grants, donations, and ingenuity.

Forensic Gravesite Excavation: How to Locate, Map the Site, and Process the Evidence

(Grades 9–College)

Broadway D, Omni

Science Focus: INF

Anthony Bertino (*abertino@nycap.rr.com*) and **Patria Nolan Bertino** (*nolanp@nycap.rr.com*), Retired Educators, Schenectady, N.Y.

How are gravesites located, mapped, and processed? How is evidence collected, documented, and photographed? Unearth how to develop this activity for your students. Handouts!

Putting STEAM Back into STEM: Challenging Students to Creatively Communicate Scientific Concepts to Public Audiences

(Grades 9–College)

Cumberland 4, Omni

Science Focus: ESS3, ETS2, LS1, LS2, LS4, CCC, SEP8

Larisa DeSantis (*larisa.desantis@vanderbilt.edu*), Vanderbilt University, Nashville, Tenn.

Derek DeSantis (*derekd@wes.edu*), Ravenwood High School, Brentwood, Tenn.

Learn effective approaches to challenge your students to write children's books, podcasts, and song lyrics that effectively communicate ecology and evolution to targeted audiences. Student examples provided.

Science for All Cultures: A Framework for Strengthening Science Teaching and Learning in Increasingly Challenging and Culturally Diverse Classrooms

(General)

Music Row 2, Omni

Science Focus: GEN

Gerry Madrazo Jr. (*gerrymadrazo@gmail.com*), 1993–1994 NSTA President, and Science Education Consultant, Gibsonville, N.C.,

Presider: Fred Johnson, 1997–1998 NSTA President, Cordova, Tenn.

Join the bandwagon as we traverse across our nation that is fast experiencing diverse learners in classrooms in inner

cities, rural areas, and numerous states. Walk a mile in those cultural moccasins as we contextualize a constructivist climate and culture.

AMSE Session: How the Science of Polymers and the Making of Tires Roll into the Next Generation Science Standards

(Grades 3–12)

Music Row 3, Omni

Science Focus: ETS, PS, CCC, SEP

Robert Ferguson (*r.l.ferguson1@csuohio.edu*), AMSE President, and Cleveland State University, Cleveland, Ohio

Experience lessons designed to differentiate instruction and integrate the three dimensions in the NGSS—science and engineering practices, disciplinary core ideas, and crosscutting concepts—based on polymer science and the making of tires.

NSELA Session: Leadership Strategies for Ensuring Each Student Has a STEM Future

(Grades K–12)

Music Row 4, Omni

Science Focus: GEN, NGSS

Bob Sotak (*bsotak@mac.com*), Science/STEM Education Consultant, Edmonds, Wash.

Brian Day (*bday@everettsd.org*), Everett (Wash.) Public Schools

Engage in strategies and tools used to implement a district-wide STEM program impacting each student. Learn how to move from providing science literacy to ensuring a STEM future.

NASA Airborne Science Missions Can Bring Science and Scientists to Your Classroom

(Grades 6–12)

Center Ballroom, Renaissance

Science Focus: ESS2, LS2, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6

Julie Bookman (*jbookman76; jbookman@avhsd.org*), Palmdale High School, Palmdale, Calif.

Learn how NASA aircraft and science missions can bring interest and excitement to your science classroom. Track flights and connect with scientists during airborne science missions.

Designing Writing Tasks for the NGSS Classroom

(Grades 6–College)

East Ballroom, Renaissance

Science Focus: ESS2, ESS3, LS1.A, LS1.B, LS2.A, LS2.B, LS3.B, LS4.B, PS1.A, PS2.A, PS2.B, PS3.C, CCC2, CCC3, CCC4, CCC7, SEP6, SEP7, SEP8

Arthur Beauchamp (@Dr_Dialogue; acbeauchamp@ucdavis.edu), University of California, Davis

Constructing explanations, arguing from evidence, and communicating information are all central features of scientific discourse. Learn techniques supporting student writing in the manner intended by the NGSS.

ASTE Session: Integrated Middle Grades STEM Instruction

(Grades 5–8)

Fisk One, Renaissance

Science Focus: GEN, SEP

Pradeep Dass (@PradeepMDass; pradeep.dass@nau.edu), Northern Arizona University, Flagstaff

Come learn how to integrate science and mathematics using technology to foster student participation and experience in the NGSS science and engineering practices.

12:30–1:30 PM Hands-On Workshops



NSTA Press® Session: Reimagining the Science Department

(Grades 7–12)

101C, Music City Center

Science Focus: GEN, NGSS

Todd Campbell (@dtcampbe; todd.campbell@uconn.edu), University of Connecticut, Storrs Mansfield

Wayne Melville (wmelville@lakeheadu.ca), Lakehead University, Thunder Bay, Ont., Canada

We will reveal strategies for the collaborative work of departments supportive of NGSS implementation.



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Science By Design: Addressing Science Concepts Through Engineering

(Grades 5–8)

101E, Music City Center

Science Focus: ETS

Julie Alexander (jalexander@cpsk12.org), Smithton Middle School, Columbia, Mo.

Want to incorporate engineering? Worried about promoting an activity-mania classroom void of scientific content? Come learn ways to meaningfully incorporate engineering in your classroom.

3D Supporting Three-Dimensional Learning by Spiraling K–12 Students' Engagement with Phenomena

(Grades K–12)

103A, Music City Center

Science Focus: GEN, NGSS

Michelle Cotterman (michelle.e.cotterman@vanderbilt.edu), Vanderbilt University, Nashville, Tenn.

Come explore practical ways to spiral phenomena—from owl pellets to roller coasters—so that students' knowledge and practice builds across grade levels.



Creating a Sticky Curriculum: Integrating Science with Core Academic Subjects in the Preschool and Elementary Classroom

(Grades P–6)

103C, Music City Center

Science Focus: GEN, CCC, SEP

Katie Morrison (@ucds_seattle; katiem@ucds.org) and **Deb Chickadel** (@ucds_seattle; debc@ucds.org), University Child Development School, Seattle, Wash.

Investigate the interconnectedness of subjects and take away curriculum planning tools and implementation strategies for integrating science with core academic subjects.

Weather or Not?

(Grades K–3)

104D, Music City Center

Science Focus: ESS

Glenda Pepin (gpepin@clemson.edu) and **Pamela King** (pamelak@clemson.edu), Clemson University, Clemson, S.C. Explore weather patterns, observations, and cause and effect before designing and constructing a house able to withstand the weather conditions you are given.

Electrifying Your STEM and Language Arts Integration with Technology

(Grades 4–9)

104E, Music City Center

Science Focus: ETS

Megan Jenkins (@MrsMegJenkins; meganj@provo.edu) and **Alison Fuller** (alisonf@provo.edu), Westridge Elementary School, Provo, Utah

In this BYOD hands-on activity, you'll be able to experience firsthand a science, engineering, language arts, and technology integration lesson.

CESI Session: Building Towers and Structures! Using the Engineering Design Process with Young Children!

(Grades P–4)

105A, Music City Center

Science Focus: ETS1, CCC1, CCC2

Anne Durrance (@sugaranne49; anne.durrance@gmail.com), Dale County Schools, Ozark, Ala.

Construction of building materials involves many elements of play. Children must plan, create/re-create, and test their creation. In this session, the engineering design process is introduced through several children's books (taken from NSTA's *Picture-Perfect Science* series) followed by several hands-on challenges!

Art in Science? YES!

(Grades 2–8)

105B, Music City Center

Science Focus: GEN, NGSS

Sherry Scott (@TTUsherryscott; swscott@tntech.edu) and **Perihan Fidan**, Tennessee Tech University, Cookeville

Draw your students into learning by including art in your science class. See a variety of examples and be prepared to make some as well!

NGSS: A Model for the Engineering Design Process

(Grades 4–8)

106B, Music City Center

Science Focus: ESS3

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

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

The Fifth Quintile

(Grades 6–12)

Broadway A, Omni

Science Focus: GEN

Sarah White (@wscCOsew; sarahw@wcs.edu), Williamson County Schools, Franklin, Tenn.

What do you do when your top students aren't reaching their potential? Form a Science Teacher Think Tank Action Group—come learn more!

Engaging Students in Environmental Health Issues Using Inquiry-Based Instruction

(Grades 7–12)

Broadway B, Omni

Science Focus: LS2.A, LS2.C, LS3.A, CCC2, CCC5, CCC6, SEP2, SEP4, SEP5, SEP8

Caitlin Ullock (@cullock; caitlin_ullock@pittsford.monroe.edu), Pittsford Mendon High School, Pittsford, N.Y.

Mary Keymel (mkeymel@avoncsd.com), Avon High School, Avon, N.Y.

Explore environmental health issues such as pesticide poisoning and cancer using easy-to-assemble kits. Each activity includes a literacy component, simulated lab tests, and an emphasis on modeling scientific concepts. Activities can be integrated into multiple units such as genetics, environmental issues, and body systems. More activities available at the Life Sciences Learning Center: www.lifesciences.envmed.rochester.edu.

Do You See What I See?

(Grades 6–12)

Broadway C, Omni

Science Focus: LS

James Clark (@Sci_innovations; jclark@slzud.org) and **Samantha Johnson** (smjohnson@slzud.org), Arroyo High School, San Lorenzo, Calif.

We will demonstrate how students can use modeling and data analysis to show their knowledge of various concepts in biology. Take home a goody bag and ready-made lesson plans that can be used immediately.

Scaffolding for Argumentation

(Grades 6–12)

Broadway H, Omni

Science Focus: GEN, SEP7, SEP8

Caryn Meirs (@caryn_meirs; caryn.meirs@gmail.com), Half Hollow Hills Central School District, Dix Hills, N.Y.

Susanne Hokkanen (susanne.hokkanen@gmail.com), Elementary School District 159, Matteson, Ill.

Argumentation is an important skill, but students often need help to join the conversation. Multiple scaffolding templates and ideas will be shared and practiced.

This Might Flip You Out! Create a Toy That Makes a Character Somersault When You Squeeze the Handles

(Grades 5–8)

Broadway K, Omni

Science Focus: ETS1.A, ETS1.B, PS2.A, PS2.C, PS3.B, PS3.C, CCC2, CCC3, CCC5, CCC6, SEP1, SEP3, SEP6, SEP7, SEP8

Gary Benenson (benenson@ccny.cuny.edu), The City College of New York, N.Y.

Cherubim Cannon (cherubimcannon@aol.com) and **Janice Porter** (porter42b@aol.com), P.S. 005 Dr. Ronald McNair, Brooklyn, N.Y.

Jody Hilton (jomihill@aol.com), Christopher Avenue Community School, Brooklyn, N.Y.

Donna Johnson (djohnson11@schools.nyc.gov), Crispus Attucks Elementary School 21, Brooklyn, N.Y.

Reverse engineer this traditional toy from Latin America and use it to develop concepts of force, energy, gravity, tension, and simple machines.

Hit the Ground Running

(Grades 9–12)

Cumberland 1, Omni

Science Focus: PS2.C, CCC6, SEP1, SEP3, SEP4, SEP5, SEP6

Aaron Osowiecki (aosowiecki@bostonpublicschools.org) and

Jesse Southwick (jesse.southwick@gmail.com), Boston Latin School, Boston, Mass.

Help students build an understanding of measurement, units, and unit conversion with their own data obtained using measuring devices they design and build.

How Are Science Teachers and Librarians Collaborating to Use Nonfiction Text and E-Content to Support STEM Instruction and Professional Learning?

(Grades P–12)

Cumberland 2, Omni

Science Focus: GEN, INF

Christine Mazza (cmazza4@schools.nyc.gov), NYCDOE Environmental Study Center, Brooklyn, N.Y.

Science and literacy educators are teaming up to integrate hands-on STEM experiences coupled with digital literacy through an innovative partnership model. Join us to learn more.



—courtesy of Jacob Slaton

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

(General)

Cumberland 3, Omni

Science Focus: GEN, SEP6

LaMoine Motz (llmotz@comcast.net), 1988–1989 NSTA President, and Motz Consultant Group, White Lake, Mich.
Sandra West (sw04@txstate.edu), Texas State University, San Marcos

Juliana Texley (jtexley@att.net), NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.

So you want new science facilities? Does your curriculum define your science teaching facility? With more than 20 years of conducting visits and presentations of new/renovated school science facilities, the author team of *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present the “basics” of science facility planning for safe, ergonomically designed, and sustainable facilities.

STEM Rocks! Discover the Excitement of Geoscience Research in Antarctica

(Grades 1–12)

Cumberland 5, Omni

Science Focus: ESS, INF

Betty Trummel (boop82@aol.com), Husmann Elementary School, Crystal Lake, Ill.

Explore geoscience activities and materials produced as a result of an exciting partnership between the scientists and educators of the ANDRILL (Antarctic DRILLing) Program.

Looking for a Way to Teach Matter and Energy Through a Model-Based Approach?

(Grades 7–10)

Cumberland 6, Omni

Science Focus: GEN, SEP2, SEP6

Wendy Johnson (@WendyJohnsonMI; john3062@msu.edu), Michigan State University, East Lansing

MaryMargaret Welch (mmwelch@seattleschools.org), Seattle (Wash.) Public Schools

Join us for a hands-on introduction to the investigations, animations, videos, and activities of a new free research-based NGSS-focused curriculum—Carbon TIME (Transformations in Matter and Energy).

PLI ADI Pathway Session: Helping Students Learn to Argue from Evidence with Argument-Driven Inquiry

(Grades 6–12)

Legends A, Omni

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

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

Patrick Enderle (patrick.enderleadi@gmail.com), Georgia State University, Atlanta

Discover how to use argument-driven inquiry as a way to help students learn how to argue from evidence in a scientific manner.

What’s in Your Tech Toolbox?

(Grades 6–11)

Legends C, Omni

Science Focus: GEN

Julie Stefanick (@JulieSDyess; juliesdyess@gmail.com), League City Intermediate School, League City, Tex.

Whether you are new to technology or looking for new ways to incorporate technology to improve scientific literacy, this workshop will provide ideas for easy integration.

INF ASTC Session: Sparking STEM Innovation with Arts-Based Learning

(Grades 7–College)

Legends E, Omni

Science Focus: INF, CCC1, CCC2

Harvey Seifter (@artSTEM; hseifter@artofsciencelearning.org), The Art of Science Learning, New York, N.Y.

Let’s take a look at the outcomes of 28 cross-disciplinary teams working with an arts-based innovation process. Come experience an arts-based ideation/modeling process in action.

Educator’s Guide to Bloodstain Pattern Analysis: Real-World Science!

(Grades 7–College)

Legends F, Omni

Science Focus: ETS2.B, PS2.A, CCC1, CCC2, SEP

Kathy Mirakovits (@kmirakovits; kmirakovits@portageps.org), Portage Northern High School, Portage, Mich.

Entice and engage students to use science and problem solve! Blood spatter analysis is a student favorite and it uses science practices and mathematics...a win-win!

Biology by Numbers: Math and Life Science Are Better Together!

(Grades 9–12)

Legends G, Omni

Science Focus: LS, CCC, SEP

Kelly Sturmer (@Soilgirl18; kmoran@nimbios.org), NIMBioS, Knoxville, Tenn.

Susan Riechert (rieichert@utk.edu), The University of Tennessee, Knoxville

Whether you and your students are math wizards or math phobic, it's easier than you think to infuse quantitative skills and *CCSS Mathematics* into your life science classroom. Join us for ways to go beyond the “let’s add a graph” approach.

NARST Session: Writing-to-Learn Activities to Support Argumentation Skills of Undergraduate Biology Students

(Grades 11–College)

Fisk Two, Renaissance

Science Focus: LS

Meena Balgopal and **Paul Laybourn** (paul.laybourn@colostate.edu), Colorado State University, Fort Collins

Alison Wallace (wallacea@mnstate.edu) and **Ellen Brisch** (brisch@mnstate.edu), Minnesota State University Moorhead

We will share our writing-to-learn activities designed for undergraduate biology students. Our goals are to improve student learning outcomes and argumentation skills through guided writing.

“Don’t simply retire from something; have something to retire to.” —Harry Emerson Fosdick

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 2
9:30–10:30 AM**

Omni Nashville Hotel, Music Row 3

For more information on the Retired Members Advisory Board, contact Linda Smith, chair, at elementary.science.teacher@gmail.com.

NSTA National Science Teachers Association



12:30–1:30 PM Exhibitor Workshops

Environmental Science Using Wireless Sensors

(Grades K–12)

206 A/B, Music City Center

Science Focus: ESS

Sponsor: PASCO scientific

Ryan Reardon (rreardon71@gmail.com), Shades Valley High School, Birmingham, Ala.

PASCO's new wireless sensors can enhance your environmental science labs! Get hands on with the Wireless Temperature and pH sensors that connect directly to your computer, tablet, or phone and can log data autonomously for environmental monitoring. Twenty-five attendees will win a free wireless sensor!

Using Biotechnology to Diagnose HIV/AIDS

(Grades 9–College)

210, Music City Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

The Human Immunodeficiency Virus (HIV) causes acquired immune deficiency syndrome (AIDS), a serious disease that suppresses a patient's immune system, leaving them susceptible to infections. In this simulation, we'll perform two common tests (western blot, ELISA) used by doctors to diagnose an HIV infection. Attendees receive a free gift!

12:30–2:30 PM Meetings

Science & Children Advisory Board Meeting

Broadway E/F, Group 1, Omni

Science Scope Advisory Board Meeting

Broadway E/F, Group 2, Omni

The Science Teacher Advisory Board Meeting

Broadway E/F, Group 3, Omni

Journal of College Science Teaching Advisory Board Meeting

Broadway E/F, Group 4, Omni

NSTA Reports Advisory Board Meeting

Broadway E/F, Group 5, Omni

Professional Development in Science Education Committee Meeting

Broadway E/F, Group 6, Omni

Preservice Teacher Preparation Committee Meeting

Broadway E/F, Group 7, Omni

Multicultural/Equity in Science Education Committee Meeting

Broadway E/F, Group 8, Omni

Coordination and Supervision of Science Teaching Committee Meeting

Broadway E/F, Group 9, Omni

Awards and Recognitions Committee Meeting

Electric, Omni

Informal Science Education Committee Meeting

Mockingbird 4, Omni



12:30–2:30 PM Hands-On Workshop

NGSS Toolkit Pathway Session: Using a Tool and NGSS Performance Expectations to Plan for Classroom Assessments

(Grades 6–College)

Legends B, Omni

Science Focus: GEN, NGSS

Dora Kastel (@dora_AMNH; dkastel@amnh.org), American Museum of Natural History, New York, N.Y.

Jo Topps (jtopps@wested.org), K–12 Alliance/WestEd, San Francisco, Calif.

Use a tool to engage in a process that deepens understanding of NGSS performance expectations to consider evidence of learning and plan for classroom assessment.

12:50–1:10 PM Presentation

SCST Session: Incorporating Reflective Journals in College Science Classrooms to Effectively and Harmoniously Bridge Science and Religion

(Grades 6–College)

Ryman One, Renaissance

Science Focus: GEN, CCC1, CCC2

Renee Clary (rclary@geosci.msstate.edu), Mississippi State University, Mississippi State, Miss.

Reflective journals respectfully record students' philosophical/religious views, providing an outlet for their opinions. Learn how journaling prompts before an evolutionary topic discussion facilitated teacher understanding and student satisfaction.



FLINN

Morning of Chemistry

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Over a Dozen Demonstrations that Educate and Entertain

Presented by:

Paul Price
Trinity Valley School

Jesse Bernstein
Miami Country Day School

Where:
Music City Convention Center
Davidson Ballroom C

When:
Friday, April 1, 2016
10:00 – 11:45 am

1:00–1:30 PM Presentations

Using Comics to Enhance Science Journals: NGSS Meets CCSS Writing

(Grades 1–5)

104A, Music City Center

Science Focus: GEN, NGSS

Kimber Hershberger (kmbhrhersh1109@gmail.com), Pennsylvania State University, University Park

Deana Washell (dmw11@scasd.org), Easterly Parkway Elementary School, State College, Pa.

Learn scaffolds for integrating science practices and informational writing standards. Comics motivate students to write like scientists while further explaining their understanding of the content.

I'm All About the "E"...More STEM: Discovering Elementary Engineering with the 5E Model

(Grades K–6)

104B, Music City Center

Science Focus: GEN, SEP

Eric Rank (@rank_mr; ericrank@gmail.com), Celentano Biotech Health and Medical Magnet School, New Haven, Conn.

Stephanie White (@S_White_QSTEM; stephanie.white@new-haven.k12.ct.us), Quinnipiac Real World Magnet Math STEM School, New Haven, Conn.

Are you afraid of the "E" in STEM? You don't need to be a professional engineer to discover how it will transform your K–6 classroom. Engage in hands-on activities that follow the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) model and design process.

Ecojustice Showcase: Middle Schoolers Sharing Their Environmental Research with Their Communities

(Grades 6–12)

106A, Music City Center

Science Focus: ESS3.C, ESS3.D, ETS2, LS2.A, LS2.B, LS4, CCC2, SEP1

Stuart Fleischer (sfleischer@wbais.net), American International School in Israel, Even Yehuda

Randy Spaid (randy.spaid@mga.edu), Middle Georgia State University, Macon

Middle school students analyze and share how extreme fluctuations in conditions can challenge the functioning of an ecosystem's biodiversity.

Getting Students to Love Science Again Through Daily Discovery Activities!

(Grades 6–9)

Broadway J, Omni

Science Focus: GEN, SEP

Gayle Dowdle (@mrsdowdle; gayle.dowdle@jordandistrict.org), Fort Herriman Middle School, Herriman, Utah

Use investigations and student summary of findings to replace traditional lecture time and notes and see students excel in and enjoy science again!

Authentic Science Research in the High School Classroom

(Grades 10–College)

Music Row 1, Omni

Science Focus: ESS1.A, PS3.A, PS3.B, PS4, CCC1, CCC2, CCC3, CCC4, SEP

Thomas Rutherford (@sternwachter; sternwachter@netscape.net), Sullivan South High School, Kingsport, Tenn. Science research has been occurring at Sullivan South High School since 2005—resulting in 15 student publications in peer-reviewed journals and two poster presentations at national conferences.

INF The Power of Initiative—Just Ask

(Grades 4–12)

West Ballroom, Renaissance

Science Focus: INF, CCC3, CCC4, CCC5, CCC6, CCC7, SEP

Trey Joyner (@t3joyner; treyjoyner@gmail.com), Baylor School, Chattanooga, Tenn.

With a little initiative, community partnerships evolve naturally. Come learn how a few standards-rich ideas become real-world connections.



1:00–4:30 PM Meeting

Teaming Up for STEM: District Leaders Session

(By Invitation Only)

101 A/B, Music City Center

NSTA is grateful to Chevron (www.chevron.com/education) for sponsoring this session.

1:10–1:30 PM Presentation

SCST Session: Altering Students' Alternative Conceptions About Science and Scientific Theories

(College)

Ryman One, Renaissance

Science Focus: GEN, NGSS

Jill Bucher (madsci122@gmail.com), Peoria Notre Dame High School, Peoria, Ill.

Laura Barden-Gabbei (lm-barden@wiu.edu), Western Illinois University, Macomb

Participants will examine college students' alternative conceptions of the nature of science and the roles of theories, hypotheses, and laws in science.

1:30–2:30 PM Exhibitor Workshop

Forensic DNA Activities and More with K'NEX Education's DNA, Replication, and Transcription Set

(Grades 7–12)

108, Music City Center

Science Focus: LS

Sponsor: K'NEX Education®

Robert Jesberg, K'NEX Education, Hatfield, Pa.

CSI has heightened students' interest in forensics and DNA fingerprinting. Let's build on that interest to strengthen their understanding of DNA concepts and processes. You will build actual K'NEX Education DNA models to examine a DNA ladder, structure, the double helix, and more. We'll also explore mRNA, replication, transcription, and translation.

1:30–4:30 PM Short Courses

3D Juggling It All: Teaching NGSS in Elementary Grades (SC-1)

(Grades K–5) Tickets Required; \$28 Capitol 1, Sheraton
Science Focus: GEN, CCC1, CCC6, SEP6

Carla Zembal-Saul (@czem; czem@psu.edu), Pennsylvania State University, University Park

Kathy Renfrew (kathy.renfrew@vermont.gov), Vermont Agency of Education, Barre

Mary Starr (@starrscience; mary@starrscience.com), Michigan Mathematics and Science Centers Network, Plymouth
For description, see page 54.

Ocean Plastic Pollution: Issues and Solutions (SC-2)

(Grades 6–8) Tickets Required; \$36 Capitol 2/3, Sheraton
Science Focus: ESS3.C

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

For description, see page 54.



Using Found Objects to Teach Important Science Content and Skills (SC-3)

(Grades P–2) Tickets Required; \$53 Suite 5A, Sheraton
Science Focus: LS1.B, PS1.A, PS2.A

Bob Williams, Consultant, Belmont, Tex.

Mary Hobbs (maryhobbs@utexas.edu), Center for STEM Education, The University of Texas at Austin
For description, see page 54.

1:30–5:30 PM Short Course

Engineering a Story: Integrating Engineering Practices with Literacy (SC-4)

(Grades P–8) Tickets Required; \$45 Capitol 4, Sheraton
Science Focus: ETS1, SEP1, SEP4, SEP6, SEP7, SEP8

Mia Dubosarsky (mdubosarsky@wpi.edu), The STEM Education Center at WPI, Worcester, Mass.

For description, see page 55.



—courtesy of Jacob Slaton

2:00–2:20 PM Presentation

SCST Session: Assessing the Effect of Instructional Strategies on Student Engagement in a Flipped Classroom

(Grades 9–College)

Ryman One, Renaissance

Science Focus: GEN, CCC1, CCC2

Cara Stephens and **Donald French** (dfrench@okstate.edu), Oklahoma State University, Stillwater

What are your students doing when you try to engage them in class? Come see what we learned through direct quantitative observations of student behavior.

2:00–2:30 PM Presentation

Creativity, Collaboration, and Innovation: Using a 3D Printer to Energize Your Teaching

(Grades 4–12)

East Ballroom, Renaissance

Science Focus: GEN

Diane Ripollone (@rippie77; dripollone@cghsnc.org), Cardinal Gibbons High School, Raleigh, N.C.

With 3D printers—creativity, collaboration, and innovation all thrive! Join me as I address finding funding, time, and resources for 3D printing in your classroom.

NSTA YOUNG PROFESSIONAL AND NEW TEACHER RECEPTION



Preservice and new teachers are invited to attend this fun and interactive networking session. The reception will include short presentations offering tips on how to excel in the classroom from both new and preservice teachers as well as NSTA Student Chapter leaders. An overview on NSTA resources geared to preservice and new teachers will also be presented. Refreshments and hors d'oeuvres will be served as you network with your peers.

Thursday, March 31

4:00–5:30 PM

Omni Nashville Hotel, Broadway B

NSTA National
Science
Teachers
Association

2:00–3:00 PM Featured Panel



It Takes a Village: A Panel on Partnerships from Multiple Perspectives

(General)

Science Focus: GEN

102 A/B, Music City Center



J. Wesley Hall



Aimee Kennedy



Oliver “Buzz” Thomas



James McIntyre, Jr.

Moderator:

J. Wesley Hall (@WesleyHall; hallj@battelle.org), Director, Tennessee STEM Innovation Network (TSIN), Nashville

Panelists:

James McIntyre Jr. (@knoxschoolsupt), Superintendent, Knox County Schools, Knoxville, Tenn.

Aimee Kennedy (kennedy@battelle.org), Vice President for Education, Philanthropy, and STEM Learning, OSLN@ Battelle, Columbus, Ohio

Oliver “Buzz” Thomas (bthomas@greatschoolspartnership.com), President, Great Schools Partnership, Knoxville, Tenn. Presider: Becky Ashe, Conference Chairperson, NSTA Nashville National Conference, and L&N STEM Academy and Knox County Schools, Knoxville, Tenn.

Today’s educators are faced with expanding challenges of developing the whole child, including providing STEM experiences, awareness, and authentic learning opportunities. Schools cannot succeed at this important task by operating in a vacuum. Just as most scientific advances are the result of collaborative team efforts, schools and systems must reach out to the larger community of stakeholders for assistance. Join this panel of experts who run systems and organizations from local, state, and national levels to hear what being a “partner” means to them. Attendees can actively participate in real time using digital feeds to pose questions for the moderator to address to the experts...so be sure to bring a smart device.

Moderator J. Wesley Hall serves as the director of Client Engagement for the Tennessee STEM Innovation Network, overseeing operations. Before joining the TSIN, he managed the Tennessee Higher Education Commission’s STEM Race to the Top initiatives, focusing on replication of the UTeach model and STEM professional development grants. Wesley holds a master’s degree in public administration from the University of Tennessee, Knoxville.

Aimee Kennedy began her teaching career in Canton City Schools in Ohio, and held a variety of leadership roles from the classroom. She was the groundbreaking STEM leader as principal and chief academic officer at the Metro School (an Ohio STEM Learning Network platform school) located on The Ohio State University Campus, before moving to her current position with Battelle Memorial Institute in 2013. Aime is a tireless supporter of reform in schools, particular in STEM-related areas, and her work now centers around bringing high-quality STEM programming to all students through partnerships that bring effective curriculum, instructional strategies, and innovative delivery of content for tomorrow’s workforce.

Oliver “Buzz” Thomas has taught First Amendment Law at Georgetown University Law Center, served on a local school board, and even served as its chairperson. He has authored and co-authored numerous books and publications and is a columnist and member of the Board of Contributors of USA Today. As an attorney, Buzz has practiced at every level of state and federal courts, including the U.S. Supreme Court; as a minister, Rev. Thomas has served churches in Tennessee and Louisiana. Most recently he co-founded and served as executive director of the Niswonger Foundation before moving to his current position as president of the Great Schools Partnership.

James McIntyre, Jr. taught at Grey Alternative High School in East St. Louis before holding several leadership positions in Boston Public Schools up to Chief Operating Officer. James was appointed superintendent of Knox County Schools in 2008. As superintendent, he has revitalized the system’s magnet program and opened two new high schools focused on STEM pathways to graduation. He has worked alongside local and state businesses and organizations to direct resources that have resulted in a partnership between the K–12 school system and a community college for students to graduate with their high school diploma and Associates Degree concurrently in Homeland Security, Sustainable Living, and Advanced Manufacturing.

2:00–3:00 PM Presentations



NSTA Press® Session: Uncovering Preservice and K–12 Teachers' Ideas About Science

(General)

101D, Music City Center

Science Focus: GEN

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

Christine Anne Royce (@caroyce; caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

Come see examples of how the *Uncovering Student Ideas in Science* series and formative assessment strategies are used to support practicing and future teachers' learning about science content and conceptual change pedagogy.



Impactful Implementation of Argument and Inquiry in High School Chemistry and Biological Sciences

(Grades 9–12)

101E, Music City Center

Science Focus: LS, PS, SEP

Tami Russell (@ScienceIsFUN4us; tami.russell@knoxschools.org), Knox County School District, Knoxville, Tenn.

Kerri Miralles (@ScienceIsFUN4us; kerri.miralles@knoxschools.net), Hardin Valley Academy, Knoxville, Tenn. Find out how to easily plan and implement inquiry and argumentation in biological sciences and chemistry—you CAN do it! We will show you how!



Using the EQuIP Rubric to Analyze a Digital Lesson for Three-Dimensional Learning with Neurobiology and Clinical Trial Connections

(Grades 8–12)

103A, Music City Center

Science Focus: LS

Lynn Lauterbach (lynnlauterbach@gmail.com), Retired Teacher, Loveland, Colo.

Kristi Bowling, Rice University Center for Technology in Teaching and Learning, Houston, Tex.

See how we used the EQuIP rubric to determine if a free online program reinforcing science practices, neurobiology, and the clinical trials process supports the NGSS three dimensions.

Science Comes Alive in Stories, Video, E-Books: Integrating STEM, Literacy, Creativity, and Media

(Grades P–2)

104B, Music City Center

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

Susie Vanderlip (@MonarchSpeaker; susie@storyofchester.com), LEGACY, Orange, Calif.

Hear about the Butterfly Life Cycle science for K–2 using storybooks, photography, and video from a monarch butterfly citizen scientist. Have your young students experience life science in their own backyard.

Here Comes the Sun...an Interactive Approach to Weather in Middle School

(Grades 7–8)

Davidson A2/3, Music City Center

Science Focus: ESS3.C, CCC5, SEP2, SEP4, SEP7

Laura Pratt (lpratt@etsd.org) and **Lisa Barry** (lbarry@etsd.org), Essex Middle School, Essex Junction, Vt.

We will share classroom activities, iPad apps, websites, and Google Docs that were used for a middle school science lesson on weather. Based on the NGSS, students learn about weather by creating a weather report, viewing live weather sites, and creating a bid for the next Winter Olympics.

NMEA Session: Ocean Literacy—Identifying Constructs That Go Beyond Content Knowledge

(Grades 5–College)

Davidson B, Music City Center

Science Focus: ESS, CCC

Timothy Goodale (tagoodal@ncsu.edu), North Carolina State University, Raleigh

Ashley Day, West Green Elementary School, West Green, Ga. One's literacy in scientific areas goes beyond content knowledge. We will go in-depth into ocean literacy and examine ways to assess how “literate” various stakeholders may be.

Making Meaning in Science for All Children: Language and Discourse

(Grades 6–12)

Acoustic, Omni

Science Focus: GEN

Theresa Robinson (@TRobinson3000; theresa.robinson@elmhurst.edu), Elmhurst College, Elmhurst, Ill.

Developing learners who are engaged and motivated to learn science can be challenging. African-American and Latino/Hispanic language and cultural norms can be used to promote academic language development needed for science understanding.

Safety Advisory Board Roundtable: Listening and Addressing Your Safety Issues!

(General)

Broadway A, Omni

Science Focus: GEN

Mary Loesing (mloesing@yahoo.com), NSTA Director, District IV, and Connetquot Central School District, Bohemia, N.Y.

Kenneth Roy (@drroysafersci; royk@glastonburyus.org), Glastonbury (Conn.) Public Schools

Brian Wazlaw (briwazlaw@aol.com), Laboratory Safety Consultant, Portsmouth, N.H.

Edward McGrath (edward.mcgrath@redclay.k12.de.us), Red Clay Consolidated School District, Wilmington, Del.

NSTA Safety Advisory Board (SAB) members will be on hand to offer guidance and answer your safety questions during this roundtable discussion. Information from the participants at this session will be used to refine the SAB's goals for the coming year.

Solids: The Neglected “State” of Chemistry

(Grades 9–12)

Broadway D, Omni

Science Focus: PS

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

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

iPad Invasion in the Middle School Science Classroom

(Grades 4–12)

Broadway G, Omni

Science Focus: GEN

Maggie Mabery (@MaggieMabery; mmabery@mbusd.org), Manhattan Beach (Calif.) Unified School District

James Locke (@jlockeh; jlocke@mbusd.org), Manhattan Beach Middle School, Manhattan Beach, Calif.

Experience innovative lessons that incorporate iPads into middle school curriculum science courses. Find out how iPads can provide an easy platform for differentiating lessons and witness how student engagement increases when they are used.

Integrating Mathematics and Science: Collaborating for STEM Success

(Grades 6–8)

Broadway J, Omni

Science Focus: GEN, SEP1, SEP4, SEP5, SEP6, SEP7, SEP8

Larry Plank (larry.plank@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

States, districts, and schools struggle with integrating math-

ematics and science standards and instruction, but the first step is collaboration among the adults in the schoolhouse.

The Science Behind Advanced Coursework in High School

(Grades 9–College)

Music Row 1, Omni

Science Focus: ESS, ETS, LS, PS

Philip Sadler (psadler@cfa.harvard.edu) and **Gerhard Sonnert** (gsonnert@cfa.harvard.edu), Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Review evidence from national studies measuring the impact of AP, IB, and other advanced coursework on STEM career interest and later performance in college biology, chemistry, physics, computer science, and mathematics.

Discover the NGSS: An Interactive Exploration of the Next Generation Science Standards

(General)

Music Row 2, Omni

Science Focus: ETS, CCC1, CCC2

Leisa Clark, Director/Producer, e-Products, NSTA, Arlington, Va.

Come learn how to put the pieces of the NGSS together with help from NSTA's interactive e-book on the standards, *Discover the NGSS: Primer and Unit Planner*. The first 20 attendees receive free copies of this Enhanced E-book.

AMSE Session: Implementing Pathways for Student Success in Science Education

(Grades 9–12)

Music Row 3, Omni

Science Focus: GEN, CCC1, CCC2

Preston Robinson, Jackson (Miss.) Public Schools

Have you ever pondered the question, “How do I increase the teaching and learning process for all students?” Join this session to see how two programs that were created to enhance the teaching and learning experience have improved science education.

Evaluate Your Sessions Online!

This year, we're giving away a Apple iPad mini 2 Wi-Fi tablet 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.)

ASTE Session: STEM Professionals Who Became Teachers: Why Did They Do That?

(Grades 6–College)

Fisk One, Renaissance

Science Focus: GEN

Michael Beeth (beeth@uwosh.edu), University of Wisconsin Oshkosh

Why do STEM professionals want to become science teachers? Interact with several who made the switch and now join you as professional educators!

Big Data, Small Devices: Using BYOT for Real-Time Investigations in Earth and Environmental Science

(Grades 4–12)

West Ballroom, Renaissance

Science Focus: ESS, ETS, CCC1, CCC2, CCC4, CCC5, CCC7, SEP1, SEP2, SEP3, SEP4, SEP8

Donna Governor (dgovernor@windstream.net), NSTA Director, District V, and North Forsyth High School, Cumming, Ga.

Michael Bowen ([@gmbowen](mailto:gmbowen); gmbowen@yahoo.com), Mount Saint Vincent University, Halifax, N.S., Canada

Find out how to use free apps with real-time data to have students engage in scientific investigations and explore concepts in Earth and environmental science.

2:00–3:00 PM Hands-On Workshops



NSTA Press® Session: Scientific Argumentation for the Classroom

(Grades 6–College)

101C, Music City Center

Science Focus: GEN, SEP

Ellen Granger (granger@bio.fsu.edu), Florida State University, Tallahassee

Engage in a sample scientific argumentation activity and analyze such activities as a teaching practice with links to the NSTA Press resource of argument-driven inquiry.

Communicate Like an Engineer!

(Grades K–5)

104C, Music City Center

Science Focus: ETS, SEP

Lukas Hefty (heftyl@pcsb.org), Douglas L. Jamerson Elementary School, Saint Petersburg, Fla.

Develop the purposeful communication skills outlined in the NGSS science and engineering practices to set the stage for a year of learning like real engineers.

Structures and Stories for K–2

(Grades K–2)

104D, Music City Center

Science Focus: ETS1

Pamela King (pamelak@clermson.edu), Clemson University, Clemson, S.C.

Experience the engineering design process as a structure is created using various materials. A story and illustration are then developed based on the design.



Putting the Green in the NGSS

(Grades 9–12)

103B, Music City Center

Science Focus: ETS, PS, CCC, SEP6

Kathe Hetter (@skylinehetter; kbhetter@gmail.com), Skyline High School, Ann Arbor, Mich.

Kate Anderson (@beyondbenign; kate_anderson@beyondbenign.org), Beyond Benign, Wilmington, Mass.

Investigate and explore new innovative green chemistry technologies. Challenge students to dig deeper into solutions to environmental concerns. Focus on the science of solutions rather than the despair of environmental problems.

Beyond the Touch Table: Creating Inquiry-Based Learning Centers for Exploring Nature

(Grades P–3)

103C, Music City Center

Science Focus: LS2, SEP1, SEP3, SEP8

Leigh Anne Kraemer-Naser (@curriculumcenter; lkraemer@curriculumcenter.com), Curriculum Solution Center, Erie, Pa.

Engage in strategies for building natural inquiry and developing a hypothesis at learning centers with relevant materials, sensory exploration, observation techniques, and journaling.

INF Bringing Nature Inside: A Classroom Investigation to Develop Science Process Skills

(Grades 3–8)

104E, Music City Center

Science Focus: INF

Cindi Smith-Walters (cindi.smith-walters@mtsu.edu), Middle Tennessee State University, Murfreesboro

Heather Barker (hbarker@lasierra.edu), La Sierra University, Riverside, Calif.

Join us in a novel interdisciplinary investigation that uses tree twigs and branches to support students' understanding and foster the development of science process skills such as observation, classification, and communication.



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Charlotte, North Carolina

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Santa Clara, California

**Dorney Park
& Wildwater Kingdom**
Allentown, Pennsylvania

Valleyfair
Shakopee, Minnesota

Worlds of Fun
Kansas City, Missouri

**Michigan's
Adventure**
Muskegon, Michigan

**Wildwater
Kingdom**
Aurora, Ohio

CESI Session: I'll Do It My Way

(Grades P–4, College) 105A, Music City Center

Science Focus: GEN, CCC1, CCC2, SEP

Sue Dale Tunncliffe (*s.tunncliffe@ucl.ac.uk*), University College London Institute of Education, London, U.K.

Hear about the responses of two four-year-old children to a challenge set by their teacher. The activity was meant to be about pendulums.

NGSS-Focused Physical Science Fun and Inquiry Across the Grade Bands

(Grades K–12) 105B, Music City Center

Science Focus: PS

Wayne Snyder (*wsnyder@caltech.edu*), Educational Consultant, Glendora, Calif.

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

Join the fun and inquiry as we apply a variety of hands-on activities to different grade levels, from elementary to middle level to high school.

LDC Integration of Science and ELA

(Grades 4–5) 106B, Music City Center

Science Focus: ETS, PS

Michele Wiehagen (*michele.wiehagen@sdhc.k12.fl.us*) and **Shana Tirado** (*shana.tirado@sdhc.k12.fl.us*), Hillsborough County Public Schools, Tampa, Fla.

We will share how teams of teachers from reading, writing, and science developed integrative lesson plans based on the Literacy Design Collaborative framework.

Model Approaches to Three-Dimensional Learning

(Grades 3–7) 106C, Music City Center

Science Focus: GEN, NGSS

Nancy Moreno (*nmoreno@bcm.edu*), **Greg Vogt** (*vogt@bcm.edu*), **Barbara Tharp** (*btharp@bcm.edu*), and **Beatriz Perez-Sweeney**, Baylor College of Medicine, Houston, Tex.

We will highlight standards-based three-dimensional learning, focusing on the real-world application of science practices, crosscutting concepts, and core ideas.

Anatomy and Physiology: Techniques and Activities

(Grades 6–12) Broadway C, Omni

Science Focus: LS, SEP2

Sylvia Tufts, Retired Educator, Flossmoor, Ill.

Construct models, participate in group activities, and acquire strategies that incorporate a variety of learning techniques and applications.

Students Developing and Using Models in Approximations of Scientific Activity in the NGSS

(Grades 7–12)

Broadway H, Omni

Science Focus: GEN, NGSS

Todd Campbell (*@dtcampbe*; *todd.campbell@uconn.edu*), University of Connecticut, Storrs Mansfield

Join me as I share strategies for engaging students in developing and using models in classroom versions of scientific activity.

Technology Tools to Make Differentiation a Breeze

(Grades 6–College)

Broadway K, Omni

Science Focus: GEN

Kathryn Lubker (*katlubker@gmail.com*), Elkhart Memorial High School, Elkhart, Ind.

John Gensic (*@bioonthego*; *john.gensic@gmail.com*), Penn High School, Mishawaka, Ind.

Join us as we show and give help in how to use free Blend-space and Super Quiz (a Google form add-on) to differentiate instruction and how to make lives easier. BYOD.

CSSS Session: The Next Generation of Science Leaders: What Does It Take to Prepare and Support Them?

(General)

Cumberland 2, Omni

Science Focus: GEN, CCC1, CCC2

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

Add to—or begin to develop—a “tool kit” of leadership and professional development tools and resources to assist in the implementation of the NGSS.

Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102)

(General)

Cumberland 3, Omni

Science Focus: GEN, NGSS

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

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

Juliana Texley (*jtexley@att.net*), NSTA Retiring President, and Science Writer/Instructor, Boca Raton, Fla.

Are you involved in your district's planning for new science facilities? If not, you need to get involved before it is too late. In an advanced course (extension of Science Facilities 101 session) the NSTA author team for *NSTA Guide to Planning School Science Facilities* (2nd ed.) will present more information and examples of safe, ergonomically correct/functional facilities for STEM-based science. We will cover budgeting, working with the architect, technology, and special adjacencies. Packet included.

Virtual Field Trip Connects Your Class to Antarctic Penguins

(Grades 2–8)

Cumberland 5, Omni

Science Focus: GEN, CCC

Jean Pennycook (jean.pennycook@gmail.com), *Penguin Science.com*, Fresno, Calif.

Take your classrooms on a virtual field trip to Antarctica. Watch life as it unfolds in an Adélie Penguin breeding colony.

ADI Pathway Session: Helping Students Learn to Obtain, Evaluate, and Communicate Information Through Reading and Writing with Argument-Driven Inquiry

(Grades 6–12)

Legends A, Omni

Science Focus: GEN, CCC

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

Patrick Enderle (patrick.enderleadi@gmail.com), Georgia State University, Atlanta

Learn how to use argument-driven inquiry as a way to help students learn to obtain, evaluate, and communicate information through reading and writing.

Helping Students Write Their Own Student-Designed Experiments in AP Biology

(Grades 9–College)

Legends C, Omni

Science Focus: LS, SEP1, SEP3

Kristen Daniels Dotti (kdotti@vvsaz.org), Verde Valley School, Sedona, Ariz.

A simple technique can take your students through the laboratory door into real scientific exploration. Learn a step-by-step process to transition your students from scientific thinkers to scientific “do-ers.”

INF ASTC Session: Building Informal/Formal Partnerships Between Schools, Science Museums/Centers, and Scientists to Create Effective PD

(Grades K–12)

Legends E, Omni

Science Focus: INF, CCC1, CCC2

Sandra Ryack-Bell (sryackbell@mits.org), MITS, Inc. (Museum Institute for Teaching Science), Quincy, Mass.

Rachel Stronach (rstronach@lloydcenter.org), Lloyd Center for the Environment, Dartmouth, Mass.

Ronald St. Amand (rstamand@charter.net), Springfield (Mass.) Public Schools

Margaret Brumsted (mabrumsted@hotmail.com), Dartmouth High School, South Dartmouth, Mass.

Jason Welch, Holbrook Junior/Senior High School, Holbrook, Mass.

Join district science coordinators and educators from MITS

partner organizations for a round-robin of inquiry-based investigations that are used in PD programs. Learn how to develop similar partnerships between formal and informal institutions in your own community.

Puzzles, Patterns, Predictions, and the Periodic Table

(Grades 9–11)

Legends F, Omni

Science Focus: PS1.A, CCC1, SEP2, SEP6

Rachelle Haroldson, University of Wisconsin–River Falls Scaffold teaching the periodic table with puzzles, the story of Mendeleev’s struggle, and a life-size interactive periodic table of elements.

Challenge Your Students to Make Motors

(Grades 4–10)

Legends G, Omni

Science Focus: ETS, CCC, SEP1, SEP2, SEP3, SEP4, SEP6

Michael Suckley (drsuckley@sciencescene.com), Macomb Community College, Clinton Township, Mich.

Attract your students’ interest by exploring fundamental concepts of magnetic and electromagnetic fields. Students will build eight different classroom motors. Take home this teaching unit with step-by-step instructions, explanations of each motor’s operation, and hands-on experience building them.

Measuring Student Proficiency of Science Practices

(Grades 6–12)

Music Row 5, Omni

Science Focus: GEN, SEP4, SEP8

Cole Entress (cole.entress@gmail.com), Relay Graduate School of Education, New York, N.Y.

Discover ways to seamlessly integrate science practices into your curriculum and track student growth mastery over time.

NARST Session: Modeling Tools, Engineering Practices, and Invasive Species

(Grades 9–12)

Fisk Two, Renaissance

Science Focus: LS, CCC, SEP

Kathy Malone (klmalone60@gmail.com), The Ohio State University, Columbus

Christian Schunn, University of Pittsburgh, Pa.

Come explore how to generate student excitement in your high school biology class by incorporating modeling and engineering practices around a design challenge featuring invasive stinkbugs. We’ll discuss the efficacy of the unit while also allowing you to actively explore one of the unit’s hands-on activities.

2:00–3:00 PM Exhibitor Workshops

Using Wireless Sensors in Enzyme Activity and Cellular Respiration Labs

(General) 206 A/B, Music City Center

Science Focus: LS

Sponsor: PASCO scientific

Ryan Reardon (rreardon71@gmail.com), Shades Valley High School, Birmingham, Ala.

Conduct hands-on inquiry investigations on enzyme activity and cellular respiration using PASCO wireless sensors and SPARKvue software. See how sensors can transform tedious qualitative labs into short data-driven learning experiences for standards-based labs for grades 9–12 general, AP®, and IB® courses. Twenty-five attendees will win a free wireless sensor!

Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 9–College)

210, Music City Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

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

2:00–3:30 PM Exhibitor Workshops

Inspire Students to Jump to the Inquiry Arc

(Grades K–5) 107A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Teachers Curriculum Institute

TCI Representatives (info@teachtci.com)

See how TCI's award-winning Bring Science Alive! program will get students involved in the inquiry arc. Engage in a sample lesson and receive practical ideas on implementation within the classroom.

How Do Scientists Think?

(Grades 6–11) 107B, Music City Center

Science Focus: ESS, CCC4

Sponsor: Perimeter Institute for Theoretical Physics

Stephanie Keating and **Glenn Wagner**, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada

Learn how to instill the scientific mind-set in your students so they actually think like scientists, rather than merely memorize facts.

The Secret to Project-Based Learning Success

(Grades 1–12) 109, Music City Center

Science Focus: GEN, NGSS

Sponsor: Accelerate Learning–STEMscopes

Shaena Ricks (shaena@acceleratelearning.com), Accelerate Learning, Houston, Tex.

Project-Based Learning can be challenging the first time you implement it. Come experience a hands-on, engaging PBL that reveals the strategies for seamless facilitation. Allow

your students the autonomy to solve problems that interest them and see high levels of engagement that lead to high levels of learning.

Giant Squid and a Space Station!

(Grades 6–10)

110A, Music City Center

Science Focus: GEN

Sponsor: Texas Instruments

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

Fred Fotsch, Texas Instruments, Dallas

Journey to the deepest parts of the ocean and prepare for a trip to Mars...all while sitting comfortably in the classroom. Come experience how you can empower students to learn science and math concepts through project- and scenario-based standards-aligned lessons using stuff in your junk drawer, a calculator, and a little creativity.

STEM and NGSS Inquiry in Chemistry—Effective, Efficient, Economical

(Grades 9–12)

110B, Music City Center

Science Focus: PS

Sponsor: Pearson Education


Ed Waterman, Retired Educator, Fort Collins, Colo.

Learn how to transition to a STEM and NGSS student-centered chemistry classroom by implementing safe, simple, easy-to-use, material-conserving, time-efficient, and effective inquiry activities in chemistry. Safety and differentiation are built in. Teach core content while fostering problem solving, creativity, and invention. Students design original experiments not possible with traditional methods.



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NGSS@NSTA FORUM

FRIDAY, APRIL 1, 2016

Music City Center
Grand Ballroom C1

The NGSS@NSTA Forum explores resources you can use to implement three-dimensional instruction. Participate in one or more:

8:00–9:00 AM

How Should Districts and Schools Focus Professional Development When Starting to Implement NGSS?

9:30–10:30 AM

Using Three-Dimensional Standards to Plan Instruction and Assessment

11:00 AM–12 NOON

Supporting Ongoing Changes in Students' Thinking: The Primer

12:30–1:30 PM

Assessing Three-Dimensional Learning

2:00–3:30 PM

Designing or Adapting Curriculum and Instruction to Make It Three Dimensional

NGSS@NSTA SHARE-A-THON

SATURDAY, APRIL 2, 2016

Music City Center
Grand Ballroom C1

9:30–10:30 AM

Get even more tips and tools to implement three-dimensional standards from NSTA's NGSS Curators, NGSS writers, and other education experts. Leave with plenty of handouts and ideas you can use in your classroom right away!

www.nsta.org/ngss



NGSS@NSTA
STEM STARTS HERE

CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design

(Grades 6–12)

201A, Music City Center

Science Focus: ETS

Sponsor: CPO Science/School Specialty Science

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

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

Engage Them Early: K–2 Science and Engineering Experiences with FOSS

(Grades K–2)

201B, Music City Center

Science Focus: PS, SEP

Sponsor: Delta Education/School Specialty Science–FOSS

Laurence Malone, Linda De Lucchi, and Diana Velez, The Lawrence Hall of Science, University of California, Berkeley

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

What's Going on in There? NGSS and STEM for Administrators, Teacher Trainers, and University Faculty

(Grades P–8)

202A, Music City Center

Science Focus: GEN, SEP

Sponsor: Delta Education/School Specialty Science

John Cafarella, Retired Teacher/Administrator, Canadensis, Pa.

Get tips on going into a classroom to observe a science lesson and how to support and evaluate a STEM-based science lesson/program through a lens of the NGSS, FOSS (3rd ed.), and Delta Science Modules. We'll look at inquiry skills embedded in the science and engineering practices along with a bit of humor, too.

Awesome, Engaging, and Motivating STEM Activities

(Grades 3–5)

202B, Music City Center

Science Focus: ESS, PS, CCC, SEP

Sponsor: Houghton Mifflin Harcourt

Michael DiSpezio, Author and STEM Specialist, North Falmouth, Mass.

Join Michael for an entertaining, motivating, and practical hands-on workshop that offers a variety of classroom activities in STEM. Profile science and engineering practices as you gather, analyze, and interpret data that explores grade-band concepts in Earth and space, forces and motion, and light and sound.

Cool Tools for Force and Motion

(Grades 6–College)

202C, Music City Center

Science Focus: PS

Sponsor: Arbor Scientific

Dwight “Buzz” Putnam (buzzputnam@gmail.com), Whitesboro High School, Marcy, N.Y.

You'll be moved by these engaging force and motion demos presented by award-winning physics teacher Buzz Putnam. These classroom-ready activities include the Stunt Car Lab (inspired by the movie *Speed*), the famous Monkey-Hunter “problem,” and a simple way to prove “g” is always the same. Door prizes!

Hands-On Science with Classroom Critters

(Grades K–12)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

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

Pushing and Pulling Your Teachers to NGSS

(Grades K–2)

205A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

The NGSS are presented as performance expectations of what students should know and be able to do from K to 12. Each PE includes the components of the three dimensions: disciplinary core ideas, crosscutting concepts, and science and engineering practices. Experience a set of lessons for K–2 that helps students meet the performance expectations of the NGSS through three-dimensional learning.

Engineer Excitement in Your Classroom with a Carolina STEM Challenge®

(Grades 6–12)

205B, Music City Center

Science Focus: ETS, PS, SEP

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Build, spin, and race into hands-on activities that engage your middle school and high school students. Apply creative problem-solving skills and engineering practices to environmental and physical science challenges. Experience how Carolina makes it easy to incorporate STEM into your classroom.

One in a Million

(Grades 9–12)

205C, Music City Center

Science Focus: PS, CCC6

Sponsor: LAB-AIDS®, Inc.

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

How do we teach electron configurations—that were graduate school material a generation ago—so that high school students can understand them? Learn effective ways to teach the structure of the atom. Using a user-friendly spectrophotometer, explore how light interacts with dyes. Then use spectrum cards to show how atoms, color, and spectra are related, making a conceptual bridge between a core chemical technology—making dyes—and atomic structure.

Lift Weight and Produce Electricity with the Power of Wind

(Grades 9–12)

207A, Music City Center

Science Focus: PS

Sponsor: Ward's Science

Samantha Bonelli, VWR Science Education, Rochester, N.Y.

With this STEM-based project kit, students are able to build a wind-powered lift or a more advanced turbine. Students will design their own blades to generate and measure power while investigating blade configuration, shape, and material to create ideal power levels. Our kit meets the NGSS and includes components for up to eight students—wood bases, motors/motor supports, hubs/alligator clips, blade shafts/skewers, and wooden support structures.

Using Biotechnology to Target Disease

(Grades 9–12)

207B, Music City Center

Science Focus: LS1.A, LS1.B, LS3, SEP1, SEP4, SEP6, SEP7
Sponsor: HHMI BioInteractive

Laura Bonetta, HHMI BioInteractive, Chevy Chase, Md.

Mary Wuerth, Tamalpais High School, Mill Valley, Calif.

Sherry Annee, Brebeuf Jesuit Preparatory School, Indianapolis, Ind.

Biotechnology research tools are providing insights into disease processes from the cell cycle gone awry in cancer to malfunctioning neurons in Alzheimer dementia. Our free multimedia resources let students explore these disease mechanisms, and discover the molecules involved and how they can be targeted by drugs.

Wind and Solar Energy Basics with Vernier

(Grades 3–8)

207C, Music City Center

Science Focus: ETS, SEP

Sponsor: Vernier Software & Technology

Frances Poodry (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Explore renewable energy using KidWind Solar and Wind Experiment Kits with Vernier data-collection technology as you design, test, and refine a device that converts energy from one form to another. This hands-on workshop is based on activities from our books: *Investigating Wind Energy* and *Investigating Solar Energy*.

Explore Motion with Vernier Video Physics for iOS

(Grades 7–College)

207D, Music City Center

Science Focus: PS, SEP

Sponsor: Vernier Software & Technology

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

Interested in creating and analyzing videos using iPad, iPhone, or iPod Touch? Attend this hands-on workshop to explore science concepts of motion and to discover best practices for capturing videos you can use with the Vernier Video Physics app. Automated object tracking streamlines data collection and analysis.

Fast Electrophoresis

(Grades 9–College)

208A, Music City Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

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

Reduce the time it takes to run your gels. Run a DNA or protein gel in less than 20 minutes and learn how to do a western transfer. We've got expert tips and tricks to help you get the most out of your class time.

ThINQ!™ About It: Bacterial Transformation, GMO Probiotics, and the Runs Make a Great Case Study for AP Biology

(Grades 9–College)

208B, Music City Center

Science Focus: LS3, SEP

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Dig through case files, design experiments, and analyze data sets from a microbiome case study. Apply these skills to a hands-on ThINQ! Investigation and learn new ways to advance inquiry in your classroom. The ThINQ! kit series are configured to facilitate inquiry—from guided to open inquiry.

Teaching Forensics with Real Crime Scene Investigation Techniques from Flinn Scientific

(Grades 9–12)

209A, Music City Center

Science Focus: GEN

Sponsor: Flinn Scientific, Inc.

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

Are you looking for innovative new ways to teach forensics in your classroom? See demonstrations of a variety of products and laboratory activities that can get your students engaged in forensic science! Features professional-grade products used by real CSI teams with write-ups that make them ideal for classroom use. Handouts for all activities.

Plate Tectonics—The Good, the Bad, and the Ugly

(Grades 6–12)

209B, Music City Center

Science Focus: ESS2.B

Sponsor: Simulation Curriculum Corp.

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

Join us as we use Simulation Curriculum's *Layered Earth, Geology*, and *Meteorology* with its STEM and NGSS-ready lessons and thought-provoking exercises to investigate the consequences of plate tectonics. Learn how volcanoes, earthquakes, and even climate change can be attributed to this phenomenon.

Experience What It Means to Engage Learners in Three-Dimensional Learning Using Project-Based Learning

(Grades 6–8)

209C, Music City Center

Science Focus: PS, CCC2, SEP2

Sponsor: It's About Time

Joseph Krajcik (krajcik@msu.edu), CREATE for STEM Institute, Michigan State University, East Lansing

Join Joseph Krajcik as he engages participants in experiencing

three-dimensional learning. The NGSS shifts science educators' focus from simply teaching science ideas to helping students figure out phenomena and design solutions to realistic problems using crosscutting concepts, disciplinary core ideas, and science and engineering practices in an integrated fashion.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

Learning to MELP: An Innovative and Integrated Approach to Embedding Environmental Literacy into Curricula

(Grades 9–12)

212, Music City Center

Science Focus: ESS3, ETS1, LS2, LS4, PS2, CCC, SEP

Sponsor: HHMI BioInteractive

Amy Green, Chesapeake Bay Foundation, Annapolis, Md.

Aleeza Oshry, Howard Hughes Medical Institute, Chevy Chase, Md.

Maryland school systems and nonprofit providers have forged an innovative partnership to embed environmental literacy standards into curricula through an inquiry-based issues investigation framework. The Maryland Environmental Literacy Partnership (MELP) offers a professional development pathway that supports the NGSS with curricular resources to achieve meaningful connections to core ideas.

Genes, Genomes, and Personalized Medicine

(Grades 9–College)

214, Music City Center

Science Focus: LS1, LS3, CCC, SEP

Sponsor: MSOE Center for BioMolecular Modeling

Gina Vogt (vogt@msoe.edu) and **Margaret Franzen** (franzen@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Introduce students to the science of genomics and personalized medicine with interactive DNA models and gene maps. We will tell a "genomic story" of how whole genome sequencing has been used to reach a molecular diagnosis of a disease.

What Works? Science Techbook and Effective Professional Development

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Renee Cartier, Discovery Education, Silver Spring, Md. Experience Discovery Education's Science Techbook and learn the secrets to its successful implementation—professional development, of course. Engage in immersive experiences that define effective professional development in science to transform teaching and learning throughout your school.

2:00–4:00 PM Presentation

INF Science in the Community Session: Learning Through Failure—Teaching Science Through Tinkering and Tweaking

(General)

104A, Music City Center

Science Focus: ETS1, INF

Joy Kubarek (@jksandor; joy.kubarek@gmail.com), PEER Associates, Richmond, Vt.

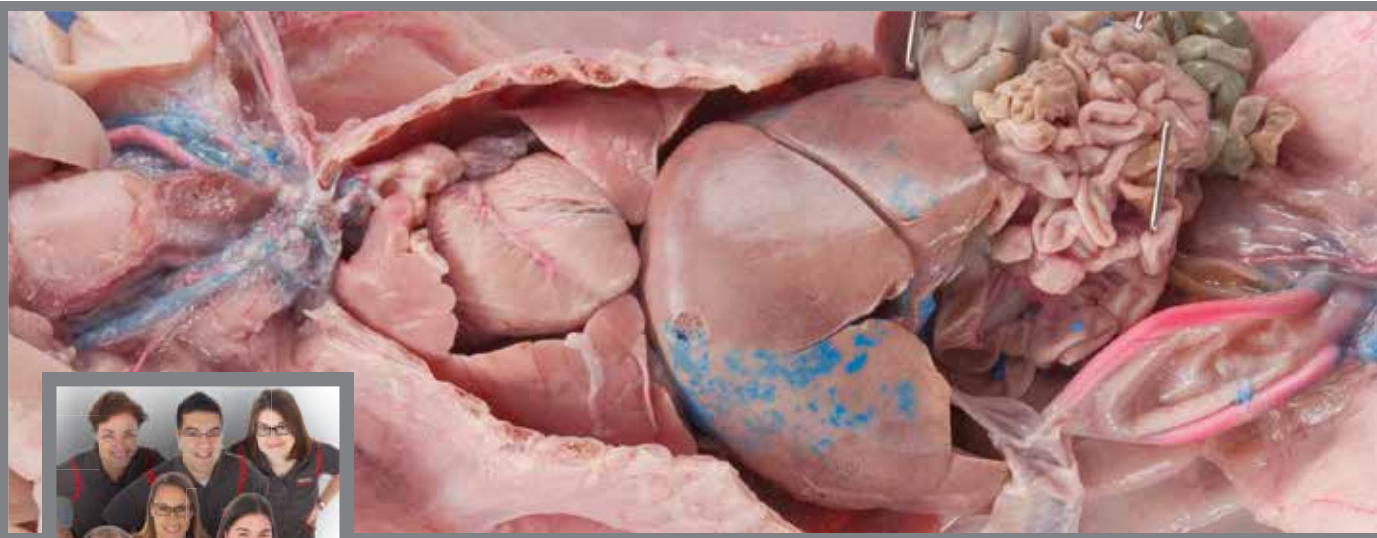
Ed Barker (edbarker@kennesaw.edu), Kennesaw State University, Kennesaw, Ga.

Steve Fulton (@steve8071; stevetfulton@gmail.com), Kannapolis Middle School, Kannapolis, N.C.

David Wells (@thenewspace; dwells@nysci.org), New York Hall of Science, Queens

Rebecca Grabman (@grabman; rebeccagrabman@gmail.com), Children's Museum of Pittsburgh, Pa.

Science community leaders and teachers share how teaching students through tinkering and “making” is an effective strategy to get them hands-on with the scientific process.



Take The Ward's Pure Challenge

Introducing Ward's Pure Preserved, the Best Dissection Experience from Start to Finish!

The Plus is Us! We're here to connect you to superior science supplies, plus personalized support.

Stop by Booth #142 to see our latest products and enter to win science prizes!

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2:20–2:40 PM Presentation

SCST Session: Does the Group Assessment of Logical Thinking (GALT) Predict Success?

(College)

Ryman One, Renaissance

Science Focus: ETS, CCC1, CCC2

David Allard (@dwallard; david.allard@tamut.edu), Texas A&M University–Texarkana

Discover a plan to administer the GALT at the beginning of biology courses and then determine if there is a correlation with students' final grades.

2:30–3:00 PM Presentations

Three Billion Years at Your Fingertips: Teaching Geological History with PBS's NOVA and Digital Media

(Grades 6–12)

Cumberland 4, Omni

Science Focus: ESS1.C, ESS2

Brooke Havlik (@novaeducation; novaeducation@wgbh.org), WGBH Educational Foundation, Brighton, Mass.

Hear how your students can uncover North America's geological mysteries with NOVA's *Making North America* film and free digital media tools. BYOD.

Analyze Your Teaching Using an iPad App

(General)

East Ballroom, Renaissance

Science Focus: GEN

Craig Berg (caberg@uwm.edu), University of Wisconsin–Milwaukee

Gregory Bisbee, Arrowhead Union High School, Hartland, Wis.

Collect data on your teaching and obtain a rich analysis using an iPad app for self, peer, student teaching, NBCT, or EdTPA purposes.

2:30–3:30 PM Meeting

Chapter and Associated Group Leader Roundtable

(By Invitation Only)

Mockingbird 2, Omni

2:40–3:00 PM Presentation

SCST Session: Predicting Performance in the Flipped Classroom—Does Active Participation Matter?

(Grades 9–College)

Ryman One, Renaissance

Science Focus: GEN, CCC1, CCC2

Michael Moore (@BioEdMike; moomi@ostateemail.okstate.edu) and **Donald French** (dfrench@okstate.edu), Oklahoma State University, Stillwater

Come learn how actively participating in a flipped classroom (both online and in-class) affects students' exam performance.

3:00–4:00 PM Exhibitor Workshop

Build, Program, and Control with K'NEX Education's New Robotics Building System

(Grades 5–10)

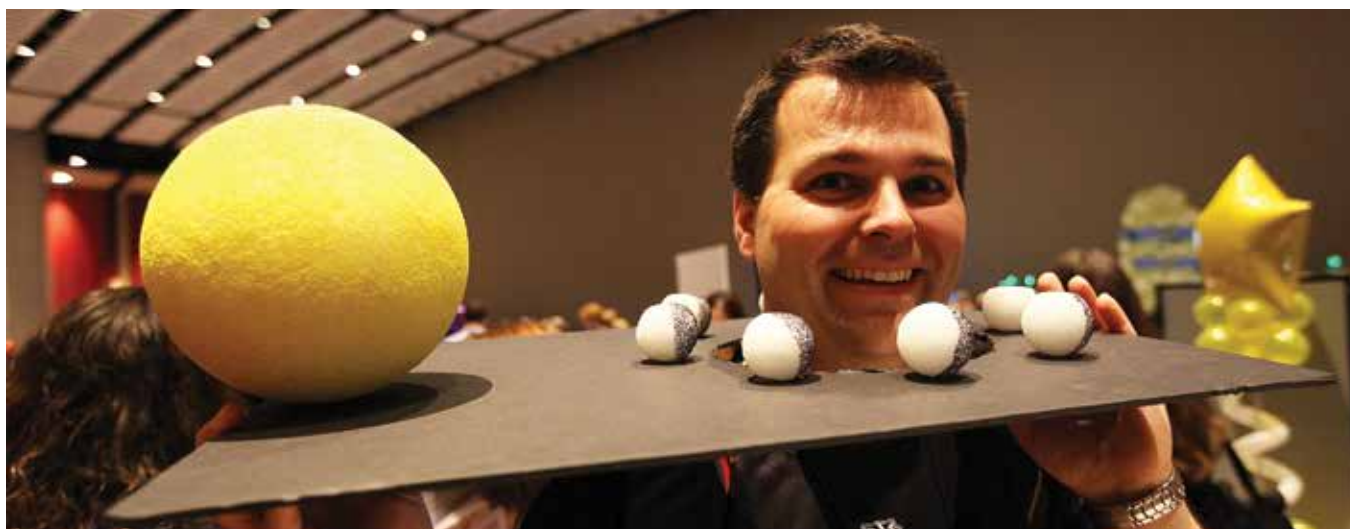
108, Music City Center

Science Focus: ETS

Sponsor: K'NEX Education®

Robert Jesberg, K'NEX Education, Hatfield, Pa.

This dynamic hands-on building system teaches students how to apply programming skills to operate various built models. You'll be the student in this workshop as you write your own computer program to control a vehicle model built out of K'NEX! Space limited: 24 working, 20 observing. Arrive early!



—courtesy of Jacob Slaton

3:00–4:30 PM Meetings

Preschool–Elementary Science Teaching Committee Meeting

Broadway E/F, Group 1, Omni

Middle Level Science Teaching Committee Meeting

Broadway E/F, Group 2, Omni

High School Science Teaching Committee Meeting

Broadway E/F, Group 3, Omni

College Science Teaching Committee Meeting

Broadway E/F, Group 4, Omni

Research in Science Teaching Committee Meeting

Broadway E/F, Group 5, Omni

Nominations Committee Meeting

Electric, Omni

Retired Members Advisory Board Meeting

Broadway E/F, Group 7, Omni

Special Needs Advisory Board Meeting

Broadway E/F, Group 8, Omni

Technology Advisory Board Meeting

Broadway E/F, Group 9, Omni

NGSS Advisory Board Meeting

Broadway E/F, Group 10, Omni

3:00–6:00 PM Meeting

Association of Multicultural Science Education Board of Directors Meeting

(By Invitation Only)

Mockingbird 4, Omni

For details, please visit www.amsek16.org.

3:30–3:50 PM Presentation

SCST Session: What Else Should They Know? Training Students to Be Effective Peer Educators in Biology, Chemistry, and Physics

(College)

Ryman One, Renaissance

Science Focus: ETS, LS, PS, CCC1, CCC2

Claire Sandler (csandler@umich.edu), University of Michigan, Ann Arbor

To be effective peer educators, students must know a lot more than just the science concepts covered in class.

3:30–4:00 PM Presentations

NMEA Session: Kelp Forests: A Free E-Book for iPads

(Grades 3–5)

Davidson B, Music City Center

Science Focus: LS2, CCC4, SEP8

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

Explore ecosystem interactions with a new free e-book for iPads called *Kelp Forests: A Young Explorers Guide* from the Monterey Bay Aquarium—designed for grades 3–5.

Science Current Events Journals: Real Science and News Media Literacy

(Grades 6–12)

Acoustic, Omni

Science Focus: GEN, SEP4, SEP7

Elizabeth Weissman (weissmane@ramaz.org) and **Lois Nyren** (nyren@ramaz.org), The Ramaz School, New York, N.Y.

Science current events journals bring real science into the classroom. Use the news to teach science content, media literacy, analytical thinking, and to reinforce language arts.

Teaching Engineering Design to the High School Blind and Visually Impaired: A Case Study

(Grade 12)

Music Row 1, Omni

Science Focus: ETS, SEP

Idalis Villanueva, Utah State University, Logan

We will share the experience and lessons learned when teaching 20 high school blind and/or visually impaired students about engineering design principles.

3:30–4:30 PM Featured Presentation



The Serengeti Rules: The Quest to Discover How Life Works and Why It Matters

(General)

102 A/B, Music City Center

Science Focus: LS



Sean Carroll (@SeanBiolCarroll), Howard Hughes Medical Institute, Chevy Chase, Md.

Presider: Barry Farris, Strand Leader: Setting the Stage: Scientific Literacy, NSTA Nashville National Conference, and Columbia Academy, Columbia, Tenn.

How does nature produce the right numbers of zebras and lions on the African savanna, or fish in the ocean? How do our bodies produce the right numbers of cells in our organs and bloodstream? How does life work? Biologist and author Sean B. Carroll tells stories from his soon-to-be-published book. *The Serengeti Rules*, of the pioneering scientists who sought the answers to such simple, yet profoundly important questions, and shows how their discoveries matter for our health and the health of the planet we depend upon.

Hailed for his pioneering work in evolutionary developmental biology, Sean Carroll is an award-winning scientist, writer, educator, and executive producer. Dr. Carroll leads the Department of Science Education at the Howard Hughes Medical Institute and is the Allan Wilson Professor of Molecular Biology and Genetics at the University of Wisconsin–Madison.

His soon-to-be-published book, The Serengeti Rules, explores the logical rules that govern all of life. His other books include Brave Genius: A Scientist, A Philosopher and their Daring Adventures from the French Resistance to the Nobel Prize, and Remarkable Creatures: Epic Adventures in the Search for the Origins of Species, which was a finalist for the National Book Award for nonfiction.

His many recognitions include the Benjamin Franklin Medal in Life Sciences, the Stephen Jay Gould Prize for the advancement of the public understanding of evolution, and the Viktor Hamburger Outstanding Educator Award from the Society for Developmental Biology.

A book signing will immediately follow this talk.

3:30–4:30 PM Mary C. McCurdy Lecture

Integrate to Innovate: How Classroom Engineering Develops “Habits of Mind” That Empower Student Performance

(Grades P–6)

Davidson A1, Music City Center

Science Focus: ETS

Sponsored by Shell



Christine Cunningham (@CunninghamEiE; ccunningham@mos.org), Museum of Science, Boston, Mass.

Presider: Ruth Leonard, Sullivan County Schools, Blountville, Tenn.

State and national science standards increasingly emphasize engineering concepts and skills as part of K–12 STEM instruction. But how do you fit engineering into an already crowded school day? And what engineering activities are right for elementary students? Christine will share a striking collection of candid short videos shot in classrooms around the country to show what engineering looks like at the elementary level, and how classroom engineering develops positive “habits of mind” that can support young students’ academic success in other subjects. You’ll also learn some concise pedagogical strategies to support robust engineering experiences for children, and hear the evidence for classroom engineering as a way to support science learning.

A particular research focus of Christine Cunningham’s has been how teaching and learning of engineering, science, and technology can change to include and benefit a more diverse population. Her transition from science to engineering and technology education was an offshoot of her interest in women in science, which led her to consider why there are so few women in engineering. Christine directed the Women’s Experiences in College Engineering (WECE) project, the first national, cross-institutional, longitudinal study of factors contributing to women’s persistence in an engineering major.

Dr. Cunningham currently works as a vice president at the Museum of Science, Boston and is founder and director of the Engineering is Elementary (EiE) project—a curriculum and professional development project designed to integrate engineering and technology concepts into preschool, elementary, and middle school science lessons. As of November 2015, EiE has reached more than 9.3 million children nationwide and 97,000 educators.

BIO-RAD Explorer

HANDS-ON INQUIRY-BASED SCIENCE EDUCATION

Visit Us at Booth #152

Free hands-on workshops! Having a hard time infusing student-driven inquiry and creating current context and relevance for 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.

NSTA Nashville Workshop Schedule

Join us in Music City Center rooms 208A and 208B for our workshops.

Thursday March 31

8:00–9:30 AM

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

10:00–11:30 AM

Investigate Photosynthesis and Cellular Respiration with Algae Beads
Improve Student Engagement Using Pop Culture in Your Life Science Class

2:00–3:30 PM

Enzymes: Technology Inspired by Nature
Fast Electrophoresis

4:00–5:30 PM

ThINQ!™ About It: Bacterial Transformation, GMO Probiotics, and the Runs
Make a Great Case Study for AP Biology

Friday April 1

8:00–9:30 AM

Improve Student Engagement Using Pop Culture in Your Life Science Class
Preparing Tomorrow's Scientists: Issues in Inquiry-Based Life Science Education

10:00–11:30 AM

Project-Based Learning for High School: Sequencing a Plant Species
Investigate Photosynthesis and Cellular Respiration with Algae Beads
Identify Patient Zero of a Zombie Apocalypse!

2:00–3:30 PM

Upgrade Your Chemotaxis Lab! (Aligns with AP Biology Big Ideas 1–4)

4:00–5:30 PM

Science, Style, and Fun! Genes in a Bottle™ Kit
The GMO Debate Rages On!

Saturday April 2

8:00–9:30 AM

Get That Grant Money!

10:00–11:30 AM

NGSS in the High School Biology Classroom



Visit us on the Web at explorer.bio-rad.com
Call toll free at 1-800-424-6723;
outside the U.S., contact your local sales office.

BIO-RAD

3:30–4:30 PM Presentations

The James Webb STEM Innovation Project: Bringing Authentic STEM Experiences to the Classroom

(Grades 5–12) 101D, Music City Center

Science Focus: ETS1.B, SEP1, SEP2, SEP8

John Maple (jmaple@stsci.edu) and **Holly Ryer** (hgreat@stsci.edu), Space Telescope Science Institute, Baltimore, Md. Examine engineering and science through the lens of the James Webb Space Telescope. Hear how this NASA mission is used to incorporate real-world STEM learning into the classroom.

Inquiry and Argumentation, Oh My!

(Grades 5–8) 101E, Music City Center

Science Focus: GEN, SEP7

Lynne Sojda and **Elizabeth Edmondson** (@EdmondsonEDU; edmondson@gilmour.org), Gilmour Academy, Gates Mills, Ohio

Middle level science and English teachers share how they combine inquiry and argumentation into class demonstrations and creative lab journaling to move students toward conceptual understanding.

3D Building an NGSS Network: One District's K–12 Journey Toward Three-Dimensional Learning

(Grades 1–12) 103A, Music City Center

Science Focus: GEN, NGSS

Susanne Moar (@RSDSciRocks; moarsusanne@rsdmo.org), **Crystal McDowell** (@RSDSciRocks; mcdowellcrystal@rsdmo.org), and **Robert Deneau** (@RSDSciRocks; deneaurobert@rockwood.k12.mo.us), Rockwood School District, Eureka, Mo.

Join us as we recap our journey toward three-dimensional learning in a non-NGSS state. We will share how partnerships and collaboration have been critical to our journey and how three-dimensional learning has been incorporated into the curriculum design for all of our secondary science courses and will be integrated into our elementary curriculum as well. Model STEM lessons have been incorporated into K–5. Walk away with scaffolding strategies to help you implement three-dimensional instruction in your curriculum.



NASA Is Looking for a Few Great Teachers and Their Students!

(General)

103B, Music City Center

Science Focus: ESS2.C, ESS2.D, ESS3, ETS1.A, ETS1.B, ETS2, CCC4, CCC5, SEP1, SEP2, SEP3, SEP4

Dorian Janney (@janneydorian; dorian.w.janney@nasa.gov), NASA Goddard Space Flight Center, Greenbelt, Md.

Fran Hess (fran Hess@gmail.com), Catskill Regional Teacher Center, Naples, Fla.

NASA's Earth science education team works closely with teacher ambassadors around the world. Want to join us? Some of our teacher ambassadors will share their story and tell you how you can become one!

Bioenergetics and Cycles of Energy and Matter in the Ecosystem

(Grades 9–College)

106A, Music City Center

Science Focus: LS2.B, CCC5

John Moore (@JhmooreJohn; jhmoore@taylor.edu), Taylor University, Upland, Ind.

Help your students with focusing on the principles without getting lost in the details. Let's apply Ausubelian and Constructivist learning theories to bioenergetics.

Science, Technology, and Literacy: A Melting Pot of Ideas for the Elementary Classroom

(Grades 1–6)

106C, Music City Center

Science Focus: GEN, CCC

Jane Savatski (@teachtwo; savatskijane@aasd.k12.wi.us), Appleton (Wis.) Area School District

Use Chromebooks and/or iPads to simultaneously teach and learn about science and literacy concepts. Most elementary classroom teachers face the challenge of teaching multiple disciplines in a limited amount of time. Walk away with ideas for using technology to internalize science and literacy concepts.

From the Laboratory to Venture Capitalists: Bringing Chemistry Alive Through the Production and Marketing of Bathroom Products

(Grades 3–8)

Davidson A2/3, Music City Center

Science Focus: PS, SEP1, SEP3, SEP4, SEP5, SEP6, SEP8

Angela Nelson (angela.nelson@nextgenerationschool.com), Next Generation School, Champaign, Ill.

Explore how we transformed chemistry into a world of discovery. Through Project-Based Learning, students created, evaluated, and marketed products to a group of venture capitalists.

Forensic Pathology: An Introduction for Educators

(Grades 9–12)

Broadway D, Omni

Science Focus: GEN, NGSS

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

Explore forensic pathology and get introduced to a wide range of “tools” used to determine cause, manner, and time of death.

Using iPads to Create Innovative Scientists

(Grades 3–College)

Broadway G, Omni

Science Focus: GEN, SEP

Ben Smith (@edtechben; ben@edtechinnovators.com), Red Lion Area Senior High School, Red Lion, 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 and analyzing data, and communicating their learning.

Sewing Science: Using Electronic Textiles Technology to Teach Electricity and Circuits

(Grades 6–8)

Broadway J, Omni

Science Focus: PS

Colby Tofel-Grehl (colby.tg@usu.edu) and **Deborah Fields**, Utah State University, Logan

Learn how to engage students in circuits and electricity through sewing! Research shows how electronic textiles are an effective way to engage girls and others in science.

Which Professional Development Improves AP Scores?

(Grades 11–College)

Music Row 2, Omni

Science Focus: GEN

Arthur Eisenkraft (arthur.eisenkraft@umb.edu), 2000–2001 NSTA President, and UMass Boston, Dorchester, Mass.

Barry Fishman (fishman@umich.edu), University of Michigan, Ann Arbor

Abigail Levy, Education Development Center, Inc., Waltham, Mass.

Research on professional development can help us choose the PD that is most effective at increasing student achievement. Review findings from a study of choices that teachers make when faced with major curriculum changes, such as the AP redesign, and the impact of those choices.

Alphabet Soup: NGSS + CCSS + STEM!

(Grades 6–9)

Music Row 3, Omni

Science Focus: GEN, NGSS

Matthew Hartman (@ecybermission), eCYBERMISSION Content Manager, and **Cheryl Long** (@ecybermission; clong@nsta.org), eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

Find out how the NGSS complement STEM education as well as the CCSS. Also, learn about the free online STEM competition eCYBERMISSION, and how it can give your middle school students a chance to use what they are learning in a practical setting.

NSELA Session: Helping Teachers Build a Foundation for Scientific Literacy in Elementary

(Grades K–5)

Music Row 4, Omni

Science Focus: GEN

April Holton (@april_holton; april.holton@dysart.org), Dysart Unified School District, Surprise, Ariz.

Do you wish science was more present in elementary? Learn about a professional learning project that focused on increasing K–5 teachers’ comfort with science to build a foundation in science learning beginning in kindergarten.

Interactive Word Walls: Purposeful Planning

(Grades K–12)

Center Ballroom, Renaissance

Science Focus: GEN

Julie Jackson (@ScienceToolkit; jj32@txstate.edu), Texas State University, San Marcos

Purposeful planning provides teachers with opportunities to plan instructional activities that focus on science standards with fidelity while heeding district and state guidelines.

ASTE Session: To Teach or Not to Teach: Examining Why Teachers Avoid Evolution

(Grades 7–College)

Fisk One, Renaissance

Science Focus: LS4

Amanda Glaze (@EvoPhD; alglazephd@gmail.com), Jacksonville (Ala.) City Schools

What does it say about classroom learning when a majority of the populace does not believe in evolution? Something is influencing their decisions about evolution, something that determines what they teach their students.

Bridging the Gap: Interdisciplinary STEM Projects

(Grades 6–12)

West Ballroom, Renaissance

Science Focus: GEN, NGSS

William Sadler (@MrSadlerBBCHS; bsadler@bbchs.org), Bradley-Bourbonnais Community High School, Bradley, Ill. Help students connect the curriculum using projects that connect the NGSS and CCSS. Learn how to model, implement, and assess these ideas in your classroom.



3:30–4:30 PM Hands-On Workshops



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

(Grades P–5)

101C, Music City Center

Science Focus: GEN, CCC1, CCC2

Emily Morgan (@EmilyMorganNTYS; emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio Join the author of the *Next Time You See* picture book series from NSTA Press for ideas on how to use these award-winning books to connect science, reading, and writing, and to inspire a sense of wonder about the natural world.



Teaching Argument Writing in the Middle School and High School Science Classroom: Do This, Not That!

(Grades 5–12)

103C, Music City Center

Science Focus: GEN, SEP7

Lori Wilfong (@DrWilfong; lgkrug@kent.edu), Kent State University at Stark, Canton, Ohio

Argument writing, a tenet of the CCSS, is perfectly situated in scientific contexts. We will walk through the steps for creating an argumentative writing unit, with suggestions on how to share the load between ELA and science teachers.

Supporting Teachers in the Introduction of Scientific Inquiry Within a Multicultural Environment

(Grades 1–6)

104C, Music City Center

Science Focus: GEN, NGSS

Deborah Roberts (deborah.roberts@hotmail.co.uk), Consultant and Visiting University Lecturer, Rotherham, U.K.

Terry Hudson (t.a.hudson@blueyonder.co.uk), University Tutor and Author, Bents Green, Sheffield, U.K.

Join us as we review models, curriculum materials, and teacher training events aimed at supporting an increasing use of scientific inquiry within multicultural school settings.

Science, Literacy, and Making Meaning Through Bookmaking

(Grades K–6)

104D, Music City Center

Science Focus: GEN, NGSS

Sheri Farmer, 93rd Street Elementary School, Los Angeles, Calif.

After they learn the content, what should they do? How about showing what they know with a book! Making books about science can integrate the (sometimes) intangible with the tangible and allow students to really “show what they know.”

Liftoff to Learning

(Grades 4–8)

104E, Music City Center

Science Focus: ETS1, PS2.A, SEP1, SEP2, SEP4, SEP5

Christine Boyer (@5Boyer; cboyer@scarsdaleschools.org), Heathcote Elementary School, Scarsdale, N.Y.

In this integrated Project-Based Learning, students use the design process to create and launch bottle rockets. Come create an inspiration board, design a template for rocket wings, and follow the reading, writing, and research process that my grade 5 students successfully completed throughout this unit.

Designing Lessons for the Private School Setting That Implement the NGSS Using the Engineering Design Process

(Grades K–8)

105B, Music City Center

Science Focus: ETS1, CCC, SEP

Susan Koppendrayner (@teachspacemn; skdrayer@calvinchristian.org), Calvin Christian School, Edina, Minn.

Unsure how to integrate the NGSS at your private school? Join this hands-on workshop to see how to integrate the standards with your school’s mission.

Carbon on the Move: Southeastern Forests and Climate Change

(Grades 7–12)

106B, Music City Center

Science Focus: ESS3.C, ESS3.D, LS2.B

Bonnie Ervin (bonnietervin@gmail.com), Rutherford County, Murfreesboro, Tenn.

Angelique Troelstrup (angelique.troelstrup@mtsu.edu), Middle Tennessee State University, Murfreesboro

Join us for systems-thinking strategies, current and ongoing research-based data, internet-rich resources, and engaging hands-on activities focusing on environmental education for middle level and high school students.

Moving Beyond the Candy Cell: Integrating Argumentation and Authentic Modeling in the Life Science Classroom

(Grades 6–12)

Broadway C, Omni

Science Focus: LS1.C, LS2.B, CCC2, CCC4, SEP2, SEP7

Jeremy Peacock (@jeremy_peacock; peacock.jeremy@gmail.com), Northeast Georgia RESA, Winterville

Zoe Evans (@zoe_evans; zoeevans@charter.net), Villa Rica High School, Villa Rica, Ga.

Argumentation and modeling go hand in hand to support three-dimensional learning in science. Learn how to integrate these key science and engineering practices in secondary life science.

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Including Nature of Science and Scientific Inquiry in Lessons Without Starting from Scratch

(Grades 6–12)

Broadway H, Omni

Science Focus: GEN, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Renee Schwartz (rschwartz@gsu.edu), Georgia State University, Atlanta

Receive an overview of the nature of science and scientific inquiry objectives and leave with ways to easily incorporate these objectives into existing lessons.

Implementing Challenge-Based Learning in the Classroom

(Grades 6–8)

Broadway K, Omni

Science Focus: ETS1

Joanne Vakil, Dayton Islamic School, Beavercreek, Ohio
Improve achievement in your classroom by implementing challenge-based learning with the engineering design process. Experience how this works! Learn ways to integrate science with math, and provide engaging, collaborative activities to your students within a contextual base.

NGSS in the Classroom Made Easy

(Grades 9–12)

Cumberland 1, Omni

Science Focus: LS2, CCC1, CCC2, CCC3, CCC4, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6, SEP8

Jason Goffe (jgoffe@woonsocketschools.com) and **Rebecca Schmitt** (rschmitt@woonsocketschools.com), Woonsocket High School, Woonsocket, R.I.

We will introduce strategies useful to educators transitioning current non-NGSS versions of their labs to meet the current NGSS approach.

Polar Bears and Penguins Bring Science Literacy to the Classroom

(Grades 1–6)

Cumberland 5, Omni

Science Focus: ESS2.C, ESS2.D, ESS3.D

Jean Pennycook (jean.pennycook@gmail.com), Penguin Science, com, Fresno, Calif.

Louise Huffman (louise.t.huffman@dartmouth.edu), Thayer School of Engineering at Dartmouth, Hanover, N.H.

Penguins, polar bears, and more! Cross the curricular areas with classroom resources about the Polar regions.

20 in 20: The Next Chapter

(Grades 6–12)

Cumberland 6, Omni

Science Focus: LS

Whitney Hagins, Massachusetts Biotechnology Education Foundation, Cambridge

Make your biology course more inquiry based and student centered! Here are new exciting 20-minute activities to engage students in hands-on learning.

PLI ADI Pathway Session: Making Science Instruction More Equitable with Argument-Driven Inquiry

(Grades 6–College)

Legends A, Omni

Science Focus: GEN, CCC

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

Patrick Enderle (patrick.enderleadi@gmail.com), Georgia State University, Atlanta

Learn how to use argument-driven inquiry as a way to make science instruction more equitable and discover how it can help all students develop science proficiency.

Bioengineering Activities for the Classroom

(Grades 4–College)

Legends C, Omni

Science Focus: ETS, PS, CCC, SEP

Carrie Kouadio (ckouadio@illinois.edu), University of Illinois at Urbana-Champaign

The research of one bioengineering center captures imaginations and inspires interest. Come participate in some hands-on activities and demonstrations that will excite and engage your students.

INF ASTC Session: Science Beyond the Classroom—Strategies for Developing Community Partnerships to Enrich STEM Learning Opportunities

(General)

Legends E, Omni

Science Focus: INF, CCC1, CCC2

Karlisa Callwood (kcallwood@miamisci.org) and **Daniel Mannina** (@PPFMoS; dmannina@miamisci.org), Patricia and Phillip Frost Museum of Science, Miami, Fla.

Learn about our community engagement program, built through successful partnerships, and develop strategies for linking to your community to craft exciting new STEM learning experiences.

Integrating Three-Dimensional Learning Using Rocket Cars in a Project-Based Classroom

(Grades 6–8)

Legends F, Omni

Science Focus: ETS1, PS2, CCC6, SEP2

Elizabeth Gorak, Forest Park Middle School, Franklin, Wis.

Sharon Hushek (sharon.hushek@franklin.k12.wi.us), Ben Franklin Elementary School, Franklin, Wis.

Get your students excited about STEM by infusing the three dimensions of the NGSS using rocket cars to teach Newton's three laws.

Marble Maniacs

(Grades 4–College)

Legends G, Omni

Science Focus: GEN, NGSS

Raymond Francis (@CMU_WVU; franc1rw@cmich.edu), Central Michigan University, Mount Pleasant

Ready to test your gamesmanship, scientific understanding, and academic prowess—with marbles? Come see how the simple game of marbles is used to teach science, engineering, and problem solving in an interactive and experiential setting.

Developing Science Practices: Constructing Explanations and Engaging in Argumentation

(Grades 6–10)

Music Row 5, Omni

Science Focus: LS2.A, LS2.C

Dora Kastel (@Dora_AMNH; dkastel@amnh.org), American Museum of Natural History, New York, N.Y.

Maia Willcox (mwillcox@berkeley.edu), The Lawrence Hall of Science, University of California, Berkeley

Learn how to use scaffolding tools to help students construct NGSS-focused explanations and engage in argument from scientific evidence.

NARST Session: How to Make Science Instruction Compelling to Students: Designing Formative Assessments to Build on Learners' Interests AND Knowledge

(Grades 1–12)

Fisk Two, Renaissance

Science Focus: ESS2, LS1, PS1, SEP

Philip Bell (@philipbell; pbell@uw.edu), University of Washington, Seattle

William Penuel (@bpeneul; william.penuel@colorado.edu) and **Katie Van Horne** (@dizzvh; katie.vanhorne@colorado.edu), University of Colorado Boulder

Learn formative assessment approaches for discovering and building on students' interests and knowledge in support of 3-D science learning.

3:30–4:30 PM Exhibitor Workshops

Sensor-Based Labs to Address NGSS Practices for Middle School Life, Earth, and Physical Science

(Grades 6–8)

206 A/B, Music City Center

Science Focus: ESS, LS, PS, SEP

Sponsor: PASCO scientific

Dan Burns (dburns@lgsuhsd.org), Los Gatos High School, Los Gatos, Calif.

Get hands-on experience using SPARKvue software and wireless temperature, pH, pressure, and force acceleration sensors. Explore disciplinary core ideas in middle school science while facilitating science and engineering practices such as developing and using models and constructing explanations based on evidence. Twenty-five attendees will win a free wireless sensor!

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

(Grades 9–College)

210, Music City Center

Science Focus: LS

Sponsor: Edvotek Inc.

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

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



3:30–5:00 PM Meeting

Science Matters Advisory Board Meeting

Old Hickory, Omni

3:30–5:30 PM Hands-On Workshops

CESI Session: Using Digital Literacies and Place-Based Learning to Engage Students in Inquiry-Based Science

(Grades K–6)

105A, Music City Center

Science Focus: ETS, CCC1, CCC2

Cynthia Deaton (cdeaton@clemsun.edu), **Jackie Malloy** (malloy2@clemsun.edu), and **Adeyanju Odutola** (aodutol@clemsun.edu), Clemson University, Clemson, S.C.

This workshop will guide teachers in integrating mathematics and English language arts into science lessons encouraging digital literacies and place-based learning.

CSSS Session: Aligning Classroom Instruction and Formative Assessment to NGSS Performance Expectations

(General)

Cumberland 2, Omni

Science Focus: GEN, CCC1, CCC2

Brett Moulding (mouldingb@ogdensd.org) and **Nicole Paulson** (nicole.paulson@nebo.edu), Partnership for Effective Science Teaching and Learning, Ogden, Utah

This session provides science educators with a useful tool to align classroom instruction and formative assessment items to the NGSS performance expectations.

3:50–4:10 PM Presentation

SCST Session: Exploring Pedagogical Content Knowledge of Graduate Teaching Assistants Through Their Participation in Lesson Study

(College)

Ryman One, Renaissance

Science Focus: LS, CCC1, CCC2

Sandra Lampley (sandra.lampley@uah.edu), The University of Alabama in Huntsville

Grant Gardner (grant.gardner@mtsu.edu), Middle Tennessee State University, Murfreesboro

This study examined the potential that lesson study, a form of professional development, holds for advancing graduate teaching assistants' pedagogical content knowledge (PCK) while teaching an introductory biology course.

4:00–4:30 PM Presentations

Using Creative Nonfiction to Integrate Writing and Science into the Elementary Classroom

(Grades 3–6)

104B, Music City Center

Science Focus: GEN

Terry Jennings (ltjennings@verizon.net), Children's Science Writer, Reston, Va.

Lead students in researching and writing a creative nonfiction story using a science trade book as a launching point. Lesson plan, model, and materials provided.

NMEA Session: Conservation and Children

(Grades P–3)

Davidson B, Music City Center

Science Focus: ESS3.C

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

Why does age-appropriate conservation matter? Why shouldn't you teach about the rain forests? Explore how to encourage the environmentalist in your students with Monterey Bay Aquarium educators.

Using Evidence from Text to Support Student Claims

(Grades 7–12)

Acoustic, Omni

Science Focus: GEN, NGSS

Robbie Higdon (rhigdon72@yahoo.com), James Madison University, Harrisonburg, Va.

Elizabeth Moon (emoon@richlandone.org), Dreher High School, Columbia, S.C.

Stephanie Green (sgreen@anderson2.k12.sc.us), Belton-Honea Path High School, Honea Path, S.C.

Explore practical ways to engage your students in using evidence from a variety of text-based sources, including a lesson for the first day of school.

Puzzling Phenomena, NGSS, and Technology-Based Learning for Diverse Learners

(Grades 9–12)

Music Row 1, Omni

Science Focus: GEN, SEP2

Kat Lucido (kalucido1@cps.edu), Wendell Phillips Academy High School, Chicago, Ill.

Discussion centers on best practices for incorporating puzzling phenomena as a basis for implementing the NGSS and technology- and engineering-based investigations for diverse learners.

4:00–5:00 PM Exhibitor Workshop

Project-Based Earth Science: Engaging Students in Real-World Issues

(Grades 9–12)

209C, Music City Center

Science Focus: ESS, CCC, SEP

Sponsor: It's About Time

Amanda Wilson (awilson@iat.com), It's About Time, Mount Kisco, N.Y.

Project-Based Learning provides opportunities for students to ask questions, analyze data, and collaborate with peers. Students must explore authentic data sets and design solutions to real-world problems based on evidence. Explicitly teaching practices and crosscutting concepts is essential for preparing our students for the 21st century. Investigate how this might look in your classroom using *EarthComm* inquiry-based instructional materials.

4:00–5:30 PM Networking Opportunity

NSTA Young Professional and New Teacher Reception

Broadway B, Omni

Preservice and new teachers are invited to attend this fun and interactive networking session. The reception will include short presentations offering tips on how to excel in the classroom from both new and preservice teachers as well as NSTA Student Chapter leaders. An overview on NSTA resources geared to preservice and new teachers will also be presented. Refreshments and hors d'oeuvres will be served as you network with your peers.

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NSTA National Science Teachers Association

4:00–5:30 PM Exhibitor Workshop

Science of Speed: The Fusion of Competition, Creativity, and STEM Learning

(Grades 6–8)

107A, Music City Center

Science Focus: ETS, PS, SEP

Sponsor: Pitsco Education

Brad Blue (bradbbblue@gmail.com), Design & InnoVation Lab, Minneapolis, Minn.

The Science of Speed takes STEM education and fires it down a track as fast as your students can make it go. Students design, build, test, and race CO₂ cars. Along the way, they learn physical science and engineering skills at lightning speed. Join us to learn more!

What's New in Physics?

(Grades 9–12)

107B, Music City Center

Science Focus: ESS, PS

Sponsor: Perimeter Institute for Theoretical Physics

Kevin Donkers and **Stephanie Keating**, Perimeter Institute for Theoretical Physics, Waterloo, Ont., Canada
Breakthroughs are happening every day—from the quantum to the cosmos—and this workshop provides an accessible overview of the most exciting development in physics.

The Failed EdTech Revolution

(General)

109, Music City Center

Science Focus: GEN, NGSS

Sponsor: Accelerate Learning—STEMscopes

Jason Maxwell, Accelerate Learning, Houston, Tex.

Join us as we pose questions and share thoughts and ideas on the possible reasons for the failure of the educational technology revolution. Attendees will be encouraged to participate in a discussion of the issue and share their experiences.

BUGDORK! Using Insects to Engage Students and Inspire Learning

(Grades K–5)

110A, Music City Center

Science Focus: LS1.A, LS1.B, SEP1, SEP3, SEP8

Sponsor: Celestron

Kristie Reddick (contactus@thebugchicks.com), The Bug Chicks, College Station, Tex.

Learn myriad ways you can use arthropods in the classroom! Entomologist and educator Kristie Reddick of The Bug Chicks will help you conquer your fears and gain knowledge about animals that inspire inquiry in your students. Workshop includes digital microscope training with Celestron, lessons to use immediately, integration of scientific concepts, and a chance to win digital microscopes!

STEM Beyond the Classroom

(Grades 6–12)

110B, Music City Center

Science Focus: GEN

Sponsor: Pearson Education

Jacquelyn Walton, Pearson Education, Pine Mountain, Ga.
Discussion centers on how to use outside partners to effectively support your STEM curriculum. Discover ways to support teachers in developing STEM units that incorporate partners supporting the instructional focus.

Genetics: Crazy Traits and CPO's New Link™ Learning Module

(Grades 6–12)

201A, Music City Center

Science Focus: LS

Sponsor: CPO Science/School Specialty Science

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

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

What Does Conceptual Modeling Look Like in Grades 5–7 Classrooms?

(Grades 5–7)

201B, Music City Center

Science Focus: PS, SEP

Sponsor: Delta Education/School Specialty Science—FOSS

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

Join FOSS Next Generation program developers to explore how students construct models within the context of physical science. Experience active investigations from two different grade levels and create models about how matter interacts. Find out how student models can be used to guide future instruction within the FOSS program.

High-Flying Connections with Science and Literacy

(Grades 3–5)

202A, Music City Center

Science Focus: ETS1

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Delta Education Specialist, Midway, Ky.
Learn how your students can experience the enjoyment of learning science using the Flight and Rocketry Delta Science Module and its connections to the NGSS performance expectations 3-5-ETS1-1,2,3, Engineering Design. Discover

how our content readers are excellent literacy resources that can help to extend the learning experience.

Accelerating Conceptual Understanding in K–5 Science Through Technology

(Grades K–5)

202B, Music City Center

Science Focus: GEN, NGSS

Sponsor: McGraw-Hill Education

Chad Dorsey, The Concord Consortium, Concord, Mass. Join Chad Dorsey, CEO of Concord Consortium, to learn how to improve student conceptual understanding through the visualization that technology can offer in elementary classrooms.

Understanding the Community Impact of Environmental Hazards: Developing a Project-Based Learning Challenge from Start to Finish Using Microsoft Tools

(Grades 7–12)

202C, Music City Center

Science Focus: ESS

Sponsor: Microsoft

Helen Gooch (v-hegooc@microsoft.com), Microsoft Innovative Educator Fellow, Clarksville, Tenn.

Come learn about a project-based lesson that can create student understanding of environmental science and challenge students to take action to make a difference in their community. Through research and analysis, students create and present a proposal for a solution to the environmental hazard impacting their community.

Shark Dissection: A Jawsome Experience!

(Grades 9–12)

204, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Dive in and learn how to create your own Shark Week! This workshop guides participants through a hands-on dissection of the dogfish shark. Take a bite out of the *Next Generation Science Standards* related to adaptations and structure and function while giving your students an experience they will never forget.

Argumentation: Claims, Evidence, and Reasoning Made Easy

(Grades K–8)

205A, Music City Center

Science Focus: GEN, NGSS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Argumentation through claims, evidence, and reasoning leads students to make scientific explanations. The science

and engineering practices of the NGSS promote engaging in argument from evidence. The Smithsonian's science curriculum provides opportunities for students to use C-E-R. Participate in lessons that model how easily claims, evidence, and reasoning can be used with your students. Determine why this model is advantageous for your students.

Hands-On Activities to Model Habitat Preference and Population Sampling

(Grades K–12)

205B, Music City Center

Science Focus: LS

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Watch and learn! Create a terrestrial model to observe how pill bugs respond to habitat change. Use inquiry to develop experiments to observe the habitat preference of bess beetles and millipedes. Then investigate the advantages and disadvantages of different sampling methods to estimate population size in habitats. Nurture students' curiosity!

Chemical Formula and Amino Acids

(Grades 9–12)

205C, Music City Center

Science Focus: PS, CCC3

Sponsor: LAB-AIDS®, Inc.

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

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

CTE: Real-Life Forensics Brought to the Classroom, Solving the Case

(Grades 9–12)

207A, Music City Center

Science Focus: PS

Sponsor: Ward's Science

Lisabeth Hoffman, VWR Science Education, Rochester, N.Y.

Forensic chemistry is the application of chemistry to aid law enforcement, using a variety of analytical methods to reveal chemical changes that have occurred during a crime or incident. Learn how to investigate chemical compounds using common analytical techniques in your chemistry classroom to solve crime scenarios. Take home free simulated blood and luminal samples.

Renewable Energy with KidWind and Vernier

(Grades 7–College)

207C, Music City Center

Science Focus: ETS, SEP

Sponsor: Vernier Software & Technology

Colleen McDaniel (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Explore renewable energy and engineering design using KidWind Experiment Kits with Vernier data-collection technology. In this hands-on workshop, design, test, and refine a wind turbine to maximize its energy output. These activities from our book, *Renewable Energy with Vernier*, embody the spirit of STEM education through this highly relevant topic.

Advanced Physics with Vernier

(Grades 9–College)

207D, Music City Center

Science Focus: PS, SEP

Sponsor: Vernier Software & Technology

Frances Poodry (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

Already experienced using basic physics sensors from Vernier? This hands-on workshop will introduce additional Vernier sensors and lab equipment that can enhance your AP, IB, or college physics laboratory in mechanics and beyond. Plus, you will learn to employ advanced data-analysis techniques to explore quantitative relationships.

Starting a Biotech Program: One Piece of Equipment at a Time

(Grades 9–College)

208A, Music City Center

Science Focus: LS

Sponsor: Bio-Rad Laboratories

Kirk Brown, San Joaquin County Office of Education, Stockton, Calif.

Join Kirk Brown to see how he created a sustainable framework for starting a biotech program at Tracey High School. Kirk started his program with a single micropipet and grew his program to include a mentorship program for students over their entire four years of high school.

Communicating Science Through Lab Notebooking

(Grades 6–College)

208B, Music City Center

Science Focus: LS3, SEP

Sponsor: Bio-Rad Laboratories

Sherri Andrews, (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Maintaining a proper lab notebook is key to communicating processes and findings to build on your results. It's also been the difference in being awarded patents. Find out what the critical elements are good to document and how to assess student notebooks using a rubric.

Building or Renovating a Laboratory? Get Your Questions Answered!

(Grades 7–12)

209A, Music City Center

Science Focus: GEN

Sponsor: Flinn Scientific, Inc.

Greg Chyson, 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 in helping science teachers plan their laboratory construction and remodeling projects! Learn what features to include in your laboratories and what common mistakes to avoid.

National Geographic Explorers: Ideal Role Models of STEM

(Grades 3–12)

209B, Music City Center

Science Focus: ETS1.A, ETS1.B, SEP1, SEP3, SEP4, SEP8

Sponsor: National Geographic Learning

Tom Hinojosa, National Geographic Learning/Cengage Learning, Littleton, Colo.

See how National Geographic provides your students with exciting examples of an integration of disciplines that removes the traditional barriers between Science, Technology, Engineering, and Mathematics, and instead focuses on innovation and the applied process of addressing questions and designing solutions to complex contextual problems using current tools and technologies.

Make Science Come to Life

(Grades 1–5)

211, Music City Center

Science Focus: GEN, NGSS

Sponsor: LEGO Education

Laura Jackson, Anderson (S.C.) School District Five

Did you know LEGO® bricks can provide an engaging platform for making science come to life? Using LEGO Education solutions, elementary students can explore, create, and share discoveries as they build solutions to real-world, standards-based projects and deeply engage with science practices and the engineering design process. Come experience a resource that develops students' confidence to ask questions, find answers, and solve problems by putting discovery in their hands.

A collection of various tools and objects arranged in the shape of a lightbulb, symbolizing ideas and innovation. The objects include a hammer, wrench, screwdriver, pliers, scissors, magnifying glass, globe, clock, and many other small items, all arranged to form the outline of a lightbulb.

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A Peek Behind the Curtain: Disney Parks Approach to Physics and Energy

(Grades 6–12)

212, Music City Center

Science Focus: ETS, PS

Sponsor: Disney Youth Programs

Joseph Cardello, Disney Youth Programs, Anaheim, Calif. Join us for a peek into how Disney conducts in-park field trips that teach kids how Disney uses mechanical physics and elements, such as light and sound, to create world-class attractions and entertain guests from around the world.

Of All the Nerve!

(Grades 9–College)

214, Music City Center

Science Focus: LS

Sponsor: 3D Molecular Designs

Gina Vogt (vogt@msoe.edu) and **Margaret Franzen** (franzen@msoe.edu), MSOE Center for BioMolecular Modeling, Milwaukee, Wis.

Construct a neuronal synapse model—complete with sodium-potassium pump, calcium, and sodium and potassium channels! Explore the role of these ions in action potential generation and neurotransmitter release. We will tell a molecular story and use 3D-printed models to illustrate how drugs target and interact with these channels.

10 Creative Ways to Read, Write, and Think Like a Scientist

(Grades K–12)

401 A/B, Music City Center

Science Focus: GEN

Sponsor: Discovery Education

Patti Duncan, Discovery Education, Silver Spring, Md. Is literacy all you talk about in your school? Prepare to leave with 10 practical research-based literacy strategies that you can implement throughout your science classrooms. Ensure that all of your students are reading, writing, and thinking like scientists.

4:10–4:30 PM Presentation

SCST Session: Assisting Students in Large Lecture Courses: An Alternative Learning Center Model

(College)

Ryman One, Renaissance

Science Focus: PS, CCC1, CCC2

Sarah Sheeley (sheeley@illinois.edu), University of Illinois at Urbana-Champaign

Come learn about the Chemistry Learning Center at the University of Illinois, a novel learning center model that supports more than 4,000 general chemistry students each semester.

4:15–5:15 PM Meeting

Outstanding Science Trade Books Committee Meeting

(By Invitation Only)

Mockingbird 3, Omni

4:30–6:00 PM Meeting

NSTA Board/Council Meet & Greet

(By Invitation Only)

Broadway A, Omni

4:30–6:30 PM Meeting

APAST Board of Directors Meeting

(By Invitation Only)

Gibson Boardroom, Omni

The APAST board meets annually to plan for the future. This is a great opportunity to find out what we have planned for our members. For additional information, please visit www.apast.org.

5:00–5:20 PM Presentation

SCST Session: Using Graduate Learning Communities as a Tool for Student Achievement and Retention in Graduate-Level Science Programs

(College)

Ryman One, Renaissance

Science Focus: LS, CCC1, CCC2

Ashley Spooner (spooner1@iastate.edu), Iowa State University, Ames

This session describes how the Roy J. Carver Department of Biochemistry, Biophysics, and Molecular Biology at Iowa State University organizes and manages the graduate learning community, as well as individual student outcomes and experiences.

5:00–5:30 PM Presentations

Implementing Global Collaborative Projects in the Science Classroom

(Grades 7–12)

Acoustic, Omni

Science Focus: GEN, SEP

Carol Cao (@carolannecao; carolannecao@gmail.com), Summit View Valley School, North Hollywood, Calif.

Aletha Williams (aletha.williams@ttu.edu), Jane Long Futures Academy, Houston, Tex.

Shannon Sahabi (@shannonsahabi; shannon.sahabi@nisd.net), Clark High School, San Antonio, Tex.

Global collaboration links students with others around the world, where they engage in real-life science inquiry and investigations. It also focuses on CCSS, NGSS, and 21st-century skills.

Making a Perfect Cold Pack: Engineering with Thermochemistry

(Grades 9–12)

Cumberland 4, Omni

Science Focus: ETS, PS3, CCC5, SEP6

Colleen Buzby (@buzbyrocks; colleen.buzby@gmail.com), Bridgewater-Raritan High School, Bridgewater, N.J.

Elizabeth Potter-Nelson (@mrspotternelson; e.potter.nelson@gmail.com), Antioch Community High School, Antioch, Ill.

Students design the best cold pack within the limits of materials and marketing. Finding the energy absorbed by a chemical reaction, they investigate thermochemistry with purpose!

ASTE Session: Science and Literacy: Practicing Proficient Classroom Talk in Elementary Science

(Grades P–6)

Fisk One, Renaissance

Science Focus: GEN, SEP1, SEP7, SEP8

Matthew Benus (mbenus@indiana.edu) and **Anita Martin** (anitmart@iu.edu), Indiana University Northwest, Gary
Emphasis will be placed on identifying research-based patterns of talk used during argument-based inquiry by an experienced elementary teacher during whole-class instruction in science.

5:00–6:00 PM Presentations



Teachers and NOAA Scientists: A Match Made at Sea

(Grades K–6)

103B, Music City Center

Science Focus: ESS, SEP1

Stacey Klimkosky (staceyklim@gmail.com) and **Megan O’Leary** (olearym@truromass.org), Truro Central School, Truro, Mass.

Explore partnerships developed between NOAA scientists and Teacher at Sea alumni and sample programs and activities including Ocean Day and surface current drifters.

Engaging Solutions for Local Challenges

(Grades 2–6)

104A, Music City Center

Science Focus: GEN, CCC1, CCC2

Francine Gollmer, Gene Ward Elementary School, Las Vegas, Nev.

Use the power of Project-Based Learning to create sustainable actions for the future. Students explore a variety of conservation methods unique to their community.

Memoirs of a Goldfish

(Grades 2–6)

104B, Music City Center

Science Focus: GEN

Stephanie Nowak (@Stephnowak3; nowaks@mentorschools.org), Fairfax Elementary School, Mentor, Ohio

Become Mythbusters in an engaging lesson to have students prove that goldfish have a memory longer than three seconds. Using an integrated approach focused on inquiry-based learning and tech integration, get a glimpse on how to tie it all together to create deep, meaningful learning.

Is This Forest Healthy and What Does That Mean to Me?

(Grades 6–12)

106A, Music City Center

Science Focus: ESS, LS2

Maureen Miller (m.miller@k12.wv.us), Hurricane Middle School, Hurricane, W.Va.

Erika Klose (@eklose; eklose@k12.wv.us), West Virginia Dept. of Education, Winfield

We will share a cross-curricular lesson using GLOBE (Global Learning and Observations to Benefit the Environment) technologies in which students explored a local forest and then applied their findings to a real-world issue. Hands-on activities and take home materials will be available.

Fabulous Physics (with Cheap Stuff)!

(Grades 7–12)

Davidson A1, Music City Center

Science Focus: PS

Al Guenther, Retired Science Teacher, Palos Verdes Peninsula, Calif.

Experience an exciting hour of attention-grabbing discrepant demonstrations about forces, sound, electromagnetism, and weightlessness. Stimulate student inquiry and engineering skills, and enhance concept construction. Illustrated handouts.

Climate Change at the Poles and Beyond

(Grades 6–12)

Davidson A2/3, Music City Center

Science Focus: ESS2, ESS3.D, ETS, LS2

Lucy Coleman (lucycoleman@gmail.com), Twelve Bridges Middle School, Lincoln, Calif.

Regina Brinker (@brinkerscience; r.brinker@sbcglobal.net), Granada High School, Livermore, Calif.

Susan Steiner (sssteiner76@hotmail.com), Murphy High School, Murphy, N.C.

Climate changes more quickly at polar regions. Add depth to climate and environmental lessons through hands-on activities, connections to scientists in the field, and engineering lessons.

Save the Egg! A Physics and Chemistry Integrated Engineering Project

(Grades 9–12)

Broadway D, Omni

Science Focus: PS1.B, PS2.A, PS2.B, PS3.B, CCC2, CCC6, SEP5, SEP6, SEP8, PS

Michelle Mason (mmason@portageps.org) and **Kathy Mirakovits** (@kmirakovits; kmirakovits@portageps.org), Portage Northern High School, Portage, Mich.

Physics and chemistry students unite with a common goal to save the egg from certain peril! Join us as we present our integrated project, inspired by the NGSS and the science and engineering practices, and discuss its results.

How to Implement CCSS, NGSS, and Engineering in Your Classroom

(Grades 6–11)

Music Row 1, Omni

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

Karen Bowers (kbowers@guhscd.net), Monte Vista High School, Spring Valley, Calif.

Integrate CCSS strategies into NGSS and the new engineering standards using critical thinking, inexpensive design challenges, and free online resources. Leave with activities for immediate use.

It Takes Water to Make STEAM: The Hutchison Lake Project

(Grades 3–12)

Music Row 2, Omni

Science Focus: ESS2.A, ESS2.C, ETS1.B, LS2.A, CCC2, CCC3, CCC4, SEP

Donna Budynas (dbudynas@hutchisonschool.org), **Becky Deehr** (bdeehr@hutchisonschool.org), and **Mona Bland** (mbland@hutchisonschool.org), Hutchison School, Memphis, Tenn.

Join Hutchison Middle School science and math teachers as we discuss outdoor spaces as STEAM learning places, focusing on our hands-on, inquiry-based campus lake project.

The World Doesn't Exist in Separate Boxes

(Grades 6–12)

Music Row 3, Omni

Science Focus: LS, SEP1, SEP8

Sarah Sallade, Sanborn Regional High School, Hollis, N.H. What happens when you combine biology, English, and government/economics? Learning! Using local food, outbreaks, equality/diversity, and nature in an integrated setting—students engage at higher rates.

NSELA Session: Improving Preparation of Elementary Teachers for Science Teaching Through Faculty Collaboration

(College)

Music Row 4, Omni

Science Focus: ESS, LS

David Wojnowski (dwojnowski@gsu.edu), Georgia State University, Atlanta

Science Education faculty and Arts and Science Faculty co-teach an Integrated Science: Life/Earth Sciences course to preservice teachers. Lessons learned and suggestions for course integration and faculty “cross-pollination” of ideas will be shared.

Using Standards-Based Grading Principles with a Traditional Grade Book

(Grades 6–12)

Center Ballroom, Renaissance

Science Focus: GEN

Matthew Senese (@MrSenese; msenese@d155.org) and **William Janshego** (@MrJanshego; wjanshego@d155.org), Prairie Ridge High School, Crystal Lake, Ill.

Learn how to implement standards-based grading principles in order to effectively assess student learning and instruction in a traditional percentage-based grading system.

Effective Writing Strategies for Writing Lab Reports and Scientific Claims

(Grades 3–12)

West Ballroom, Renaissance

Science Focus: GEN, SEP3, SEP6, SEP7

Jeff Thomas (thomasjed@ccsu.edu), Central Connecticut State University, New Britain

Learn about high-impact instructional writing strategies aimed to improve students' ability to write high-quality lab reports and to engage in argument to write evidence-based explanations.

5:00–6:00 PM Hands-On Workshops



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

(Grades K–5)

101C, Music City Center

Science Focus: GEN

Christine Anne Royce (@caroyce; caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

Steve Rich (@bflyguy; bflywriter@comcast.net), University of West Georgia, Carrollton

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

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3D Mappin' It: Vertically Aligning Three-Dimensional Lessons in Earth Science

(Grades 4–8)

103A, Music City Center

Science Focus: ESS2, CCC, SEP

Stacy Cohen (@sciencenerd1980; scohen1@interact.ccsd.net), Southern Nevada Regional Professional Development Program, North Las Vegas

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

Experience an upper elementary and middle grades lesson around NGSS ESS2: Earth's Systems that will showcase both grade-level progressions and 3-D learning.

Science and Superheroes: Integrating Science and Literacy Learning with Active Role Play and Comic Books

(Grades K–5)

103C, Music City Center

Science Focus: PS2.A, PS3.C, SEP1, SEP2, SEP4, SEP5

Nathan Dolenc (nathan.dolenc@louisiana.edu), University of Louisiana at Lafayette

Megan Washburn (@Meg_Washburn10; mew5x@virginia.edu) and **Victoria Dickens**, University of Virginia, Charlottesville

Aja Wood (aew4za@virginia.edu), Katharine Drexel Elementary School, Broussard, La.

Experience how first-graders learned the science behind a series of gadgets they used to defeat villains in game play, and how fifth-graders role-played as news reporters in these game-play scenes to gather ideas for writing their own comic books. Capes optional.



Connect K–5 NGSS Topics and CCSS ELA

(Grades K–5)

104C, Music City Center

Science Focus: GEN, NGSS

Presenter to be announced

Link K–5 NGSS topics with CCSS ELA—for example, K–1 informational text: *Starfish* correlates with NGSS LS2.A: Interdependent Relationships in Ecosystems, whole-brain teaching, and daily CCSS practices. Join me for activities and door prizes!

Reducing Anxiety and Developing Confidence in Science Practices and Content for Elementary Teachers

(Grades K–4)

104D, Music City Center

Science Focus: GEN, NGSS

Kristi Zenchak (zenchak@oakton.edu), Oakton Community College, Des Plaines, Ill.

Chris Culen (cculen@district95.org) and **Tracy Turucz** (tturucz2116@gmail.com), Brook Park Elementary School, La Grange Park, Ill.

Science anxiety is a documented challenge facing many elementary teachers. Experience a teacher-friendly format to increase comfort using science practices and teaching science content.

SEMT—Building Capacity for STEM: Rearranging the Acronym for Increased Outcomes

(Grades 3–12)

105B, Music City Center

Science Focus: ETS, SEP1, SEP5, SEP6

Jackie Speake (@JackieSpeake; jackie.speake@polk-fl.net) and **Milton Huling** (@Mhuling1Milt; milton.huling@polk-fl.net), Polk County Public Schools, Bartow, Fla.

Join us for a presentation and discussion on building capacity to integrate STEM through a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) inquiry model. Come discover the advantages and disadvantages of a “formula style” instructional model.

Programming in Elementary (Grades K–5) Classrooms

(Grades K–5)

106B, Music City Center

Science Focus: ETS2.A, SEP5

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

Christopher Gordon (gordoncr@uncw.edu), University of North Carolina Wilmington

Receive an overview and examples of how to introduce programming basics in a format that is fun and accessible to elementary students.

Getting Your Hands Dirty in a STEM Classroom with Soils

(Grades 5–12)

106C, Music City Center

Science Focus: ESS2.A, ESS3.A, ESS3.C, ETS2.A, CCC7, SEP1, SEP4, SEP5, SEP6, SEP8

Margaret Holzer (mholzer@monmouth.com), Chatham High School, Chatham, N.J.

Soils are the backbone of our society and the foundation of our natural and engineered landscapes. Unearth why soil science is a topic for all STEM classrooms.

Learn How to Teach Drawing in the Life Science Classroom

(Grades 7–12)

Broadway C, Omni

Science Focus: LS1, CCC6, SEP2

Taryn Surabian (@thestudyoflife) and **Caroline Rufo**, Ursuline Academy, Needham, Mass.

Can't draw? Sure you can! Come learn how to teach drawing in the life science classroom to connect form and function.

Science at a History Museum? Of Course!

(Grades 5–12)

Cumberland 1, Omni

Science Focus: GEN, SEP

Robert Wallace (@robert_rwallace; iamrobwallace@gmail.com), The National World War II Museum, New Orleans, La. Use history and WWII to teach students about the role of science in society, how necessity leads to innovation, and how scientific ideas develop over time.

Replication and Protein Synthesis: Cupcake Orders

(Grades 5–College)

Cumberland 3, Omni

Science Focus: LS

Mary Gobbett (mgobbett@uindy.edu), University of Indianapolis, Ind.

Do your students have trouble understanding DNA replication, transcription, and translation? Learn how to teach these concepts with a hands-on cupcake order activity.

Reinforcing Proportional Thinking Through Distance-Speed-Time Calculations

(Grades 6–8)

Legends C, Omni

Science Focus: PS2.A, CCC3, SEP5

Kris Grymonpre (grymonpre@bostonpublicschools.org), McCormack Middle School, Boston, Mass.

Feeling the pressure to teach math during science time? Learn how I use rate tables to reinforce proportions while teaching students how to solve distance-speed-time problems.



INF ASTC Session: The All-American Total Solar Eclipse (August 21, 2017): Get Prepared for This Community-Wide Experience

(Grades 5–8)

Legends E, Omni

Science Focus: ESS, INF, CCC1, CCC2

Dennis Schatz (schatz@pacsci.org), NSTA Director, Informal Science, and Pacific Science Center, Seattle, Wash.

Now is the time to prepare for the astronomical event of 2017. Learn about the eclipse and how to make it a school/community experience.

Differentiating Science Inquiry to Engage All Students

(Grades 6–11)

Music Row 5, Omni

Science Focus: LS4.B, SEP

Jeanette Bartley (jrbartley@uchicago.edu), The University of Chicago, Ill.

Explore key aspects of differentiating a science inquiry lesson by participating in a differentiated inquiry lesson on natural selection.

NARST Session: Bringing Computational Thinking into Science Classrooms

(Grades 8–12)

Fisk Two, Renaissance

Science Focus: GEN, SEP5

David Weintrop (dweintrop@u.northwestern.edu) and **Michael Horn**, Northwestern University, Evanston, Ill.

We will share work and resources from an NSF-funded research project designed to bring computational thinking into high school math and science classrooms.

5:20–5:40 PM Presentation

SCST Session: Year One Results of an Introductory Biology Inquiry Lab

(College) *Ryman One, Renaissance Science Focus: ETS, CCC1, CCC2*

Joseph Trackey (joseph.l.trackey@lonestar.edu) and **Helen McDowell** (helen.e.mcdowell@lonestar.edu), Lone Star College—Montgomery, Conroe, Tex.

Join us as we share year one results of transforming a traditional biology lab into an inquiry-based experience.

5:30–6:00 PM Presentation

Bringing Community Stakeholders into High Schools to Improve Student Achievement

(Grades 7–12) *Acoustic, Omni Science Focus: GEN, NGSS*

Kama Almasi (kama.almasi@lincoln.k12.or.us) and **Melissa Steinman** (melissa.steinman@lincoln.k12.or.us), Waldport High School, Waldport, Ore.

Ruth McDonald (wesmc@charter.net), Lincoln County School District, Newport, Ore.

Teachers from a rural high school report on how they established a variety of partnerships to greatly increase student engagement, authentic learning, and student achievement.



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5:30–9:00 PM Special Session

Northrop Grumman Presents: *Into the Unknown*

(By Reservation Only) Adventure Science Center (Off-site)

Join us at Nashville's Adventure Science Center for an out-of-this-world film experience and to learn more about the James Webb Space Telescope and its science mission. Program participants include the filmmaker, scientists, and engineers. Event is free to registered conference attendees and includes transportation and a reception.

E-mail kim.essex-roland@ngc.com or visit Booth #442 to make a reservation. Space is limited.

5:40–6:00 PM Presentation

SCST Session: Rewards and Challenges of Developing an Online College Chemistry Course That Includes a Hands-On Lab Component

(College) Ryman One, Renaissance Science Focus: PS, CCC1, CCC2

Lois Bartsch (lbartsch@mcneb.edu) and **Bernadette Corbett** (bcorbett@mcneb.edu), Metropolitan Community College, Omaha, Neb.

Hear about the development of an online college chemistry course that includes hands-on lab components, assessment, and comparison to traditional course formats.

6:30–9:00 PM Networking Opportunity

TSTA 40th Anniversary Gala

(By Invitation Only) Broadway J/K, Omni

TSTA members are cordially invited to attend the 40-year celebration of our organization's dedication to quality science education in Tennessee. This promises to be a lively affair with light refreshments and entertainment. We hope you will be able to participate in this celebration of fellowship and good cheer with past and present members.

For information, please visit www.tsta.wildapricot.org.

6:30–10:30 PM Networking Opportunity

DuPont Welcome to Nashville and NSTA Dinner

(By Invitation Only) Broadway E, Omni

7:30–9:30 PM Meeting

NGSS Live Chat

Legends C, Omni

Come to the NGSS Live Chat during the NSTA National Conference. Meet Ted Willard, Tricia Shelton, and more as they discuss the NGSS.

6:00–8:00 PM Networking Opportunity

HHMI BioInteractive Night at the Movies

Grand Ballroom C1, Music City Center

Trophic Cascades and Keystone Species

Robert Paine's exclusion experiments along Washington State's coast laid the foundation for two key concepts in modern ecology. By removing starfish from certain areas, Paine demonstrated that these predators were a "keystone species" that had a large impact on the diversity of their ecosystem. He also coined the concept of "trophic cascades," first illuminated by James Estes' groundbreaking studies of sea otters and kelp forests. Join HHMI BioInteractive for the premiere of a new short film starring these pioneering scientists.

A Q&A with evolutionary biologist Sean B. Carroll and special guests will follow the film, and refreshments will be served.



—Courtesy of Howard Hughes Medical Institute

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Exhibit Hall B

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STORE HOURS

Wednesday	4:00 PM–7:00 PM
Thursday	7:30 AM–6:30 PM
Friday	7:30 AM–5:30 PM
Saturday	7:30 AM–5:30 PM
Sunday	8:00 AM–12:30 PM

NSTA National
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**MCC stands for Music City Center*

3D Molecular Designs (Booth #516)

Thursday, Mar 31	4:00–5:30 PM	214, MCC	Of All the Nerve! (p. 156)
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Accelerate Learning—STEMscopes (Booth #520)

Thursday, Mar 31	8:00–9:30 AM	109, MCC	Assessment Writers Workshop (p. 94)
Thursday, Mar 31	10:00–11:30 AM	109, MCC	Successful Use of Argumentation in the STEM Classroom (p. 102)
Thursday, Mar 31	12 Noon–1:30 PM	109, MCC	Engineering Solutions in the STEM Classroom (p. 109)
Thursday, Mar 31	2:00–3:30 PM	109, MCC	The Secret to Project-Based Learning Success (p. 134)
Thursday, Mar 31	4:00–5:30 PM	109, MCC	The Failed EdTech Revolution (p. 152)

Activate Learning (Booth #1204)

Thursday, Mar 31	10:00–11:30 AM	214, MCC	Integrating Literacy and Science—The Wow Factor (p. 107)
Thursday, Mar 31	12 Noon–1:30 PM	214, MCC	Discourse Tools for Equitable and Rigorous Talk (p. 112)

AEOP eCYBERMISSION (Booth #1046)

Thursday, Mar 31	10:00–11:30 AM	107B, MCC	Engineering Design in the Middle School Classroom (p. 102)
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Amplify (Booth #308)

Thursday, Mar 31	8:00–9:30 AM	107B, MCC	Navigating the Shifts of the NGSS with Leaders from The Lawrence Hall of Science (p. 94)
Thursday, Mar 31	12 Noon–1:30 PM	107B, MCC	What Is Amplify Science? Learn About the Newest K–8 Curriculum from The Lawrence Hall of Science (p. 108)

ANATOMY IN CLAY® Learning System (Booth #926)

Thursday, Mar 31	10:00–11:30 AM	212, MCC	Understanding Muscle Concepts of Human Anatomy: Building It in Clay (p. 106)
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Arbor Scientific (Booth #743)

Thursday, Mar 31	2:00–3:30 PM	202C, MCC	Cool Tools for Force and Motion (p. 136)
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Backyard Brains, Inc. (Booth #156)

Thursday, Mar 31	10:00–11:30 AM	202C, MCC	Bringing Real Neuroscience and Neural Engineering into Your Classroom (p. 103)
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Index of Exhibitor Workshops

Bio-Rad Laboratories, Inc. (Booth #152)

Thursday, Mar 31	8:00–9:30 AM	208A, MCC	Contagion! Track the Progress of Dangerous Viruses That Are Spreading Throughout the Country (p. 97)
Thursday, Mar 31	8:00–9:30 AM	208B, MCC	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 97)
Thursday, Mar 31	10:00–11:30 AM	208A, MCC	Improve Student Engagement Using Pop Culture in Your Life Science Class (p. 106)
Thursday, Mar 31	10:00–11:30 AM	208B, MCC	Enzymes: Technology Inspired by Nature (p. 106)
Thursday, Mar 31	2:00–3:30 PM	208B, MCC	ThiNQ!™ About It: Bacterial Transformation, GMO Probiotics, and the Runs Make a Great Case Study for AP Biology (p. 138)
Thursday, Mar 31	2:00–3:30 PM	208A, MCC	Fast Electrophoresis (p. 137)
Thursday, Mar 31	4:00–5:30 PM	208B, MCC	Communicating Science Through Lab Notebooking (p. 154)
Thursday, Mar 31	4:00–5:30 PM	208A, MCC	Starting a Biotech Program: One Piece of Equipment at a Time (p. 154)

BIOZONE International Ltd. (Booth #840)

Thursday, Mar 31	10:00–11:30 AM	202B, MCC	Engaging Students Effectively: The BIOZONE Solution for Grades 9–12 (p. 103)
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Bone Clones Inc. (Booth #1021)

Thursday, Mar 31	8:00–9:30 AM	214, MCC	Hominid Evolution Activity (p. 98)
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Carolina Biological Supply Co. (Booth #118)

Thursday, Mar 31	8:00–9:30 AM	204, MCC	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 96)
Thursday, Mar 31	8:00–9:30 AM	205B, MCC	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 97)
Thursday, Mar 31	8:00–9:30 AM	205A, MCC	Bring Visual Science into K–5 Classrooms—It's a Game Changer! (p. 96)
Thursday, Mar 31	10:00–11:30 AM	204, MCC	Introduction to Wisconsin Fast Plants® (p. 103)
Thursday, Mar 31	10:00–11:30 AM	205A, MCC	Modeling Beyond a Flashlight and Beach Ball (p. 104)
Thursday, Mar 31	10:00–11:30 AM	205B, MCC	They Come in Pairs: Using Socks to Identify and Address Student Misconceptions About Chromosomes (p. 104)
Thursday, Mar 31	12 Noon–1:30 PM	204, MCC	Genetics Brought to Life: Gene-ius Model Organisms (p. 110)
Thursday, Mar 31	12 Noon–1:30 PM	205A, MCC	EQuIP Your District for NGSS (p. 110)
Thursday, Mar 31	12 Noon–1:30 PM	205B, MCC	Strawberry Milkshakes: DNA and Lactose Intolerance (p. 111)
Thursday, Mar 31	2:00–3:30 PM	204, MCC	Hands-On Science with Classroom Critters (p. 136)
Thursday, Mar 31	2:00–3:30 PM	205A, MCC	Pushing and Pulling Your Teachers to NGSS (p. 136)
Thursday, Mar 31	2:00–3:30 PM	205B, MCC	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 137)
Thursday, Mar 31	4:00–5:30 PM	204, MCC	Shark Dissection: A Jawsome Experience! (p. 153)
Thursday, Mar 31	4:00–5:30 PM	205B, MCC	Hands-On Activities to Model Habitat Preference and Population Sampling (p. 153)
Thursday, Mar 31	4:00–5:30 PM	205A, MCC	Argumentation: Claims, Evidence, and Reasoning Made Easy (p. 153)

Celestron (Booth #1218)

Thursday, Mar 31	4:00–5:30 PM	110A, MCC	BUGDORK! Using Insects to Engage Students and Inspire Learning (p. 152)
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CPO Science/School Specialty Science (Booth #420)

Thursday, Mar 31	8:00–9:30 AM	201A, MCC	CPO's Chemistry Models Link™ Learning Module: Fun with Atom Building Games (p. 95)
Thursday, Mar 31	12 Noon–1:30 PM	201A, MCC	Building an Electric Motor the STEM Way with CPO's Link™ Learning Module (p. 110)
Thursday, Mar 31	2:00–3:30 PM	201A, MCC	CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design (p. 136)
Thursday, Mar 31	4:00–5:30 PM	201A, MCC	Genetics: Crazy Traits and CPO's New Link™ Learning Module (p. 152)

Delta Education/School Specialty Science (Booth #322)

Thursday, Mar 31	8:00–9:30 AM	202A, MCC	Engineering Design—Will It Sink or Float? (p. 96)
Thursday, Mar 31	10:00–11:30 AM	202A, MCC	PEASE in Our Time: Memory Lanes of the Brain (p. 103)
Thursday, Mar 31	12 Noon–1:30 PM	202A, MCC	Crosscutting Concepts and Argumentation Using Magnets and Electromagnetism (p. 110)
Thursday, Mar 31	2:00–3:30 PM	202A, MCC	What's Going on in There? NGSS and STEM for Administrators, Teacher Trainers, and University Faculty (p. 136)
Thursday, Mar 31	4:00–5:30 PM	202A, MCC	High-Flying Connections with Science and Literacy (p. 152)

THE NEED PROJECT

Looking to energize your classroom?

Come visit us at booth 1326

Energize Your Elementary Students,
April 1 3:30-4:30 p.m.
Music City Center Room 104C

Energize Your Classroom While Teaching Tough Energy Concepts,
April 3 11:00 a.m. – 12:00 p.m.
Music City Center Room 103B





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Delta Education/School Specialty Science–FOSS (Booth #322)

Thursday, Mar 31	8:00–9:30 AM	201B, MCC	10 Minutes to Improving Science Achievement (p. 96)
Thursday, Mar 31	10:00–11:30 AM	201B, MCC	What Does Argumentation Look Like in an Elementary Classroom? (p. 103)
Thursday, Mar 31	12 Noon–1:30 PM	201B, MCC	Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate Using FOSS (p. 110)
Thursday, Mar 31	2:00–3:30 PM	201B, MCC	Engage Them Early—K–2 Science and Engineering Experiences with FOSS (p. 136)
Thursday, Mar 31	4:00–5:30 PM	201B, MCC	What Does Conceptual Modeling Look Like in Grades 5–7 Classrooms? (p. 152)

Discovery Education (Booth #642)

Thursday, Mar 31	8:00–9:30 AM	401 A/B, MCC	Engaging Students in Authentic Science Experiences Using Digital Tools (p. 98)
Thursday, Mar 31	10:00–11:30 AM	401 A/B, MCC	Personalizing Your Science Instruction (p. 107)
Thursday, Mar 31	12 Noon–1:30 PM	401 A/B, MCC	Bringing NGSS to the Classroom with Discovery Education (p. 113)
Thursday, Mar 31	2:00–3:30 PM	401 A/B, MCC	What Works? Science Techbook and Effective Professional Development (p. 139)
Thursday, Mar 31	4:00–5:30 PM	401 A/B, MCC	10 Creative Ways to Read, Write, and Think Like a Scientist (p. 156)

Disney Youth Programs (Booth #844)

Thursday, Mar 31	4:00–5:30 PM	212, MCC	A Peek Behind the Curtain: Disney Parks Approach to Physics and Energy (p. 156)
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Edvotek Inc. (Booth #606)

Thursday, Mar 31	8:00–9:00 AM	210, MCC	Teaching STEM Using Agarose Gel Electrophoresis (p. 94)
Thursday, Mar 31	9:30–10:30 AM	210, MCC	Case of the Missing Records (p. 102)
Thursday, Mar 31	11:00 AM–12 Noon	210, MCC	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 108)
Thursday, Mar 31	12:30–1:30 PM	210, MCC	Using Biotechnology to Diagnose HIV/AIDS (p. 122)
Thursday, Mar 31	2:00–3:00 PM	210, MCC	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 134)
Thursday, Mar 31	3:30–4:30 PM	210, MCC	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 149)

FIRST (Booth #255)

Thursday, Mar 31	10:00–11:30 AM	110A, MCC	Use Robots to Engage Elementary/Middle School Students with Hands-On Project-Based Learning (p. 102)
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Flinn Scientific, Inc. (Booth #333)

Thursday, Mar 31	10:00–11:30 AM	209A, MCC	Flinn Favorite Biology Lab Activities and Games (p. 106)
Thursday, Mar 31	12 Noon–1:30 PM	209A, MCC	Year-Round Solutions for Success in AP Chemistry from Flinn Scientific (p. 112)
Thursday, Mar 31	2:00–3:30 PM	209A, MCC	Teaching Forensics with Real Crime Scene Investigation Techniques from Flinn Scientific (p. 138)
Thursday, Mar 31	4:00–5:30 PM	209A, MCC	Building or Renovating a Laboratory? Get Your Questions Answered! (p. 154)

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2016 Schedule

April 20	Kites
May 11	Helicopters
May 25	Moon Rocks
June 15	Milestones of Flight: Lunar Module
September 14	Science on the Station
September 28	Star Trek 50th Anniversary
October 19	Hot Air Balloons
November 16	Landing on Other Planets
December 14	Wright Brothers



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Frey Scientific/School Specialty Science (Booth #521)

Thursday, Mar 31	10:00–11:30 AM	201A, MCC	Inquiry Investigations into Environmental Issues (p. 103)
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HHMI BioInteractive (Booth #822)

Thursday, Mar 31	8:00–9:30 AM	207B, MCC	HHMI BioInteractive's Evolution Resources in Your NGSS Classroom (p. 97)
Thursday, Mar 31	10:00–11:30 AM	207B, MCC	BioInteractive's Free Resources to Teach Math, Statistics, and Data Analysis (p. 104)
Thursday, Mar 31	12 Noon–1:30 PM	207B, MCC	Use Free BioInteractive Resources to Build Evolutionary Trees from DNA Sequence Data (p. 111)
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Thursday, Mar 31	2:00–3:30 PM	212, MCC	Learning to MELP: An Innovative and Integrated Approach to Embedding Environmental Literacy into Curriculum (p. 138)

Houghton Mifflin Harcourt (Booth #1240)

Thursday, Mar 31	8:00–9:30 AM	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 96)
Thursday, Mar 31	12 Noon–1:30 PM	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 110)
Thursday, Mar 31	2:00–3:30 PM	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 136)

It's About Time (Booth #1140)

Thursday, Mar 31	8:00–9:30 AM	209C, MCC	Active Chemistry: The Leading Project-Based High School Chemistry Program Capturing the Essence of the NGSS and STEM (p. 98)
Thursday, Mar 31	10:00–11:30 AM	209C, MCC	Active Physics: The Leading Project-Based High School Physics Program Capturing the Essence of the NGSS and STEM (p. 106)
Thursday, Mar 31	12 Noon–1:30 PM	209C, MCC	Engineering in the NGSS: New Curricula for New Standards (p. 112)
Thursday, Mar 31	2:00–3:30 PM	209C, MCC	Experience What It Means to Engage Learners in Three-Dimensional Learning Using Project-Based Learning (p. 138)
Thursday, Mar 31	4:00–5:00 PM	209C, MCC	Project-Based Earth Science: Engaging Students in Real-World Issues (p. 151)

K'NEX Education® (Booth #607)

Thursday, Mar 31	8:30–9:30 AM	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 100)
Thursday, Mar 31	10:00–11:00 AM	108, MCC	Off to the Races with K'NEX Education's Forces, Energy, and Motion Set! (p. 102)
Thursday, Mar 31	11:30 AM–12:30 PM	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 108)
Thursday, Mar 31	1:30–2:30 PM	108, MCC	Forensic DNA Activities and More with K'NEX Education's DNA, Replication, and Transcription Set (p. 125)
Thursday, Mar 31	3:00–4:00 PM	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 140)

LAB-AIDS®, Inc. (Booth #915)

Thursday, Mar 31	8:00–9:30 AM	205C, MCC	Calling All Carbons (p. 97)
Thursday, Mar 31	10:00–11:30 AM	205C, MCC	Prospecting for Mineral Ore (p. 104)
Thursday, Mar 31	12 Noon–1:30 PM	205C, MCC	Using Climate Proxies to Learn About Earth's Climate History (p. 111)

LAB-AIDS®, Inc., continued

Thursday, Mar 31	2:00–3:30 PM	205C, MCC	One in a Million (p. 137)
Thursday, Mar 31	4:00–5:30 PM	205C, MCC	Chemical Formula and Amino Acids (p. 153)

LaMotte Co. (Booth #1015)

Thursday, Mar 31	10:00–11:30 AM	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 102)
Thursday, Mar 31	12 Noon–1:30 PM	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 108)

LEGO Education (Booths #341 / #358)

Thursday, Mar 31	10:00–11:30 AM	211, MCC	Make Science Come to Life (p. 106)
Thursday, Mar 31	12 Noon–1:30 PM	211, MCC	Make Science Come to Life (p. 112)
Thursday, Mar 31	2:00–3:30 PM	211, MCC	Make Science Come to Life (p. 138)
Thursday, Mar 31	4:00–5:30 PM	211, MCC	Make Science Come to Life (p. 154)

McGraw-Hill Education (Booth #1345)

Thursday, Mar 31	4:00–5:30 PM	202B, MCC	Accelerating Conceptual Understanding in K–5 Science Through Technology (p. 153)
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Microsoft (Booth #1335)

Thursday, Mar 31	8:00–9:30 AM	202C, MCC	Development of a Science Maker Kit for Inquiry-Based Teaching: Ideation and Feedback (p. 96)
Thursday, Mar 31	4:00–5:30 PM	202C, MCC	Understanding the Community Impact of Environmental Hazards: Developing a Project-Based Learning Challenge from Start to Finish Using Microsoft Tools (p. 153)

MSOE Center for BioMolecular Modeling (Booth #518)

Thursday, Mar 31	2:00–3:30 PM	214, MCC	Genes, Genomes, and Personalized Medicine (p. 138)
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National Geographic Learning (Booth #750)

Thursday, Mar 31	12 Noon–1:30 PM	209B, MCC	CONNECTIONS: Three-Dimensional Learning by National Geographic Explorers (p. 112)
Thursday, Mar 31	4:00–5:30 PM	209B, MCC	National Geographic Explorers: Ideal Role Models of STEM (p. 154)

PASCO scientific (Booth #622)

Thursday, Mar 31	8:00–9:00 AM	206 A/B, MCC	Engineering Bumpers and NGSS: Hands-On Physics with PASCO's New Wireless Smart Cart! (p. 94)
Thursday, Mar 31	9:30–10:30 AM	206 A/B, MCC	Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics! (p. 101)
Thursday, Mar 31	11:00 AM–12 Noon	206 A/B, MCC	Project-Based Activities with Wireless Sensors to Meet Gas Laws and Stoichiometry Chemistry Standards (p. 108)
Thursday, Mar 31	12:30–1:30 PM	206 A/B, MCC	Environmental Science Using Wireless Sensors (p. 122)
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PASCO scientific, continued

Thursday, Mar 31	3:30–4:30 PM	206 A/B, MCC	Sensor-Based Labs to Address NGSS Practices for Middle School Life, Earth, and Physical Science (p. 149)
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Pearson Education (Booth #612)

Thursday, Mar 31	8:00–9:30 AM	110B, MCC	Using Problem-Based Learning to Up Your NGSS Game (p. 95)
Thursday, Mar 31	10:00–11:30 AM	110B, MCC	Welcome to the Anthropocene: Using Global Change to Teach NGSS Crosscutting Concepts and Core Ideas in Biology and Earth Science (p. 103)
Thursday, Mar 31	12 Noon–1:30 PM	110B, MCC	Using the Pearson Virtual Laboratories to Implement the NGSS (p. 109)
Thursday, Mar 31	2:00–3:30 PM	110B, MCC	STEM and NGSS Inquiry in Chemistry: Effective, Efficient, Economical (p. 134)
Thursday, Mar 31	4:00–5:30 PM	110B, MCC	STEM Beyond the Classroom (p. 152)

Perimeter Institute for Theoretical Physics (Booth #1219)

Thursday, Mar 31	2:00–3:30 PM	107B, MCC	How Do Scientists Think? (p. 134)
Thursday, Mar 31	4:00–5:30 PM	107B, MCC	What's New in Physics? (p. 152)

The Perry Initiative (Booth #1350)

Thursday, Mar 31	12 Noon–1:30 PM	212, MCC	Orthopaedics In Action (p. 112)
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Pitsco Education (Booth #352)

Thursday, Mar 31	4:00–5:30 PM	107A, MCC	Science of Speed: The Fusion of Competition, Creativity, and STEM Learning (p. 152)
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SAE International—A World In Motion Program (Booth #609)

Thursday, Mar 31	8:00–9:30 AM	107A, MCC	STEM and Literature (p. 94)
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Science First®/STARLAB® (Booth #1114)

Thursday, Mar 31	12:30–1:00 PM	Booth #1114, Exh. Hall	The Solid Earth (p. 115)
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Simulation Curriculum Corp. (Booth #834)

Thursday, Mar 31	10:00–11:30 AM	209B, MCC	Plate Tectonics: Continents on the Move (p. 106)
Thursday, Mar 31	2:00–3:30 PM	209B, MCC	Plate Tectonics: The Good, the Bad, and the Ugly (p. 138)

Teachers Curriculum Institute (Booth #256)

Thursday, Mar 31	2:00–3:30 PM	107A, MCC	Inspire Students to Jump to the Inquiry Arc (p. 134)
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A low-cost, award-winning, PreK-12 STEM curriculum, STEMscopes understands what it takes to engage your learners in rigorous STEM learning. Take a test drive today and discover what over 2 million students already love.



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Texas Instruments (Booth #108)

Thursday, Mar 31	8:00–9:30 AM	110A, MCC	Zombie Apocalypse! (p. 94)
Thursday, Mar 31	12 Noon–1:30 PM	110A, MCC	Body of Evidence: A Forensic Science Mystery! (p. 109)
Thursday, Mar 31	2:00–3:30 PM	110A, MCC	Giant Squid and a Space Station! (p. 134)

Van Andel Education Institute Science Academy (Booth #706)

Thursday, Mar 31	12 Noon–1:30 PM	202C, MCC	No Great Science Student (NGSS) Left Behind with NexGen Inquiry™ (p. 110)
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Vernier Software & Technology (Booth #134)

Thursday, Mar 31	8:00–9:30 AM	207D, MCC	Middle School Science with Vernier (p. 97)
Thursday, Mar 31	8:00–9:30 AM	207C, MCC	Environmental Science with Vernier (p. 97)
Thursday, Mar 31	10:00–11:30 AM	207C, MCC	Chemistry with Vernier (p. 104)
Thursday, Mar 31	10:00–11:30 AM	207D, MCC	Integrating Chromebook with Vernier Technology (p. 104)
Thursday, Mar 31	12 Noon–1:30 PM	207D, MCC	iPad and Wireless Sensors with Vernier (p. 111)
Thursday, Mar 31	12 Noon–1:30 PM	207C, MCC	Biology with Vernier (p. 111)
Thursday, Mar 31	2:00–3:30 PM	207D, MCC	Explore Motion with Vernier Video Physics for iOS (p. 137)
Thursday, Mar 31	2:00–3:30 PM	207C, MCC	Wind and Solar Energy Basics with Vernier (p. 137)
Thursday, Mar 31	4:00–5:30 PM	207C, MCC	Renewable Energy with KidWind and Vernier (p. 154)
Thursday, Mar 31	4:00–5:30 PM	207D, MCC	Advanced Physics with Vernier (p. 154)

Ward's Science (Booth #142)

Thursday, Mar 31	8:00–9:30 AM	207A, MCC	Artificial Selection, It's Unnatural! (p. 97)
Thursday, Mar 31	10:00–11:30 AM	207A, MCC	Forces, Interactions, and Energy, Oh My! (p. 104)
Thursday, Mar 31	12 Noon–1:30 PM	207A, MCC	Introduction to BioBuilder (p. 111)
Thursday, Mar 31	2:00–3:30 PM	207A, MCC	Lift Weight and Produce Electricity with the Power of Wind (p. 137)
Thursday, Mar 31	4:00–5:30 PM	207A, MCC	CTE: Real-Life Forensics Brought to the Classroom, Solving the Case (p. 153)

Wavefunction, Inc. (Booth #1443)

Thursday, Mar 31	8:00–9:30 AM	212, MCC	Teaching Chemistry Effectively with Visualization and Simulation at the Molecular Level (p. 98)
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WhiteBox Learning (Booth #458)

Thursday, Mar 31	8:00–9:30 AM	209B, MCC	Project-Based STEM/Engineering (p. 98)
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National Earth Science Teachers Association Events at 2016 Nashville NSTA Conference



**All NESTA sessions are in Music City Center,
Davidson B, unless otherwise indicated**

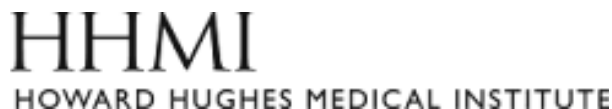
Friday, April 1

- 9:30 – 10:30 am Earth System Science Share-a-Thon
- 11:00 am – noon NESTA and HHMI Share: Multimedia Tools and Resources for Teaching Earth Science
- 12:30 – 1:30 pm NESTA and TERC Share: EarthScope Chronicles: The Newberry Volcano
- 2:00 – 3:00 pm Geology Share-a-Thon
- 3:30 – 4:30 pm Rock, Mineral, and Fossil Raffle
- 6:30 – 8:00 pm NESTA Friends of Earth Science Reception, Hilton Garden Inn, Skyline Junior Ballroom

Saturday, April 2

- 9:30 – 10:30 am Astronomy Science Share-a-Thon
- 11:00 am – noon American Geophysical Union Lecture, Dr. Linda Kah, Kenneth Walker Professor at UT-Knoxville, Music City Center, Grand Ballroom C2
- 12:30 – 1:30 pm NESTA and CIESIN Share: Exploring a Compendium of Online Resources for Teaching Earth Science
- 2:00 – 3:00 pm Atmosphere and Ocean Share-a-Thon
- 3:30 – 4:30 pm Innovative Ways to Teach about Weather Observation and Weather Hazards
- 5:00 – 6:00 pm NESTA Annual Membership Meeting

NESTA gratefully acknowledges the following organizations as sponsors:



*MCC stands for Music City Center

Earth and Space Science

8:00–8:30 AM	7–12	101E, MCC	The CO ₂ Culprit: Man vs. (Volcanic) Mountain (p. 85)
8:00–9:00 AM	9–12	Broadway G, Omni	Climate Change, Evolution, and Bears: Oh My! (p. 88)
8:00–9:00 AM	K–4	104D, MCC	Creating Teachable Moments for Elementary Classrooms (p. 89)
8:00–9:00 AM	4–6	106B, MCC	Using Modeling to Teach Grade 5 Students About Natural Systems (p. 92)
8:00–9:00 AM	G	Davidson B, MCC	NMEA Session: Whale of a Tale Share-a-Thon (p. 92)
8:00–9:00 AM	6–C	103A, MCC	Analyzing and Interpreting Ice Sheet Data to Determine the Effects of Human Activities on Climate (p. 86)
8:00–9:00 AM	G	Center Blrm., Renaissance	50 Years of Field Science (p. 88)
8:00–9:00 AM	6–C	West Blrm., Renaissance	Atmospheric and Earth Observations Using Sensors (p. 88)
8:00–9:00 AM	K–12	Cumberland 2, Omni	Argumentation by Design: Integrating Evidence-Based Arguments with STEM Design Tasks (p. 93)
8:00–9:00 AM	6–12	Legends C, Omni	Making Sense of Phenomena Through Three-Dimensional Learning (p. 93)
8:00–9:30 AM	6–8	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 96)
8:00–9:30 AM	9–12	205C, MCC	Calling All Carbons (p. 97)
8:00–9:30 AM	7–C	207C, MCC	Environmental Science with Vernier (p. 97)
8:30–9:00 AM	9–12	101E, MCC	Creating a NASA-Based Research Environment in a High School Classroom: Mission to Outer Space (p. 99)
8:30–9:00 AM	6–8	Music Row 4, Omni	Dissonance to Harmony: How to Create Beautiful Educational Music with non-STEM Teachers (p. 99)
9:30–10:30 AM	7–C	Davidson B, MCC	NMEA Session: Oil Spill Research—A Microcosm for Understanding the Process of Science (p. 101)
10:00–11:30 AM	4–C	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 102)
10:00–11:30 AM	6–12	209B, MCC	Plate Tectonics: Continents on the Move (p. 106)
10:00–11:30 AM	9–12	202B, MCC	Engaging Students Effectively: The BIOZONE Solution for Grades 9–12 (p. 103)
10:00–11:30 AM	9–12	205C, MCC	Prospecting for Mineral Ore (p. 104)
10:00–11:30 AM	9–12	110B, MCC	Welcome to the Anthropocene: Using Global Change to Teach NGSS Crosscutting Concepts and Core Ideas in Biology and Earth Science (p. 103)
10:00–11:30 AM	5–11	201A, MCC	Inquiry Investigations into Environmental Issues (p. 103)
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12 Noon–1:30 PM	4–C	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 108)
12 Noon–1:30 PM	9–12	205C, MCC	Using Climate Proxies to Learn About Earth's Climate History (p. 111)
12 Noon–1:30 PM	5–8	201B, MCC	Floods, Heat Waves, and Hurricanes: Analyzing Evidence for a Changing Climate Using FOSS (p. 110)
12:30–1:00 PM	7–12	106A, MCC	High-Adventure Science: Free Simulations Exploring Earth's Systems and Sustainability (p. 114)
12:30–1:00 PM	P–4	104B, MCC	The Living Classroom: Turning Your Curriculum into an Outdoor Adventure Through Learning Gardens (p. 114)
12:30–1:00 PM	5–8	Booth #1114, Exhibit Hall, MCC	The Solid Earth (p. 115)
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12:30–1:30 PM	K–3	104D, MCC	Weather or Not? (p. 118)
12:30–1:30 PM	6–C	East Blrm., Renaissance	Designing Writing Tasks for the NGSS Classroom (p. 117)
12:30–1:30 PM	9–C	Cumberland 4, Omni	Putting STEAM Back into STEM: Challenging Students to Creatively Communicate Scientific Concepts to Public Audiences (p. 116)
12:30–1:30 PM	6–12	Center Blrm., Renaissance	NASA Airborne Science Missions Can Bring Science and Scientists to Your Classroom (p. 116)
12:30–1:30 PM	1–12	Cumberland 5, Omni	STEM Rocks! Discover the Excitement of Geoscience Research in Antarctica (p. 120)
12:30–1:30 PM	6–12	Legends A, Omni	ADI Pathway Session: Helping Students Learn to Argue from Evidence with Argument-Driven Inquiry (p. 120)
12:30–1:30 PM	K–12	206 A/B, MCC	Environmental Science Using Wireless Sensors (p. 122)

1:00–1:30 PM	6–12	106A, MCC	Ecojustice Showcase: Middle Schoolers Sharing Their Environmental Research with Their Communities (p. 124)
1:00–1:30 PM	10–C	Music Row 1, Omni	Authentic Science Research in the High School Classroom (p. 124)
2:00–3:00 PM	9–C	Music Row 1, Omni	The Science Behind Advanced Coursework in High School (p. 129)
2:00–3:00 PM	5–C	Davidson B, MCC	NMEA Session: Ocean Literacy—Identifying Constructs That Go Beyond Content Knowledge (p. 128)
2:00–3:00 PM	4–12	West Blrm., Renaissance	Big Data, Small Devices: Using BYOT for Real-Time Investigations in Earth and Environmental Science (p. 130)
2:00–3:30 PM	9–12	212, MCC	Learning to MELP: An Innovative and Integrated Approach to Embedding Environmental Literacy into Curriculum (p. 138)
2:00–3:30 PM	3–5	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 136)
2:00–3:30 PM	6–11	107B, MCC	How Do Scientists Think? (p. 134)
2:00–3:30 PM	7–8	Davidson A2/3, MCC	Here Comes the Sun...an Interactive Approach to Weather in Middle School (p. 128)
2:00–3:30 PM	6–12	209B, MCC	Plate Tectonics: The Good, the Bad, and the Ugly (p. 138)
2:30–3:00 PM	C	Ryman One, Renaissance	Three Billion Years at Your Fingertips: Teaching Geological History with PBS's NOVA and Digital Media (p. 140)
3:30–4:30 PM	G	103B, MCC	NASA Is Looking for a Few Great Teachers and Their Students! (p. 144)
3:30–4:30 PM	1–6	Cumberland 5, Omni	Polar Bears and Penguins Bring Science Literacy to the Classroom (p. 148)
3:30–4:30 PM	7–12	106B, MCC	Carbon on the Move: Southeastern Forests and Climate Change (p. 147)
3:30–4:30 PM	1–12	Fisk Two, Renaissance	NARST Session: How to Make Science Instruction Compelling to Students: Designing Formative Assessments to Build on Learners' Interests AND Knowledge (p. 149)
3:30–4:30 PM	G	206 A/B, MCC	Sensor-Based Labs to Address NGSS Practices for Middle School Life, Earth, and Physical Science (p. 149)
4:00–4:30 PM	P–3	Davidson B, MCC	NMEA Session: Conservation and Children (p. 150)
4:00–5:00 PM	9–12	209C, MCC	Project-Based Earth Science: Engaging Students in Real-World Issues (p. 151)
4:00–5:30 PM	7–12	202C, MCC	Understanding the Community Impact of Environmental Hazards: Developing a Project-Based Learning Challenge from Start to Finish Using Microsoft Tools (p. 153)
4:00–5:30 PM	9–12	107B, MCC	What's New in Physics? (p. 152)
5:00–6:00 PM	K–6	103B, MCC	Teachers and NOAA Scientists: A Match Made at Sea (p. 157)
5:00–6:00 PM	4–8	103A, MCC	Mappin' It: Vertically Aligning Three-Dimensional Lessons in Earth Science (p. 160)
5:00–6:00 PM	6–12	Davidson A2/3, MCC	Climate Change at the Poles and Beyond (p. 158)
5:00–6:00 PM	3–12	Music Row 2, Omni	It Takes Water to Make STEAM: The Hutchison Lake Project (p. 158)
5:00–6:00 PM	5–12	106C, MCC	Getting Your Hands Dirty in a STEM Classroom with Soils (p. 161)
5:00–6:00 PM	6–12	106A, MCC	Is This Forest Healthy and What Does That Mean to Me? (p. 157)
5:00–6:00 PM	5–8	Legends E, Omni	ASTC Session: The All-American Total Solar Eclipse (August 21, 2017): Get Prepared for This Community-Wide Experience (p. 161)
5:00–6:00 PM	C	Music Row 4, Omni	NSELA Session: Improving Preparation of Elementary Teachers for Science Teaching Through Faculty Collaboration (p. 158)

Engineering, Technology, and the Application of Science

8:00–8:20 AM	9–C	Ryman One, Renaissance	SCST Session: Teaching Creativity in the Science Classroom (p. 85)
8:00–9:00 AM	7–12	Broadway H, Omni	From Students to Investigators—Igniting Students' Use of Data Analysis and Interpretation (p. 92)
8:00–9:00 AM	K–12	206 A/B, MCC	Engineering Bumpers and NGSS: Hands-On Physics with PASCO's New Wireless Smart Cart! (p. 94)
8:00–9:00 AM	K–12	Cumberland 2, Omni	Argumentation by Design: Integrating Evidence-Based Arguments with STEM Design Tasks (p. 93)
8:00–9:00 AM	K–9/C	Davidson A1, MCC	Harry Potter's Amazing World of Science and Magic (p. 86)
8:00–9:00 AM	7–12	Music Row 2, Omni	Cross-Curricular Project Based Learning (p. 88)

Schedule at a Glance Engineering, Technology, and the Application of Science

8:00–9:00 AM	7–11	103C, MCC	Using PBLs to Teach NGSS-Focused Chemistry (p. 89)
8:00–9:00 AM	4–9	105B, MCC	Force and Motion—Deeper and Cheaper (p. 89)
8:00–9:00 AM	K–3	104E, MCC	And They All Lived Scientifically Ever After! (p. 89)
8:00–9:00 AM	6–C	210, MCC	Teaching STEM Using Agarose Gel Electrophoresis (p. 94)
8:00–9:00 AM	6–12	Cumberland 3, Omni	Using Copper Tape, LEDs, and Stickers to Prototype and Explore Electrical Circuits (p. 93)
8:00–9:30 AM	5–C	209B, MCC	Project-Based STEM/Engineering (p. 98)
8:00–9:30 AM	9–12	209C, MCC	Active Chemistry: The Leading Project-Based High School Chemistry Program Capturing the Essence of the NGSS and STEM (p. 98)
8:00–9:30 AM	1–6	202A, MCC	Engineering Design—Will It Sink or Float? (p. 96)
8:30–9:00 AM	8–12	Music Row 1, Omni	Becoming WISE: A Year in the Life of a Girls' Science and Engineering Club (p. 99)
8:30–9:30 AM	5–10	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 100)
8:30–9:00 AM	6–8	Music Row 4, Omni	Dissonance to Harmony: How to Create Beautiful Educational Music with non-STEM Teachers (p. 99)
9:30–10:30 AM	9–C	210, MCC	Case of the Missing Records (p. 102)
10:00–11:30 AM	9–12	209C, MCC	Active Physics: The Leading Project-Based High School Physics Program Capturing the Essence of the NGSS and STEM (p. 106)
10:00–11:30 AM	4–C	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 102)
10:00–11:30 AM	6–9	107B, MCC	Engineering Design in the Middle School Classroom (p. 102)
10:00–11:30 AM	6–C	202C, MCC	Bringing Real Neuroscience and Neural Engineering into Your Classroom (p. 103)
10:00–11:30 AM	K–8	110A, MCC	Use Robots to Engage Elementary/Middle School Students with Hands-On Project-Based Learning (p. 102)
11:30 AM–12:30 PM	5–10	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 108)
12 Noon–1:30 PM	6–C	212, MCC	Orthopaedics In Action (p. 112)
12 Noon–1:30 PM	4–C	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 108)
12 Noon–1:30 PM	9–12	209C, MCC	Engineering in the NGSS: New Curricula for New Standards (p. 112)
12 Noon–1:30 PM	6–12	201A, MCC	Building an Electric Motor the STEM Way with CPO's Link™ Learning Module (p. 110)
12 Noon–1:30 PM	9–12	207A, MCC	Introduction to BioBuilder (p. 111)
12 Noon–1:30 PM	1–12	109, MCC	Engineering Solutions in the STEM Classroom (p. 109)
12:30–1:00 PM	P–4	104B, MCC	The Living Classroom: Turning Your Curriculum into an Outdoor Adventure Through Learning Gardens (p. 114)
12:30–1:30 PM	7–C	Legends F, Omni	Educator's Guide to Bloodstain Pattern Analysis: Real-World Science! (p. 120)
12:30–1:30 PM	3–12	Music Row 3, Omni	AMSE Session: How the Science of Polymers and the Making of Tires Roll into the Next Generation Science Standards (p. 116)
12:30–1:30 PM	P–4	105A, MCC	CESI Session: Building Towers and Structures! Using the Engineering Design Process with Young Children! (p. 118)
12:30–1:30 PM	4–9	104E, MCC	Electrifying Your STEM and Language Arts Integration with Technology (p. 118)
12:30–1:30 PM	9–C	Cumberland 4, Omni	Putting STEAM Back into STEM: Challenging Students to Creatively Communicate Scientific Concepts to Public Audiences (p. 116)
12:30–1:30 PM	5–8	101E, MCC	Science By Design: Addressing Science Concepts Through Engineering (p. 118)
12:30–1:30 PM	5–8	Broadway K, Omni	This Might Flip You Out: Create a Toy That Makes a Character Somersault When You Squeeze the Handles (p. 119)
2:00–3:00 PM	9–12	103B, MCC	Putting the Green in the NGSS (p. 130)
2:00–3:00 PM	K–2	104D, MCC	Structures and Stories for K–2 (p. 130)
2:00–3:00 PM	4–5	106B, MCC	LDC Integration of Science and ELA (p. 132)
2:00–3:00 PM	G	Music Row 2, Omni	Discover the NGSS: An Interactive Exploration of the <i>Next Generation Science Standards</i> (p. 129)

Schedule at a Glance Engineering, Technology, and the Application of Science

2:00–3:00 PM	4–12	West Blrm., Renaissance	Big Data, Small Devices: Using BYOT for Real-Time Investigations in Earth and Environmental Science (p. 130)
2:00–3:00 PM	4–10	Legends G, Omni	Challenge Your Students to Make Motors (p. 133)
2:00–3:00 PM	9–C	Music Row 1, Omni	The Science Behind Advanced Coursework in High School (p. 129)
2:00–3:00 PM	K–5	104C, MCC	Communicate Like an Engineer! (p. 130)
2:00–3:30 PM	3–8	207C, MCC	Wind and Solar Energy Basics with Vernier (p. 137)
2:00–3:30 PM	6–12	205B, MCC	Engineer Excitement in Your Classroom with a Carolina STEM Challenge® (p. 137)
2:00–3:30 PM	6–12	201A, MCC	CPO's Link™ Wind Turbine Learning Module: A STEM Approach to Engineering and Design (p. 136)
2:00–3:30 PM	9–12	212, MCC	Learning to MELP: An Innovative and Integrated Approach to Embedding Environmental Literacy into Curriculum (p. 138)
2:20–2:40 PM	C	Ryman One, Renaissance	SCST Session: Does the Group Assessment of Logical Thinking (GALT) Predict Success? (p. 140)
3:00–4:00 PM	5–10	108, MCC	Build, Program, and Control with K'NEX Education's New Robotics Building System (p. 140)
3:30–3:50 PM	C	Ryman One, Renaissance	SCST Session: What Else Should They Know? Training Students to Be Effective Peer Educators in Biology, Chemistry, and Physics (p. 141)
3:30–4:00 PM	12	Music Row 1, Omni	Teaching Engineering Design to the High School Blind and Visually Impaired: A Case Study (p. 141)
3:30–4:30 PM	5–12	101D, MCC	The James Webb STEM Innovation Project: Bringing Authentic STEM Experiences to the Classroom (p. 144)



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Schedule at a Glance Engineering, Technology, and the Application of Science

3:30–4:30 PM	4–8	104E, MCC	Liftoff to Learning (p. 146)
3:30–4:30 PM	K–8	105B, MCC	Designing Lessons for the Private School Setting that Implement the NGSS Using the Engineering Design Process (p. 146)
3:30–4:30 PM	6–8	Broadway K, Omni	Implementing Challenge-Based Learning in the Classroom (p. 148)
3:30–4:30 PM	4–C	Legends C, Omni	Bioengineering Activities for the Classroom (p. 148)
3:30–4:30 PM	6–8	Legends F, Omni	Integrating Three-Dimensional Learning Using Rocket Cars in a Project-Based Classroom (p. 149)
3:30–4:30 PM	P–6	Davidson A1, MCC	Mary C. McCurdy Lecture: Integrate to Innovate: How Classroom Engineering Develops “Habits of Mind” That Empower Student Performance (p. 142)
3:30–4:30 PM	G	103B, MCC	NASA Is Looking for a Few Great Teachers and Their Students! (p. 144)
3:30–5:30 PM	K–6	105A, MCC	CESI Session: Using Digital Literacies and Place-Based Learning to Engage Students in Inquiry-Based Science (p. 150)
4:00–5:30 PM	7–C	207C, MCC	Renewable Energy with KidWind and Vernier (p. 154)
4:00–5:30 PM	3–12	209B, MCC	National Geographic Explorers: Ideal Role Models of STEM (p. 154)
4:00–5:30 PM	3–5	202A, MCC	High-Flying Connections with Science and Literacy (p. 152)
4:00–5:30 PM	6–12	212, MCC	A Peek Behind the Curtain: Disney Parks Approach to Physics and Energy (p. 156)
4:00–5:30 PM	6–8	107A, MCC	Science of Speed: The Fusion of Competition, Creativity, and STEM Learning (p. 152)
5:00–5:30 PM	9–12	Cumberland 4, Omni	Making a Perfect Cold Pack: Engineering with Thermochemistry (p. 157)
5:00–6:00 PM	6–12	Davidson A2/3, MCC	Climate Change at the Poles and Beyond (p. 158)
5:00–6:00 PM	3–12	Cumberland 4, Omni	SEMT—Building Capacity for STEM: Rearranging the Acronym for Increased Outcomes (p. 160)
5:00–6:00 PM	K–5	106B, MCC	Programming in Elementary (Grades K–5) Classroom (p. 160)
5:00–6:00 PM	6–11	Music Row 1, Omni	How to Implement CCSS, NGSS, and Engineering in Your Classroom (p. 158)
5:00–6:00 PM	3–12	Music Row 2, Omni	It Takes Water to Make STEAM: The Hutchison Lake Project (p. 158)
5:00–6:00 PM	5–12	106C, MCC	Getting Your Hands Dirty in a STEM Classroom with Soils (p. 161)
5:20–5:40 PM	C	Ryman One, Renaissance	SCST Session: Year One Results of an Introductory Biology Inquiry Lab (p. 161)

General Science Education

8:00–8:30 AM	1–8	106A, MCC	Sweet Sound of Integration (p. 85)
8:00–8:30 AM	6–12	Music Row 1, Omni	Incorporating Arts in a Science and Technology Fair Program (p. 86)
8:00–8:30 AM	6–8	Music Row 4, Omni	Creation and Evaluation: Sharing STEM Tasks and Student Work (p. 86)
8:00–9:00 AM	6–8	Broadway K, Omni	WOW! Words of Wisdom: Ways to Make Your Students Scientifically Literate (p. 93)
8:00–9:00 AM	4–C	Cumberland 1, Omni	Analysis of Variance Visualized (p. 93)
8:00–9:00 AM	K–8	106C, MCC	Show Me the Data (p. 92)
8:00–9:00 AM	4–C	Legends G, Omni	STEM Infographic Use, Analysis, and Production for Higher Scientific Literacy in the Classroom (p. 93)
8:00–9:00 AM	P–1	103B, MCC	From the Farm to the Pond—An Inquiry Unit for Early Childhood Learners (p. 89)
8:00–9:00 AM	6–C	East Blrm., Renaissance	Science Through Service: Connecting Science with Community Needs (p. 88)
8:00–9:00 AM	6–12	Acoustic, Omni	Managing Your Science Classroom: Lessons Learned from Teaching in Unconventional Learning Environments (p. 87)
8:00–9:00 AM	4–8	Davidson A2/3, MCC	A Model for Immersive STEM Learning in Diverse Urban Middle Schools (p. 87)
8:00–9:00 AM	1–5	104A, MCC	Help! It’s My First Year Teaching Science! (p. 86)
8:00–9:00 AM	6–12	Music Row 5, Omni	Games: Hands-On Review Activities (p. 94)
8:00–9:00 AM	K–8	105A, MCC	CESI Session: Modeling Evidence Circles and Formative Assessment to Develop Three-Dimensional Learning (p. 89)

8:00–9:00 AM	6–12	Legends F, Omni	CSSS Session: Short Science Lessons Exemplars Blending Content, Practices, and Crosscutting Concepts (p. 93)
8:00–9:00 AM	3–8	101C, MCC	NSTA Press® Session: Promote Enduring Understanding with Literacy-Infused Units (p. 89)
8:00–9:00 AM	3–12	Music Row 3, Omni	Science Olympiad Urban Schools Initiative Kick Starter (p. 88)
8:00–9:00 AM	G	101D, MCC	NSTA Press® Session: Teaching Science for Conceptual Understanding: Exploring the “Big Ideas” of Conceptual Teaching and Learning in Science (p. 86)
8:00–9:00 AM	G	Legends E, Omni	AMSE Session: English Language Development Opportunities for ELLs Through Meaningful Integration of the NGSS and CCSS (p. 93)
8:00–9:00 AM	G	Davidson C, MCC	Welcome to Your First NSTA Conference (p. 87)
8:00–9:30 AM	3–8	201B, MCC	10 Minutes to Improving Science Achievement (p. 96)
8:00–9:30 AM	6–8	207D, MCC	Middle School Science with Vernier (p. 97)
8:00–9:30 AM	1–8	107B, MCC	Navigating the Shifts of the NGSS with Leaders from The Lawrence Hall of Science (p. 94)
8:00–9:30 AM	G	109, MCC	Assessment Writers Workshop (p. 94)
8:00–9:30 AM	1–8	110B, MCC	Using Problem-Based Learning to Up Your NGSS Game (p. 95)
8:00–9:30 AM	K–5	205A, MCC	Bring Visual Science into K–5 Classrooms—It’s a Game Changer! (p. 96)
8:00–9:30 AM	K–12	401 A/B, MCC	Engaging Students in Authentic Science Experiences Using Digital Tools (p. 98)
8:00–9:30 AM	6–12	202C, MCC	Development of a Science Maker Kit for Inquiry-Based Teaching: Ideation and Feedback (p. 96)
8:00–9:30 AM	K–4	107A, MCC	STEM and Literature (p. 94)
8:00–11:00 AM	6–C	Legends B, Omni	NGSS Toolkit Pathway Session: Using a Tool and the NGSS to Plan a Unit of Instruction (p. 99)
8:20–8:40 AM	11–C	Ryman One, Renaissance	SCST Session: Assessing Nonscience Majors’ Learning in General Education Courses by Using Their Disciplinary Talents and Interests (p. 99)
8:30–9:00 AM	K–8	106A, MCC	Teaching to Learn: An Elementary/Postsecondary Collaboration to Improve K–16 Science Teaching and Learning (p. 99)
9:15–10:30 AM	G	Grand Blrm. B/C, MCC	General Session: Energize Science (p.100)
10:00–11:30 AM	3–C	207D, MCC	Integrating Chromebook with Vernier Technology (p. 104)
10:00–11:30 AM	6–8	205A, MCC	Modeling Beyond a Flashlight and Beach Ball (p. 104)
10:00–11:30 AM	1–12	109, MCC	Successful Use of Argumentation in the STEM Classroom (p. 102)
10:00–11:30 AM	K–5	201B, MCC	What Does Argumentation Look Like in an Elementary Classroom? (p. 103)
10:00–11:30 AM	1–6	202A, MCC	PEASE in Our Time: Memory Lanes of the Brain (p. 103)
10:00–11:30 AM	P–5	214, MCC	Integrating Literacy and Science—The Wow Factor (p. 107)
10:00–11:30 AM	9–C	207B, MCC	BioInteractive’s Free Resources to Teach Math, Statistics, and Data Analysis (p. 104)
10:00–11:30 AM	1–5	211, MCC	Make Science Come to Life (p. 106)
10:00–11:30 AM	K–12	401 A/B, MCC	Personalizing Your Science Instruction (p. 107)
11:00 AM–12 Noon	11–12	Music Row 3, Omni	AMSE Session: Opening the Gateway to Success Using Case Studies to Help Implement Scientific Concepts (p. 107)
12 Noon–1:30 PM	5–8	214, MCC	Discourse Tools for Equitable and Rigorous Talk (p. 112)
12 Noon–1:30 PM	1–5	211, MCC	Make Science Come to Life (p. 112)
12 Noon–1:30 PM	K–8	205A, MCC	EQuIP Your District for NGSS (p. 110)
12 Noon–1:30 PM	3–C	207D, MCC	iPad and Wireless Sensors with Vernier (p. 111)
12 Noon–1:30 PM	G	202C, MCC	No Great Science Student (NGSS) Left Behind with NexGen Inquiry™ (p. 110)
12 Noon–1:30 PM	1–8	107B, MCC	What Is Amplify Science? Learn About the Newest K–8 Curriculum from The Lawrence Hall of Science (p. 108)
12 Noon–1:30 PM	K–12	401 A/B, MCC	Bringing NGSS to the Classroom with Discovery Education (p. 113)
12 Noon–1:30 PM	1–5	209B, MCC	CONNECTIONS: Three-Dimensional Learning by National Geographic Explorers (p. 112)

Schedule at a Glance General Science Education

12:30–12:50 PM	C	Ryman One, Renaissance	SCST Session: Growing a Writing-Across-the-Curriculum (WAC) Movement Through an Innovative STEM Collaboration (p. 113)
12:30–1:00 PM	P–5	104A, MCC	She Inspired Me with Science: A Theme-Based, Science-Inspired Curriculum in Elementary School (p. 114)
12:30–1:00 PM	9–C	Music Row 1, Omni	Creating a Semi Self-Paced Classroom Without Killing the Teacher (p. 114)
12:30–1:30 PM	P–12	101E, MCC	Visual Literacy: Using Observable and Inferred Evidence to Analyze and Interpret Information (p. 115)
12:30–1:30 PM	P–6	103C, MCC	Creating a Sticky Curriculum: Integrating Science with Core Academic Subjects in the Preschool and Elementary Classroom (p. 118)
12:30–1:30 PM	7–10	Cumberland 6, Omni	Looking for a Way to Teach Matter and Energy Through a Model-Based Approach? (p. 120)
12:30–1:30 PM	4–12	103B, MCC	Overcoming Geographical Barriers to Engaging with Scientists: I’m a Scientist USA (p. 115)
12:30–1:30 PM	K–12	103A, MCC	Supporting Three-Dimensional Learning by Spiraling K–12 Students’ Engagement with Phenomena (p. 118)
12:30–1:30 PM	P–12	Cumberland 2, Omni	How Are Science Teachers and Librarians Collaborating to Use Nonfiction Text and E-Content to Support STEM Instruction and Professional Learning? (p. 119)
12:30–1:30 PM	6–12	Music Row 5, Omni	The Fifth Quintile (p. 118)
12:30–1:30 PM	G	106C, MCC	Flipped Class 101: A User’s Manual (p. 115)
12:30–1:30 PM	6–12	Broadway H, Omni	Scaffolding for Argumentation (p. 119)
12:30–1:30 PM	6–11	Legends C, Omni	What’s in Your Tech Toolbox? (p. 120)
12:30–1:30 PM	2–8	105B, MCC	Art in Science? YES! (p. 118)
12:30–1:30 PM	G	Music Row 2, Omni	Science for All Cultures: A Framework for Strengthening Science Teaching and Learning in Increasingly Challenging and Culturally Diverse Classrooms (p. 116)
12:30–1:30 PM	5–8	Fisk One, Renaissance	ASTE Session: Integrated Middle Grades STEM Instruction (p. 117)
12:30–1:30 PM	K–12	Music Row 4, Omni	NSELA Session: Leadership Strategies for Ensuring Each Student Has a STEM Future (p. 116)
12:30–1:30 PM	3–C	Davidson A1, MCC	Magical Illusions and Scintillating Simulations for Science: It’s Showtime! (p. 115)
12:30–1:30 PM	6–8	Davidson B, MCC	NMEA Session: Starting a STEM Program in Your School on Next to Nothing (p. 116)
12:30–1:30 PM	G	Cumberland 3, Omni	Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 101) (p. 120)
12:30–1:30 PM	7–12	101C, MCC	NSTA Press® Session: Reimagining the Science Department (p. 117)
12:30–2:30 PM	6–C	Legends B, Omni	NGSS Toolkit Pathway Session: Using a Tool and NGSS Performance Expectations to Plan for Classroom Assessments (p. 123)
12:50–1:10 PM	6–C	Ryman One, Renaissance	SCST Session: Incorporating Reflective Journals in College Science Classrooms to Effectively and Harmoniously Bridge Science and Religion (p. 123)
1:00–1:30 PM	6–9	Broadway J, Omni	Getting Students to Love Science Again Through Daily Discovery Activities! (p. 124)
1:00–1:30 PM	K–6	104B, MCC	I’m All About the “E”...More STEM: Discovering Elementary Engineering with the 5E Model (p. 124)
1:00–1:30 PM	1–5	104A, MCC	Using Comics to Enhance Science Journals: NGSS Meets CCSS Writing (p. 124)
1:10–1:30 PM	C	Ryman One, Renaissance	SCST Session: Altering Students’ Alternative Conceptions About Science and Scientific Theories (p. 125)
2:00–2:20 PM	9–C	Ryman One, Renaissance	SCST Session: Assessing the Effect of Instructional Strategies on Student Engagement in a Flipped Classroom (p. 126)
2:00–2:30 PM	4–12	East Blrm., Renaissance	Creativity, Collaboration, and Innovation: Using a 3D Printer to Energize Your Teaching (p. 126)
2:00–3:00 PM	6–12	Music Row 5, Omni	Measuring Student Proficiency of Science Practices (p. 133)

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Schedule at a Glance General Science Education

2:00–3:00 PM	7–12	Broadway H, Omni	Students Developing and Using Models in Approximations of Scientific Activity in the NGSS (p. 132)
2:00–3:00 PM	6–12	Acoustic, Omni	Making Meaning in Science for All Children: Language and Discourse (p. 128)
2:00–3:00 PM	4–12	Broadway G, Omni	iPad Invasion in the Middle School Science Classroom (p. 129)
2:00–3:00 PM	3–7	106C, MCC	Model Approaches to Three-Dimensional Learning (p. 132)
2:00–3:00 PM	G	Cumberland 2, Omni	CSSS Session: The Next Generation of Science Leaders: What Does It Take to Prepare and Support Them? (p. 132)
2:00–3:00 PM	6–C	Fisk One, Renaissance	ASTE Session: STEM Professionals Who Became Teachers: Why Did They Do That? (p. 130)
2:00–3:00 PM	6–C	101C, MCC	NSTA Press® Session: Scientific Argumentation for the Classroom (p. 130)
2:00–3:00 PM	G	Cumberland 3, Omni	Planning and Designing Safe and Sustainable Science Facilities That Meet the NGSS (Science Facilities 102) (p. 132)
2:00–3:00 PM	G	Broadway A, Omni	Safety Advisory Board Roundtable: Listening and Addressing Your Safety Issues! (p. 129)
2:00–3:00 PM	P–4/C	105A, MCC	CESI Session: I'll Do It My Way (p. 132)
2:00–3:00 PM	G	101D, MCC	NSTA Press® Session: Uncovering Preservice and K–12 Teachers' Ideas About Science (p. 128)
2:00–3:00 PM	G	Music Row 4, Omni	NSELA Session: Equity, Leadership, and Change (p. 129)
2:00–3:00 PM	9–12	Music Row 3, Omni	AMSE Session: Implementing Pathways for Student Success in Science Education (p. 129)
2:00–3:00 PM	6–12	Legends A, Omni	ADI Pathway Session: Helping Students Learn to Obtain, Evaluate, and Communicate Information Through Reading and Writing with Argument-Driven Inquiry (p. 133)
2:00–3:00 PM	6–C	Broadway K, Omni	Technology Tools to Make Differentiation a Breeze (p. 132)
2:00–3:00 PM	6–8	Broadway J, Omni	Integrating Mathematics and Science: Collaborating for STEM Success (p. 129)
2:00–3:00 PM	2–8	Cumberland 5, Omni	Virtual Field Trip Connects Your Class to Antarctic Penguins (p. 133)
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2:00–3:30 PM	1–12	109, MCC	The Secret to Project-Based Learning Success (p. 134)
2:00–3:30 PM	1–5	211, MCC	Make Science Come to Life (p. 138)
2:00–3:30 PM	P–8	202A, MCC	What's Going on in There? NGSS and STEM for Administrators, Teacher Trainers, and University Faculty (p. 136)
2:00–3:30 PM	K–2	205A, MCC	Pushing and Pulling Your Teachers to NGSS (p. 136)
2:00–3:30 PM	K–5	107A, MCC	Inspire Students to Jump to the Inquiry Arc (p. 134)
2:00–3:30 PM	6–10	110A, MCC	Giant Squid and a Space Station! (p. 134)
2:00–3:30 PM	9–12	209A, MCC	Teaching Forensics with Real Crime Scene Investigation Techniques from Flinn Scientific (p. 138)
2:00–3:30 PM	K–12	401 A/B, MCC	What Works? Science Techbook and Effective Professional Development (p. 139)
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2:40–3:00 PM	9–C	Ryman One, Renaissance	SCST Session: Predicting Performance in the Flipped Classroom—Does Active Participation Matter? (p. 140)
3:30–4:00 PM	1–6	104B, MCC	Science, Technology, and Literacy: A Melting Pot of Ideas for the Elementary Classroom (p. 144)
3:30–4:00 PM	6–12	Acoustic, Omni	Science Current Events Journals: Real Science and News Media Literacy (p. 141)
3:30–4:30 PM	4–C	Legends G, Omni	Marble Maniacs (p. 163)
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3:30–4:30 PM	6–12	Broadway H, Omni	Including Nature of Science and Scientific Inquiry in Lessons Without Starting from Scratch (p. 148)
3:30–4:30 PM	K–6	104D, MCC	Science, Literacy, and Making Meaning Through Bookmaking (p. 146)

3:30–4:30 PM	1–6	104C, MCC	Supporting Teachers in the Introduction of Scientific Inquiry within a Multicultural Environment (p. 146)
3:30–4:30 PM	6–9	Music Row 3, Omni	Alphabet Soup: NGSS + CCSS + STEM! (p. 145)
3:30–4:30 PM	9–12	Broadway D, Omni	Forensic Pathology: An Introduction for Educators (p. 145)
3:30–4:30 PM	11–C	Music Row 2, Omni	Which Professional Development Improves AP Scores? (p. 145)
3:30–4:30 PM	K–5	Music Row 4, Omni	NSELA Session: Helping Teachers Build a Foundation for Scientific Literacy in Elementary (p. 145)
3:30–4:30 PM	5–8	101E, MCC	Inquiry and Argumentation, Oh My! (p. 144)
3:30–4:30 PM	6–C	Legends A, Omni	ADI Pathway Session: Making Science Instruction More Equitable with Argument-Driven Inquiry (p. 148)
3:30–4:30 PM	6–12	West Blrm., Renaissance	Bridging the Gap: Interdisciplinary STEM Projects (p. 146)
3:30–4:30 PM	1–12	103A, MCC	Building an NGSS Network: One District's K–12 Journey Toward Three-Dimensional Learning (p. 144)
3:30–4:30 PM	5–12	103C, MCC	Teaching Argument Writing in the Middle School and High School Science Classroom: Do This, Not That! (p. 146)
3:30–5:30 PM	G	Cumberland 2, Omni	CSSS Session: Aligning Classroom Instruction and Formative Assessment to NGSS Performance Expectations (p. 150)
4:00–4:30 PM	3–6	104B, MCC	Using Creative Nonfiction to Integrate Writing and Science into the Elementary Classroom (p. 150)
4:00–4:30 PM	7–12	Acoustic, Omni	Using Evidence from Text to Support Student Claims (p. 150)
4:00–4:30 PM	9–12	Music Row 1, Omni	Puzzling Phenomena, NGSS, and Technology-Based Learning for Diverse Learners (p. 150)
4:00–5:30 PM	K–8	205A, MCC	Argumentation: Claims, Evidence, and Reasoning Made Easy (p. 153)
4:00–5:30 PM	1–5	211, MCC	Make Science Come to Life (p. 154)
4:00–5:30 PM	6–12	110B, MCC	STEM Beyond the Classroom (p. 152)
4:00–5:30 PM	G	109, MCC	The Failed EdTech Revolution (p. 152)
4:00–5:30 PM	7–12	209A, MCC	Building or Renovating a Laboratory? Get Your Questions Answered! (p. 154)
4:00–5:30 PM	K–5	202B, MCC	Accelerating Conceptual Understanding in K–5 Science Through Technology (p. 153)
4:00–5:30 PM	K–12	401 A/B, MCC	10 Creative Ways to Read, Write, and Think Like a Scientist (p. 156)
5:00–5:30 PM	P–6	Fisk One, Renaissance	ASTE Session: Science and Literacy: Practicing Proficient Classroom Talk in Elementary Science (p. 157)
5:00–5:30 PM	7–12	Acoustic, Omni	Implementing Global Collaborative Projects in the Science Classroom (p. 157)
5:00–6:00 PM	6–12	Center Blrm., Renaissance	Using Standards-Based Grading Principles with a Traditional Grade Book (p. 158)
5:00–6:00 PM	K–5	104C, MCC	Connect K–5 NGSS Topics and CCSS ELA (p. 160)
5:00–6:00 PM	5–12	Cumberland 1, Omni	Science at a History Museum? Of Course! (p. 161)
5:00–6:00 PM	2–6	104A, MCC	Engaging Solutions for Local Challenges (p. 157)
5:00–6:00 PM	K–4	104D, MCC	Reducing Anxiety and Developing Confidence in Science Practices and Content for Elementary Teachers (p. 160)
5:00–6:00 PM	2–6	104B, MCC	Memoirs of a Goldfish (p. 157)
5:00–6:00 PM	K–5	101C, MCC	NSTA Press® Session: Teaching Science Through Integrating Children's Literature and Outdoor Investigations (p. 159)
5:00–6:00 PM	8–12	Fisk Two, Renaissance	NARST Session: Bringing Computational Thinking into Science Classrooms (p. 161)
5:00–6:00 PM	3–12	West Blrm., Renaissance	Effective Writing Strategies for Writing Lab Reports and Scientific Claims (p. 159)
5:30–6:00 PM	7–12	Acoustic, Omni	Bringing Community Stakeholders into High Schools to Improve Student Achievement (p. 162)

Informal Science Education

8:00–9:00 AM	P–2	104C, MCC	Exploring Force and Motion: It Will Be a Moving Experience (p. 89)
8:00–9:30 AM	K–5	205A, MCC	Bring Visual Science into K–5 Classrooms—It’s a Game Changer! (p. 96)
8:30–9:00 AM	8–12	Music Row 1, Omni	Becoming WISE: A Year in the Life of a Girls’ Science and Engineering Club (p. 99)
12 Noon–1:30 PM	6–C	212, MCC	Orthopaedics In Action (p. 112)
12:30–1:00 PM	G	West Blrm., Renaissance	From the Classroom to the Community: How Informal Science Education Provides Opportunities for Teachers to Partner with Education Stakeholders in the Community (p. 114)
12:30–1:30 PM	1–12	Cumberland 5, Omni	STEM Rocks! Discover the Excitement of Geoscience Research in Antarctica (p. 120)
12:30–1:30 PM	7–C	Legends E, Omni	ASTC Session: Sparking STEM Innovation with Arts-Based Learning (p. 120)
12:30–1:30 PM	9–C	Broadway D, Omni	Forensic Gravesite Excavation: How to Locate, Map the Site, and Process the Evidence (p. 116)
12:30–1:30 PM	P–12	Cumberland 2, Omni	How Are Science Teachers and Librarians Collaborating to Use Nonfiction Text and E-Content to Support STEM Instruction and Professional Learning? (p. 119)
1:00–1:30 PM	4–12	West Blrm., Renaissance	The Power of Initiative—Just Ask (p. 124)
2:00–3:00 PM	K–12	Legends E, Omni	ASTC Session: Building Informal/Formal Partnerships Between Schools, Science Museums/Centers, and Scientists to Create Effective PD (p. 133)
3:30–4:30 PM	G	Legends E, Omni	ASTC Session: Science Beyond the Classroom—Strategies for Developing Community Partnerships to Enrich STEM Learning Opportunities (p. 148)
5:00–6:00 PM	5–8	Legends E, Omni	ASTC Session: The All-American Total Solar Eclipse (August 21, 2017): Get Prepared for This Community-Wide Experience (p. 161)

Life Science

8:00–9:00 AM	P–6	104A, MCC	Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (p. 86)
8:00–9:00 AM	G	Center Blrm., Renaissance	50 Years of Field Science (p. 88)
8:00–9:00 AM	9–12	Broadway G, Omni	Climate Change, Evolution, and Bears: Oh My! (p. 88)
8:00–9:00 AM	9–12	Broadway C, Omni	Mathematical Modeling: STR Systems Used for DNA Identification (p. 92)
8:00–9:00 AM	6–C	210, MCC	Teaching STEM Using Agarose Gel Electrophoresis (p. 94)
8:00–9:00 AM	G	Davidson B, MCC	NMEA Session: Whale of a Tale Share-a-Thon (p. 92)
8:00–9:30 AM	6–8	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 96)
8:00–9:30 AM	9–12	214, MCC	Hominid Evolution Activity (p. 98)
8:00–9:30 AM	9–12	204, MCC	Autopsy: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs (p. 96)
8:00–9:30 AM	9–C	208A, MCC	Contagion! Track the Progress of Dangerous Viruses That Are Spreading Throughout the Country (p. 97)
8:00–9:30 AM	6–12	110A, MCC	Zombie Apocalypse! (p. 94)
8:00–9:30 AM	6–C	208B, MCC	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 97)
8:00–9:30 AM	9–12	207A, MCC	Artificial Selection, It’s Unnatural! (p. 97)
8:00–9:30 AM	9–12	207B, MCC	HHMI BioInteractive’s Evolution Resources in Your NGSS Classroom (p. 97)
8:30–9:00 AM	6–8	Music Row 4, Omni	Dissonance to Harmony: How to Create Beautiful Educational Music with non-STEM Teachers (p. 99)
8:30–9:00 AM	9–12	101E, MCC	Creating a NASA-Based Research Environment in a High School Classroom: Mission to Outer Space (p. 99)
9:30–10:30 AM	9–C	210, MCC	Case of the Missing Records (p. 102)

Science Inspires

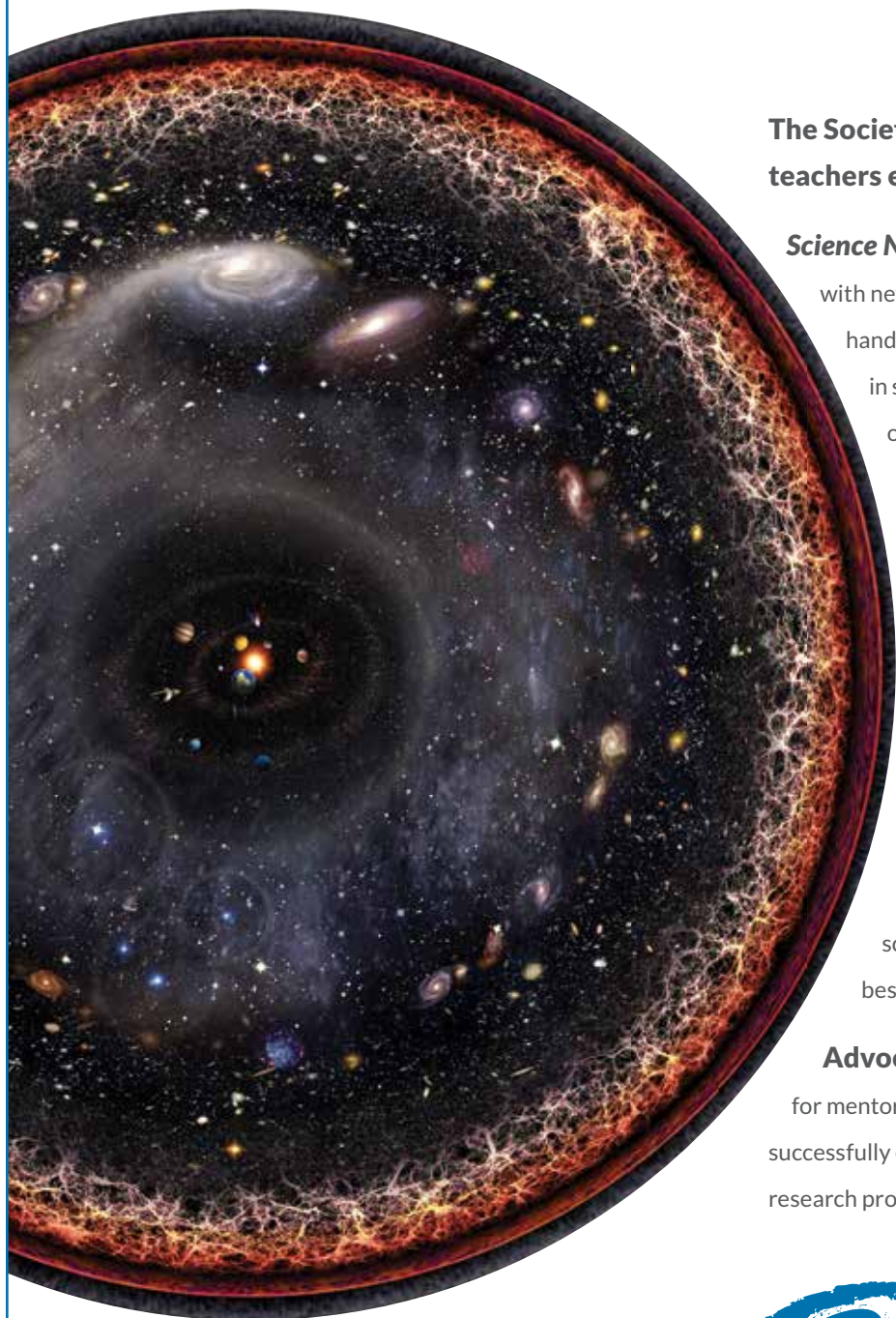
The Society for Science & the Public helps teachers educate and inspire students.

Science News for Students—our free website with news stories, features and ideas for hands-on activities that connect the latest in scientific research to in- and out-of-classroom learning.

Science News in High School—our award-winning magazine delivered to your classroom together with an online educator guide.

Acclaimed education competitions—Intel Science Talent Search (STS), the Intel International Science and Engineering Fair (ISEF), and the Broadcom MASTERS recognize young scientists and teach them how to conduct best-of-class, inquiry-based scientific research.

Advocate Grants—stipends and support for mentors who help under-represented students successfully enter their science or engineering research projects in scientific competitions.



UNIVERSAL MAP This diagram, made up of stitched together NASA imagery, is essentially a map of the observable universe. The solar system is at center. The scale changes as you move outward so that the distances depicted toward the edge of the circle are enormous.
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Schedule at a Glance Life Science

9:30–10:30 AM	G	206 A/B, MCC	Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics! (p. 101)
10:00–11:30 AM	4–C	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 102)
10:00–11:30 AM	9–12	202B, MCC	Engaging Students Effectively: The BIOZONE Solution for Grades 9–12 (p. 103)
10:00–11:30 AM	9–C	208A, MCC	Improve Student Engagement Using Pop Culture in Your Life Science Class (p. 106)
10:00–11:30 AM	K–12	204, MCC	Introduction to Wisconsin Fast Plants® (p. 103)
10:00–11:30 AM	6–C	205B, MCC	They Come in Pairs: Using Socks to Identify and Address Student Misconceptions About Chromosomes (p. 104)
10:00–11:30 AM	9–12	110B, MCC	Welcome to the Anthropocene: Using Global Change to Teach NGSS Crosscutting Concepts and Core Ideas in Biology and Earth Science (p. 103)
10:00–11:30 AM	6–C	202C, MCC	Bringing Real Neuroscience and Neural Engineering into Your Classroom (p. 103)
10:00–11:30 AM	6–C	212, MCC	Understanding Muscle Concepts of Human Anatomy: Building It in Clay (p. 106)
10:00–11:30 AM	9–12	209A, MCC	Flinn Favorite Biology Lab Activities and Games (p. 106)
10:00–11:30 AM	9–C	208B, MCC	Enzymes: Technology Inspired by Nature (p. 106)
11:00 AM–12 Noon	9–C	210, MCC	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 108)
12 Noon–1:30 PM	6–C	212, MCC	Orthopaedics In Action (p. 112)
12 Noon–1:30 PM	4–C	107A, MCC	Stream Ecology: Slimy Leaves for Healthy Streams (p. 108)
12 Noon–1:30 PM	9–C	207C, MCC	Biology with Vernier (p. 111)
12 Noon–1:30 PM	9–12	110B, MCC	Using the Pearson Virtual Laboratories to Implement the NGSS (p. 109)
12 Noon–1:30 PM	6–12	205B, MCC	Strawberry Milkshakes: DNA and Lactose Intolerance (p. 111)
12 Noon–1:30 PM	9–C	204, MCC	Genetics Brought to Life: Gene-ius Model Organisms (p. 110)
12 Noon–1:30 PM	9–12	207A, MCC	Introduction to BioBuilder (p. 111)
12 Noon–1:30 PM	9–C	207B, MCC	Use Free Biointeractive Resources to Build Evolutionary Trees from DNA Sequence Data (p. 111)
12 Noon–1:30 PM	6–12	110A, MCC	Body of Evidence: A Forensic Science Mystery! (p. 109)
12:30–1:00 PM	P–4	104B, MCC	The Living Classroom: Turning Your Curriculum into an Outdoor Adventure Through Learning Gardens (p. 114)
12:30–1:30 PM	7–12	Broadway B, Omni	Engaging Students in Environmental Health Issues Using Inquiry-Based Instruction (p. 119)
12:30–1:30 PM	6–12	Broadway C, Omni	Do You See What I See? (p. 119)
12:30–1:30 PM	9–C	Cumberland 4, Omni	Putting STEAM Back into STEM: Challenging Students to Creatively Communicate Scientific Concepts to Public Audiences (p. 116)
12:30–1:30 PM	9–12	Legends G, Omni	Biology by Numbers: Math and Life Science Are Better Together! (p. 121)
12:30–1:30 PM	5–8	Davidson A2/3, MCC	A Neuroscience STEM Program for Middle School Students (p. 115)
12:30–1:30 PM	6–C	East Blrm., Renaissance	Designing Writing Tasks for the NGSS Classroom (p. 117)
12:30–1:30 PM	11–C	Fisk Two, Renaissance	NARST Session: Writing-to-Learn Activities to Support Argumentation Skills of Undergraduate Biology Students (p. 121)
12:30–1:30 PM	6–12	Center Blrm., Renaissance	NASA Airborne Science Missions Can Bring Science and Scientists to Your Classroom (p. 116)
12:30–1:30 PM	6–12	Legends A, Omni	ADI Pathway Session: Helping Students Learn to Argue from Evidence with Argument-Driven Inquiry (p. 120)
12:30–1:30 PM	9–C	210, MCC	Using Biotechnology to Diagnose HIV/AIDS (p. 122)
1:00–1:30 PM	6–12	106A, MCC	Ecojustice Showcase: Middle Schoolers Sharing Their Environmental Research with Their Communities (p. 124)
1:30–2:30 PM	7–12	108, MCC	Forensic DNA Activities and More with K’NEX Education’s DNA, Replication, and Transcription Set (p. 125)
2:00–3:00 PM	8–12	103A, MCC	Using the EQuIP Rubric to Analyze a Digital Lesson for Three-Dimensional Learning with Neurobiology and Clinical Trial Connections (p. 128)

2:00–3:00 PM	9–12	Fisk Two, Renaissance	NARST Session: Modeling Tools, Engineering Practices, and Invasive Species (p. 133)
2:00–3:00 PM	P–2	104B, MCC	Science Comes Alive in Stories, Video, E-Books: Integrating STEM, Literacy, Creativity, and Media (p. 128)
2:00–3:00 PM	9–C	210, MCC	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 134)
2:00–3:00 PM	G	206 A/B, MCC	Using Wireless Sensors in Enzyme Activity and Cellular Respiration Labs (p. 134)
2:00–3:00 PM	9–12	101E, MCC	Impactful Implementation of Argument and Inquiry in High School Chemistry and Biological Sciences (p. 128)
2:00–3:00 PM	9–C	Music Row 1, Omni	The Science Behind Advanced Coursework in High School (p. 129)
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2:00–3:00 PM	9–C	Legends C, Omni	Helping Students Write Their Own Student-Designed Experiments in AP Biology (p. 133)
2:00–3:00 PM	P–3	103C, MCC	Beyond the Touch Table: Creating Inquiry-Based Learning Centers for Exploring Nature (p. 130)
2:00–3:30 PM	9–12	212, MCC	Learning to MELP: An Innovative and Integrated Approach to Embedding Environmental Literacy into Curriculum (p. 138)
2:00–3:30 PM	K–12	204, MCC	Hands-On Science with Classroom Critters (p. 136)
2:00–3:30 PM	9–12	207B, MCC	Using Biotechnology to Target Disease (p. 137)
2:00–3:30 PM	9–C	214, MCC	Genes, Genomes, and Personalized Medicine (p. 138)
2:00–3:30 PM	9–C	208A, MCC	Fast Electrophoresis (p. 137)
2:00–3:30 PM	9–C	208B, MCC	ThiNQ!™ About It: Bacterial Transformation, GMO Probiotics, and the Runs Make a Great Case Study for AP Biology (p. 138)
3:30–3:50 PM	C	Ryman One, Renaissance	SCST Session: What Else Should They Know? Training Students to Be Effective Peer Educators in Biology, Chemistry, and Physics (p. 141)
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3:30–4:30 PM	9–12	Cumberland 1, Omni	NGSS in the Classroom Made Easy (p. 148)
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3:30–4:30 PM	G	102 A/B, MCC	Featured Presentation: <i>The Serengeti Rules</i> : The Quest to Discover How Life Works and Why It Matters (p. 142)
3:30–4:30 PM	1–12	Fisk Two, Renaissance	NARST Session: How to Make Science Instruction Compelling to Students: Designing Formative Assessments to Build on Learners' Interests AND Knowledge (p. 149)
3:30–4:30 PM	7–C	Fisk One, Renaissance	ASTE Session: To Teach or Not to Teach: Examining Why Teachers Avoid Evolution (p. 145)
3:30–4:30 PM	6–10	Music Row 5, Omni	Developing Science Practices: Constructing Explanations and Engaging in Argumentation (p. 149)
3:30–4:30 PM	G	206 A/B, MCC	Sensor-Based Labs to Address NGSS Practices for Middle School Life, Earth, and Physical Science (p. 149)
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3:30–4:30 PM	6–12	Broadway C, Omni	Moving Beyond the Candy Cell: Integrating Argumentation and Authentic Modeling in the Life Science Classroom (p. 147)
3:30–4:30 PM	9–C	106A, MCC	Bioenergetics and Cycles of Energy and Matter in the Ecosystem (p. 144)
3:50–4:10 PM	C	Ryman One, Renaissance	SCST Session: Exploring Pedagogical Content Knowledge of Graduate Teaching Assistants Through Their Participation in Lesson Study (p. 150)
4:00–5:30 PM	K–12	205B, MCC	Hands-On Activities to Model Habitat Preference and Population Sampling (p. 153)
4:00–5:30 PM	9–12	204, MCC	Shark Dissection: A Jawsome Experience! (p. 153)
4:00–5:30 PM	6–12	201A, MCC	Genetics: Crazy Traits and CPO's New Link™ Learning Module (p. 152)
4:00–5:30 PM	9–C	214, MCC	Of All the Nerve! (p. 156)
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4:00–5:30 PM	6–C	208B, MCC	Communicating Science Through Lab Notebooking (p. 154)
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5:00–6:00 PM	3–12	Music Row 2, Omni	It Takes Water to Make STEAM: The Hutchison Lake Project (p. 158)
5:00–6:00 PM	6–12	106A, MCC	Is This Forest Healthy and What Does That Mean to Me? (p. 157)
5:00–6:00 PM	6–12	Davidson A2/3, MCC	Climate Change at the Poles and Beyond (p. 158)
5:00–6:00 PM	C	Music Row 4, Omni	NSELA Session: Improving Preparation of Elementary Teachers for Science Teaching Through Faculty Collaboration (p. 158)
5:00–6:00 PM	6–11	Music Row 5, Omni	Differentiating Science Inquiry to Engage All Students (p. 161)
5:00–6:00 PM	5–C	Cumberland 3, Omni	Replication and Protein Synthesis: Cupcake Orders (p. 161)
5:00–6:00 PM	7–12	Broadway C, Omni	Learn How to Teach Drawing in the Life Science Classroom (p. 161)
5:00–6:00 PM	6–12	Music Row 3, Omni	The World Doesn't Exist in Separate Boxes (p. 158)

Physical Science

8:00–9:00 AM	K–9/C	Davidson A1, MCC	Harry Potter's Amazing World of Science and Magic (p. 86)
8:00–9:00 AM	7–12	Music Row 2, Omni	Cross-Curricular Project Based Learning (p. 88)
8:00–9:00 AM	9–12	Broadway G, Omni	Climate Change, Evolution, and Bears: Oh My! (p. 88)
8:00–9:00 AM	K–12	Cumberland 2, Omni	Argumentation by Design: Integrating Evidence-Based Arguments with STEM Design Tasks (p. 93)
8:00–9:00 AM	K–4	104D, MCC	Creating Teachable Moments for Elementary Classrooms (p. 89)
8:00–9:00 AM	P–6	104A, MCC	Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (p. 86)
8:00–9:00 AM	4–9	105B, MCC	Force and Motion—Deeper and Cheaper (p. 89)
8:00–9:00 AM	6–12	Cumberland 3, Omni	Using Copper Tape, LEDs, and Stickers to Prototype and Explore Electrical Circuits (p. 93)
8:00–9:00 AM	P–2	104C, MCC	Exploring Force and Motion: It Will Be a Moving Experience (p. 89)
8:00–9:00 AM	10–12	Broadway D, Omni	Cell Phone Physics (p. 87)
8:00–9:00 AM	6–8	Broadway J, Omni	Strategies for Using NGSS-Focused Physical Science Assessment Tasks Formatively in Classrooms (p. 88)
8:00–9:00 AM	7–11	103C, MCC	Using PBLs to Teach NGSS-Focused Chemistry (p. 89)
8:00–9:00 AM	K–12	206 A/B, MCC	Engineering Bumpers and NGSS: Hands-On Physics with PASCO's New Wireless Smart Cart! (p. 94)
8:00–9:30 AM	6–8	202B, MCC	Awesome, Engaging, and Motivating STEM Activities (p. 96)
8:00–9:30 AM	9–12	205B, MCC	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (p. 97)
8:00–9:30 AM	9–12	209C, MCC	Active Chemistry: The Leading Project-Based High School Chemistry Program Capturing the Essence of the NGSS and STEM (p. 98)
8:00–9:30 AM	6–12	201A, MCC	CPO's Chemistry Models Link™ Learning Module: Fun with Atom Building Games (p. 95)
8:00–9:30 AM	7–C	212, MCC	Teaching Chemistry Effectively with Visualization and Simulation at the Molecular Level (p. 98)
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9:30–10:30 AM	G	206 A/B, MCC	Wireless Spectrometry to Investigate Light Emission, Colored Solutions, Plant Pigments, Solution Concentration, and Reaction Kinetics! (p. 101)
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Day	Time	Room Number 207C	Room Number 207D
THURSDAY 3/31	8:00–9:30 a.m.	Environmental Science with Vernier	Middle School Science with Vernier
	10:00–11:30	Chemistry with Vernier	Integrating Chromebook™ with Vernier Technology
	12:00–1:30 p.m.	Biology with Vernier	iPad® and Wireless Sensors with Vernier
	2:00–3:30	Wind and Solar Energy Basics with Vernier	Explore Motion with Vernier Video Physics for iOS
	4:00–5:30	Renewable Energy with KidWind and Vernier	Advanced Physics with Vernier
FRIDAY 4/1	8:00–9:30 a.m.	Renewable Energy with KidWind and Vernier	Advanced Physics with Vernier
	10:00–11:30	Biology with Vernier	Physics with Vernier
	12:00–1:30 p.m.	Water Quality with Vernier	Integrating Chromebook™ with Vernier Technology
	2:00–3:30	Inquiry-Based Biology with Vernier	iPad® and Wireless Sensors with Vernier
	4:00–5:30	Chemistry with Vernier	STEM / Engineering Activities using Vernier Sensors with Arduino
SATURDAY 4/2	8:00–9:30 a.m.	Chemistry with Vernier	Integrating Chromebook™ with Vernier Technology
	10:00–11:30	Inquiry-Based Chemistry with Vernier	Elementary Science with Vernier
	12:00–1:30 p.m.	Biology with Vernier	Physics with Vernier
	2:00–3:30	Human Physiology with Vernier	Introductory Engineering-Design Projects with Vernier



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