

CHARLOTTE

AREA CONFERENCE *on* SCIENCE EDUCATION

NOVEMBER 7-9, 2013

4 CHARLOTTE 4



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Science
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Association

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ABOUT TOSHIBA/NSTA EXPLORAVISION:

The Toshiba/NSTA ExploraVision STEM competition inspires K-12 students to envision the technologies of the future. ExploraVision lets your students engage in hands-on learning, problem solving, critical thinking, and collaboration. Learn more at: www.exploravision.org/regionalconference



IT'S ALL ABOUT

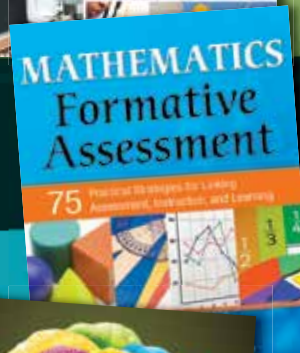
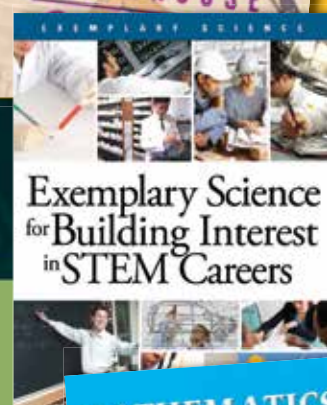
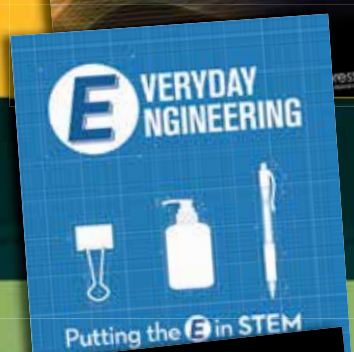
STEM

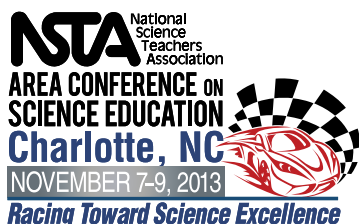
Looking for exciting STEM design challenges and activities to engage students?

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Get ideas, inspiration, and much more from these books in NSTA's STEM collection.

To order or learn more, visit
www.nsta.org/store





NSTA 2013 Area Conference on Science Education

Charlotte, North Carolina • November 7–9, 2013

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National Science Teachers Association

1840 Wilson Blvd.
Arlington, VA 22201-3000
703-243-7100, E-mail: conferences@nsta.org
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)



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FREE HANDS-ON WORKSHOPS

Friday, November 8 • Room 210A/B

8:00am-9:15am

PASCO's SPARKscience for High School Students -
Free starter kits for 20 attendees!

10:00am-11:15am

PASCO's SPARKscience for K-8 Students -
Free starter kits for 20 attendees!

12:00am-1:15am

PASCO's SPARKscience for High School Students -
Free starter kits for 20 attendees!

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NSTA National
Science
Teachers
Association

Welcome to Charlotte



Alisa B. Wickliff



Manley Midgett



Nancy Addison

Welcome to Charlotte—the Queen City! We know that you'll have an engaging and exciting learning experience at this NSTA Conference on Science Education.

A primary goal of this conference is to motivate you to continue to grow professionally in the pursuit of quality STEM education. We have an exciting lineup of presentations, featured speakers, exhibitors, and field trips that are sure to pave your way in "Racing Toward Science Excellence!"

The program has been organized around these three conference strands:

- Engineering: Promoting the "E" in STEM
- Merging Literacy into Science Instruction
- Accelerating the Skills of Digital Learners

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

Conference Chairperson

Alisa B. Wickliff
Assistant Director
Center for STEM Education
The University of North Carolina at Charlotte
9201 University City Blvd.
Charlotte, NC 28223-0001
abwickli@uncc.edu

Program Coordinator

Manley Midgett
Instructional Review Coach
North Carolina Dept. of Public Instruction
6369 Mall Service Center
Raleigh, NC 27699-6369
midgettm@meredith.edu

Local Arrangements Coordinator

Nancy Addison
Director of PreK–12 STEM Education
Charlotte-Mecklenburg Schools
700 E. Stonewall St.
Suite 506
Charlotte, NC 28202
nancyh.addison@cms.k12.nc.us

We also encourage you to enrich your content knowledge at one of these special programs—Physics Day at NSTA, Chemistry Day at NSTA, and Engineering Day at NSTA.

Other area attractions include touring the world's largest greenhouse; seeing how physics, math, and engineering run NASCAR; viewing an IMAX *Hubble* production at Discovery Place science museum; or having a hooting great time at the Carolina Raptor Center's Owl Prowl.

Located in the center of Charlotte, you also will be close to several museums and learning experiences within blocks of the Convention Center that will give you a taste of the history, art, and science of the Carolinas.

Interacting with teachers, learning new instructional strategies, and exploring resources will help invigorate your lifelong learning and teaching. We are glad you could join us in lovely Charlotte for an exceptional learning experience that is sure to rev you up for continued science excellence.

2013 Charlotte Area Conference Committee Leaders
Alisa B. Wickliff, Manley Midgett, and Nancy Addison

Charlotte Conference Committee

Program Committee

Strand Leaders: Merging Literacy into

Science Instruction

Michelle Ellis
Grier Middle School
Gastonia, NC

Patricia Shane
North Carolina Science
Leadership Association
Chapel Hill, NC

Strand Leader: Accelerating the Skills of Digital Learners

Scott E. Grumelot
Cumberland County Schools
Fayetteville, NC

Strand Leader: Engineering: Promoting the "E" in STEM

Terence (Terry) D. Jordan
Industrial Solutions Lab,
College of Engineering
The University of North Carolina
at Charlotte

NSTA Director, District VI

Carrie Jones
Middle Creek High School
Apex, NC

Local Arrangements Committee

Field Trips Manager

Cynthia Rudolph
Charlotte-Mecklenburg Schools
Charlotte, NC

Guides Manager

Shagufta Raja
Center for STEM Education
The University of North Carolina
at Charlotte

Manager of Services for People with Disabilities

Kathleen Koch
Charlotte-Mecklenburg Schools
Charlotte, NC

Volunteers Manager

Wayne Fisher
Charlotte-Mecklenburg Schools
Charlotte, NC

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STORE HOURS

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

- Fun NSTA-branded gear—unique hats, shirts, mugs, collectible pins, and more
- Everyone enjoys member pricing: **20%** off all NSTA Press® titles
- Special savings for conference app users
- Free gift with \$100 purchase

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

NSTA National
Science
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Association

President's Welcome

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



Welcome to NSTA's 2013 Charlotte Area Conference on Science Education in the beautiful southern city of Charlotte, North Carolina. This "Queen City" provides the backdrop for you to engage in professional development to strengthen your understanding of science standards and literacy.

With the release of the NRC *Framework*, the Next Generation Science Standards, and the Common Core State Standards in reading and mathematics, the Charlotte Conference Committee has organized a comprehensive program incorporating these areas around the theme "Racing Toward Science Excellence." The major conference strands include:

- Engineering: Promoting the "E" in STEM
- Accelerating the Skills of Digital Learners
- Merging Literacy into Science Instruction

These strands will allow you to leave the conference with a deeper understanding of the NGSS, (including the focus on engineering practice), the principles behind their development, and how they may be implemented. The strands will focus on important issues in STEM education and address the connection between science, literacy, and the Common Core and how to capitalize on that connection. Supporting students' abilities to read, write, and discuss in the context of science is critical to student achievement in both science and literacy.

I encourage you to take full advantage of this opportunity to attend dynamic teacher workshops and presentations, see outstanding speakers, explore the exhibit hall, sign up for special ticketed events, and network with colleagues.

I look forward to meeting you in Charlotte. I guarantee that you will leave the conference inspired to create new opportunities for your students and colleagues!

Bill Badders

2013–2014 NSTA President

Sponsors and Contributors to the Charlotte Conference

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

Sponsors

Appleseed Expeditions

Discovery Education

Discovery Place, Inc.

North Carolina Science Teachers Association

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Contributors

American Chemical Society

American Society for Engineering Education

Museum of York County Guild

North Carolina Section of the American Association of Physics Teachers



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

NSTA Conferences Go Green!

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

Conference Previews

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

Online Conference Information and Personal Scheduler

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

Final Conference Programs by E-Mail/Conference App

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

Recycled Paper and Sustainable Print Services

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

Environmentally Friendly Exhibition Practices

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

efforts are extended operationally with reductions in electricity, heating fuel, and water usage, as well as a move to 100% recyclable and biodegradable products.

Charlotte Convention Center's Green Efforts

The Charlotte Convention Center has become one of a growing number of large convention facilities across the United States and the first in North Carolina to "go green." In April 2008, the Charlotte Convention Center won in the category of "Green Building Management Project" at the *Charlotte Business Journal* Green Awards. The Charlotte Convention Center:

- Recycles all aluminum cans, glass, and plastic bottles disposed of by groups in the facility with clearly marked recycling bins throughout the facility.
- Recycles approximately 800 pallets per year.
- Installed 19 "blend centers" by Spartan Chemical to dispense cleaning chemicals that are green certified. 95% of cleaning supplies are environmentally safe and biodegradable.
- Uses biodegradable cups made from corn products.
- Works with a local composting facility to compost organic and compostable materials, reducing unnecessary landfill usage.
- Works with partner Johnson Controls to efficiently manage the heat and air system (regulating facility at 72 degrees), as well as schedules operation of lights based on activity in the building.
- Considers local food options by season. With the recent addition of the Farmers Fresh Market; some of the offerings of local products have expanded considerably.

"Go Green" at the Charlotte Conference!

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



Free Hands-On Workshops

USING VERNIER DATA-COLLECTION TECHNOLOGY

FRIDAY, NOVEMBER 8 th – ROOM 209 A/B	
8:00 – 9:30 am	Chemistry and Biology with Vernier
10:00 – 11:30 am	Integrate Your iPad® and BYOD with Vernier Technology
12:00 – 1:30 pm	Integrate Your iPad® and BYOD with Vernier Technology
2:00 – 3:30 pm	Physics and Physical Science with Vernier

Stop by our **Booth 300**
and enter to **WIN** a



LABQUEST® 2



Registration, Travel, and Hotels

Meeting Location and Times

The conference hotels are The Westin Charlotte (*headquarters*), Hilton Garden Inn Charlotte Uptown, Hampton Inn Charlotte–Uptown, and Hilton Charlotte Center City. Conference registration, the exhibits, the NSTA Avenue, the NSTA Science Store, exhibitor workshops, and most sessions will be located at the Charlotte Convention Center. Other sessions and events will be held at the Hilton Center City and the Westin. The conference will begin on Thursday, November 7, at 8:00 AM, and end on Saturday, November 9, at 12 Noon.

Registration

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

Don’t want to wait in line to register on-site? Please look for the “Self-Serve” signs in the NSTA Registration Area. Here you’ll find two computer stations where you can register on your own.

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

Wed., Nov. 6	5:00–7:00 PM
Thu., Nov. 7	7:00 AM–5:00 PM
Fri., Nov. 8	7:00 AM–5:00 PM
Sat., Nov. 9	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 Charlotte Planning Committee has scheduled a variety of ticketed events. Each of these events requires a separate fee and ticket. You may purchase tickets



—Photo of the NASCAR Hall of Fame, courtesy of CRVA/Visit Charlotte.

for these events, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 35) for details. Note that some events may have required advance registration.

Airlines

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

Ground Transportation to/from Airport

Charlotte Douglas International Airport (CLT) is conveniently located just seven miles from the Convention Center. Taxi fare is regulated and is \$25 for up to two people to the Center City hotels; \$2 for each additional person over two people. Pick-up is located across from the Visitor Info Center in baggage claim, between Zones B and C at the taxi stand.

The Charlotte Area Transit Authority (CATS) has a “green” bus with storage for luggage and travels between the airport and Center City every 20 minutes. Cost is \$2 each way (exact change required—either bills or coins). Visit www.nsta.org/charlotte-travel for more details.

Getting Around Town

The **LYNX Blue Line** runs from 7th Street Station south about 12 miles. The Convention Center, the Hilton Center City, and Westin hotels are on the line or within

one block of the line. Cost to ride the light rail is \$2 per trip; \$4 round trip; or \$6 per day. Go to www.ridetransit.org for a schedule.

The **Gold Rush Trolley** is a complimentary service that operates weekdays from 7:00 AM to 6:00 PM. Service is provided roughly every 15 minutes. The **Gold Rush Orange Line** runs along Tryon Street. The Gold Rush does not stop at the Charlotte Convention Center. The closest stop is the Tryon Street Route at the Levine Avenue of the Arts, which is one block (*literally just a walk in the park—known as The Green*) from the Convention Center.

The **Charlotte Area Transit System (CATS)** buses can be accessed at the Charlotte Transit Center, located just three blocks from the Convention Center between College and Brevard streets (www.ridetransit.org).

Parking

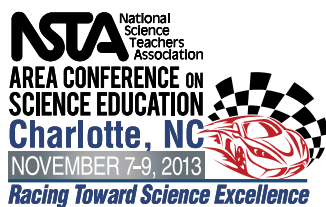
Connected to the Convention Center via a convenient over-street walkway, the NASCAR Hall of Fame parking deck is located on Brevard Street, adjacent to the Convention Center. For more details on nearby parking, go to bit.ly/15Nsayv.

Discounted Rental Cars

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

Enterprise 800-593-0505 16AH230

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



Housing Questions or Concerns?

If you have any questions or concerns about your housing, please contact Orchid Event Solutions toll free at 877-352-6710.

1. **The Westin Charlotte (Headquarters Hotel)**
601 S. College St.
2. **Hilton Garden Inn Charlotte Uptown**
508 E. Martin Luther King Jr. Blvd.
3. **Hampton Inn Charlotte–Uptown**
530 E. Martin Luther King Jr. Blvd.
4. **Hilton Charlotte Center City**
222 E. Third St.



NSTA Exhibits

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

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. A map display of the Exhibit Hall will be on-site. A complete list of exhibitors and contact information starts on page 122.

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

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

Thu., Nov. 7	11:00 AM–5:00 PM
Fri., Nov. 8	9:00 AM–5:00 PM
Sat., Nov. 9	9:00 AM–12 Noon

Did you know that NSTA offers Exclusive Exhibits Hall hours—Thursday 11:00 AM–12:30 PM; and Friday 12 Noon–2:00 PM? During these hours, there are no sessions or workshops scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer.

Lead Retrieval. NSTA exhibitors use electronic lead retrieval, a paperless tracking system that allows them to receive fast, accurate information about conference attendees who have visited their booths. With the lead retrieval system, an exhibitor scans your

badge as you visit the booth. This allows exhibitors to send information to you while the conference is still fresh in your mind.

Exhibitor Workshops. Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See page 136 for a complete listing of exhibitor workshops.

NSTA Avenue

Stop by NSTA Avenue (Booth #422) and learn about NSTA's benefits, products, services, programs, and partners...and receive free gifts, too! Share with others, expand your knowledge, and earn rewards for you and your students. See pages 130–131 for a complete list of NSTA services and programs.

NSTA Science Store

The NSTA Science Store showcases the best new books of 2013 and a wide range of award-winning professional development titles. Pick up exclusive "I Love Science" T-shirts, mugs, and gifts for friends and colleagues. Located in the attendee registration area, stop by and check out our latest books—*Translating the NGSS for Classroom Instruction*; *The Case for STEM Education: Challenges and Opportunities*; and *Uncovering Student Ideas in Primary Science, Volume 1*—and take a peek at our brand-new line of children's books. We'll also be having special events throughout the conference and opportunities for you to meet our amazing authors. Don't forget—all conference attendees enjoy a 20% discount on NSTA Press® titles along with free shipping for online orders placed during the conference!

NEW for Fall 2013! Come by and enjoy complimentary internet access at our e-mail stations. Make sure to shop with us on Wednesday night and receive a complimentary Welcome Pack with all purchases over \$25. Spend more than \$100 and receive a FREE collectible conference mug while supplies last.

Meet the Presidents and Board/Council

Be sure to stop by Thursday from 11:10 AM to 12:10 PM at the entrance to the Exhibit Hall for a special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!

Information Desk

Need help exploring Charlotte? An information specialist will be available at a booth on the College Street Concourse, adjacent to Hall A in the Convention Center during the hours of Thursday–Friday, 8:00 AM–4:00 PM; and Saturday, 8:00 AM–12 Noon. Be sure to stop by for dining and attraction suggestions. For more information, visit www.charlottesgotalot.com.

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

Charlotte conference attendees can earn one graduate-level credit in professional development through Framingham State University. To learn more about the assignment requirements and access a registration form, go to the Framingham State University website: www.framingham.edu/nsta2013. Forms will also be available at the NCSTA booth. An NSTA transcript is required. *Note:* Credit is by pass/fail option only.

Lost and Found

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

NCSTA Booth

The North Carolina Science Teachers Association (NCSTA) booth is located in the registration area of Hall A of the Convention Center. Stop by for information on the benefits of becoming a member of this organization. Membership forms as well as information on NCSTA activities will be available. If you are interested in graduate credit, you can also pick up Framingham State University graduate credit forms. This is your opportunity to update your information, renew your membership, or become a member. Find out what is happening in science education in North Carolina!

(SC)² Booth

The South Carolina Science Council (SC)² booth is located in the registration area of Hall A. Stop by for information about South Carolina Science Council, the benefits of becoming a member of (SC)², and some South Carolina goodies. Membership forms and information on association activities will be available. Also, pick up an invite to our South Carolina teachers breakfast sponsored by Carolina Biological Supply.

The NSTA Conference App

Navigate the conference from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful conference experience. Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center, hotels, and Exhibit Hall; Social

Media plugins; and a note-taking tool. Scan the QR code in the promotion below or visit www.nsta.org/conferenceapp to download the app. Please make sure to create a CrowdCompass account when logging in to be able to export any notes taken within the app.

Wi-Fi in Convention Center

Free wireless internet is available in the food court seating area near the grand staircase outside the Ballroom as well as the lobby area at the top of the Hall C escalators. To access, choose the "Free WIFI" network option; there is no code.

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

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

When you log on to www.nsta.org/evaluations and fill out an evaluation, you get entered into a drawing for a chance to win the recently introduced Kindle Fire HDX 7" courtesy of the NSTA Conference Department.

Your feedback helps us in creating the best conference experience for you and other attendees.

- **WE'RE GIVING AWAY THE NEW KINDLE FIRE HDX 7", 16 GB**



• CONFERENCE APP



- You can also evaluate sessions on your smartphone via the NSTA Conference app.



NSTA National Science Teachers Association

First Aid Services

First Aid is located outside of Hall A next to the loading docks office (First Aid signs are displayed outside the door and at Gate 5 of Hall A). Attendees in need of first aid may simply walk into the room, or call 704-339-6090. House phones that are located throughout the Convention Center can be used to reach the First Aid room by dialing extension 6090.

Message Center

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

Audiovisual Needs

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

- Room 214, Convention Center
- Morehead Executive Boardroom, Hilton Center City
- Park, Westin

Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at www.surveymonkey.com/s/H91jrM.

Business Services

The FedEx Office Print & Ship CenterSM at the Westin offers printing, packing, shipping, copying, and office supplies. Hours are Monday–Friday 8:00 AM–5:00 PM; and Saturday 8:00 AM–2:00 PM. For more information, call 704-333-6609 or e-mail usa5579@fedex.com.

Next to the Courtyard Marriott on the corner of Third and South Tryon streets, FedEx Office Print & Ship Center at 237 S. Tryon Street offers copying and digital printing, direct mail, signs and graphics, internet access, computer rental, fax services, and shipping. Hours are Monday–Friday, 7:00 AM–11:00 PM, and Saturday–Sunday, 9:00 AM–9:00 PM. For more information, call 704-338-5911 or e-mail usa0929@fedex.com.

Online Session Evaluations and Tracking Professional Development

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

Help NSTA's **GREEN** efforts by completing session evaluations online November 7–20, 2013, while the session is fresh in your mind! Visit www.nsta.org/conferenceapp to download our conference app for your smartphone. Or attendees can visit www.nsta.org/evaluations at a later time to complete a short online session evaluation for each session they attend. **And this year, we're giving away a NEW Kindle Fire HDX 7" to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

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

To evaluate a session via www.nsta.org/evaluations:

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

To evaluate a session via your smartphone, download our conference app and:

- Locate the appropriate session by schedule, format, subject, or keyword search from the home page and click "Evaluate This Session."
- Enter your badge number at the top of the form and then answer the nine questions.

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

Beginning November 26, 2013, an attendee can view his or her transcript at the NSTA Learning Center (learningcenter.nsta.org) by clicking on "My PD Record and Certificates." Attendees can also document credit for activities that are not being evaluated (e.g., field trips, short courses, meetings, Exhibit Hall visits, etc.). Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

The following venues have extended special offers for Charlotte conference attendees.



DISCOVERY PLACE

Discovery Place

www.discoveryplace.org

Present your NSTA conference badge at the Admissions Desk on Friday, November 8, 5:00–9:00 PM for complimentary admission to Discovery Place's Free Open House. Ignite wonder at this preeminent science education center, full of interactive exhibits and explosive experiments. The entire museum will be open, including showings of *Hubble*, its IMAX film for the 2013–2014 school year. Visit www.discoveryplace.org to find out the latest happenings at this ever-changing dynamic museum.

McColl Center for Visual Art

www.mccollcenter.org

You are invited to a special gallery reception on Friday, November 8, 5:00–7:00 PM in honor of the NSTA conference. Visit with kinetic artist Joseph Herscher and view his exhibition inspired by Rube Goldberg's absurd and humorous inventions. There will be a cash bar and dollar beers. Admission is free. You may also attend public hours on Thursday evening, November 7, or attend a special performance of his machine on Saturday, November 9, 1:00–5:00 PM.



SHARE YOUR IDEAS!

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

Enthuse and
stimulate our
community of
educators!

NSTA's 2014



Forum & Expo

New Orleans

May 14–17

* Evening Exhibits Preview—May 14

Proposal Deadline: December 2, 2013

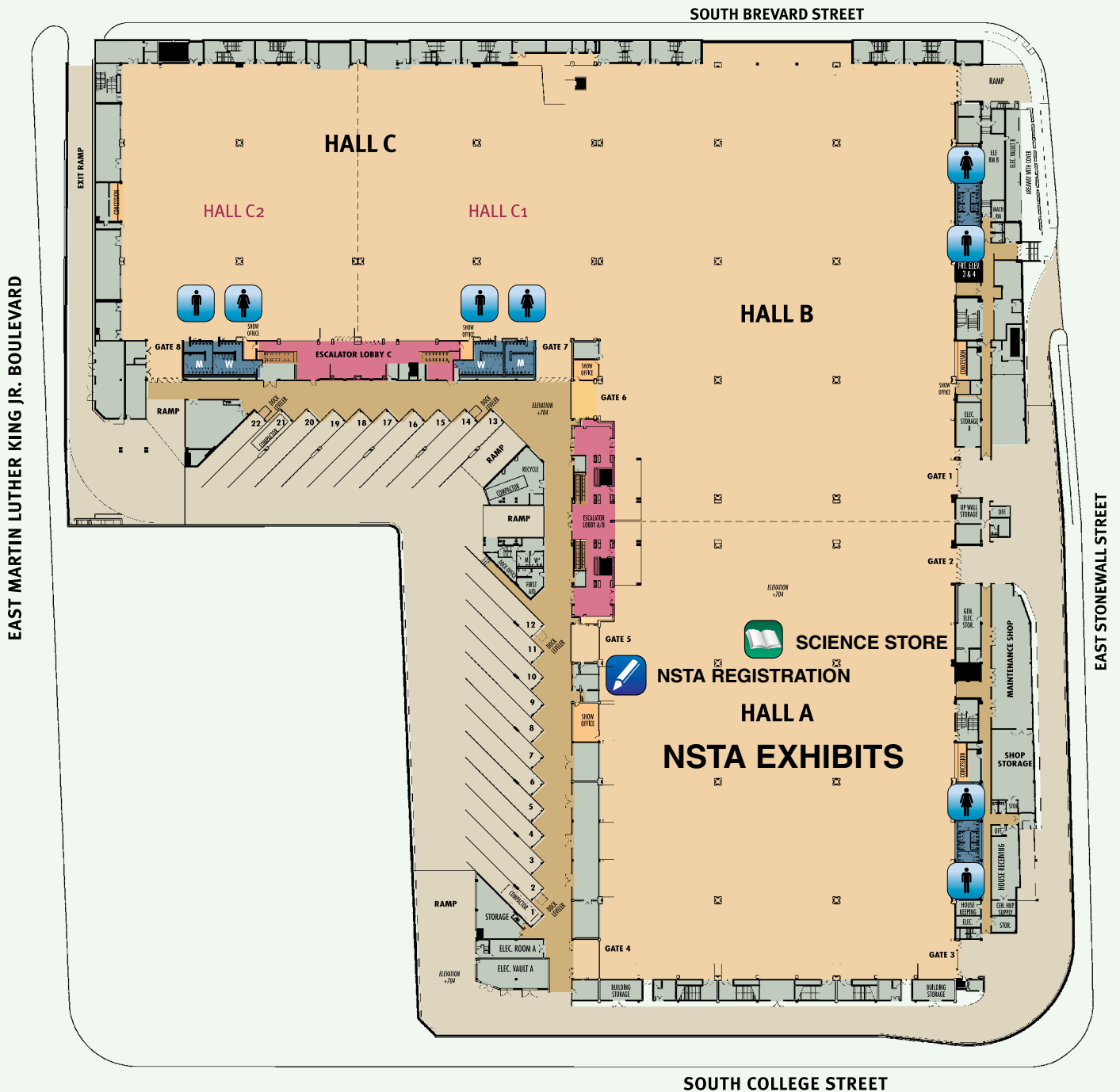
For more details on the Forum, visit

www.nsta.org/2014stemforum



Charlotte Convention Center

Exhibit Level

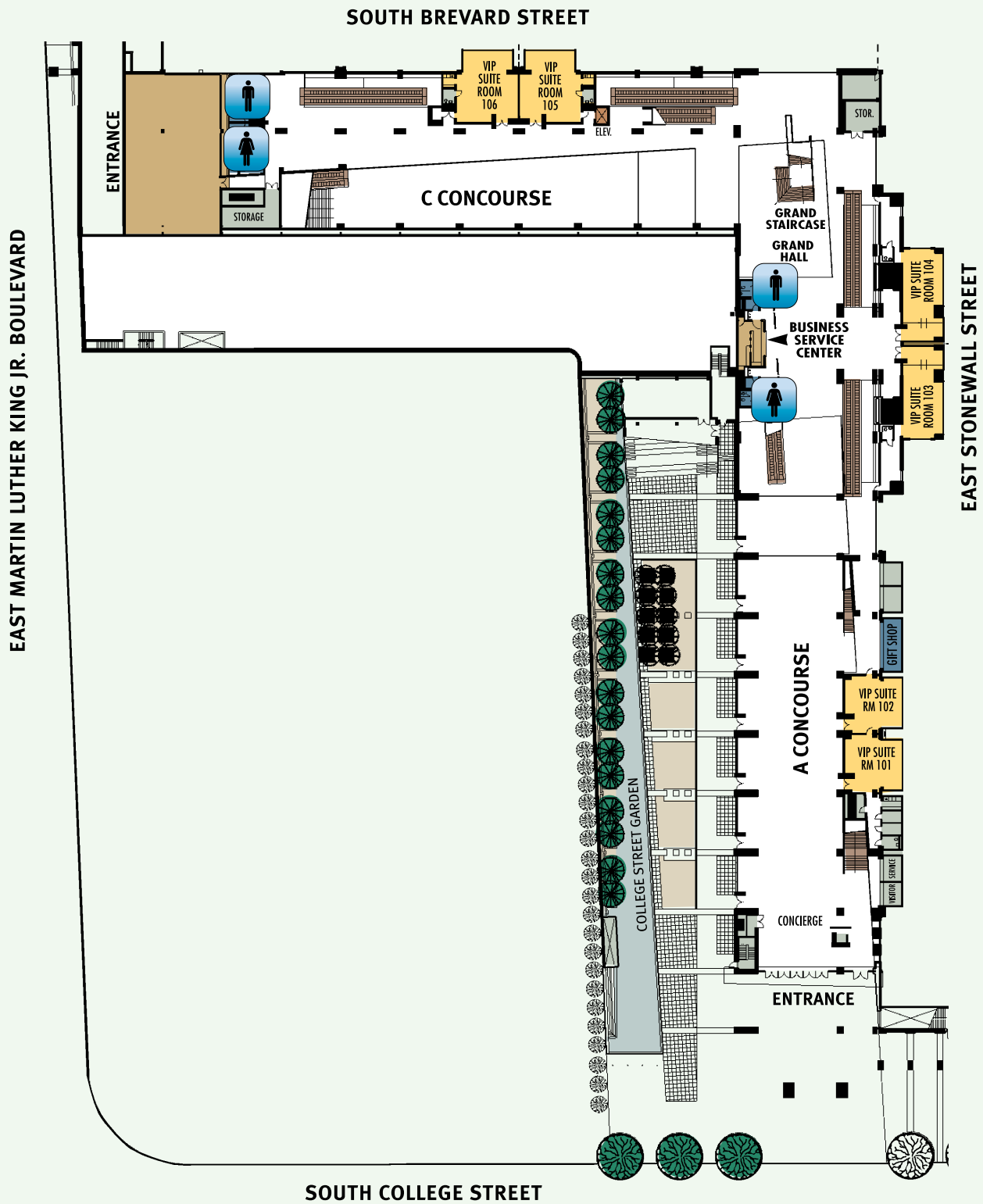


Charlotte Convention Center

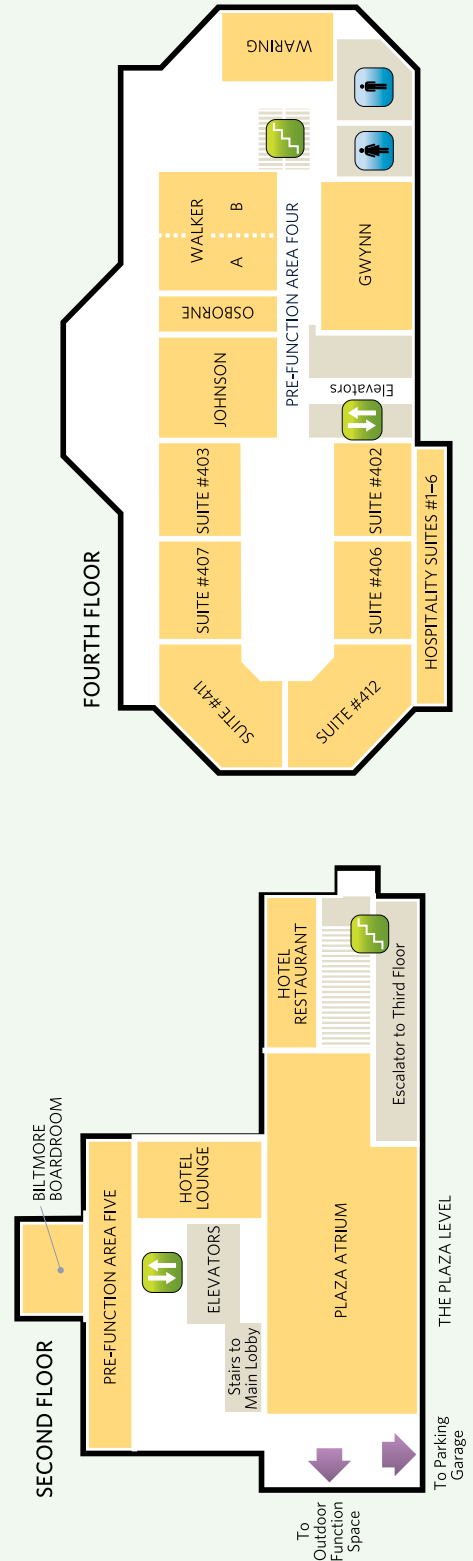
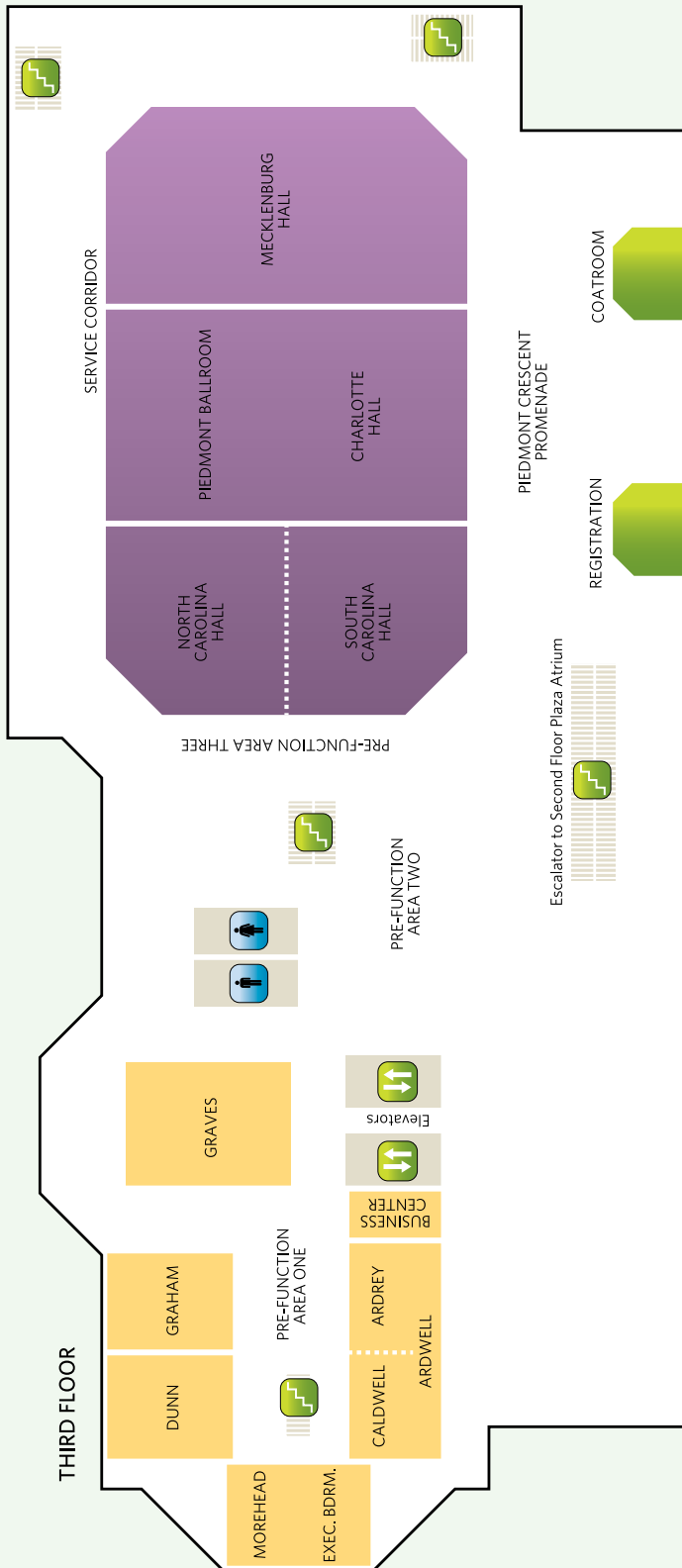


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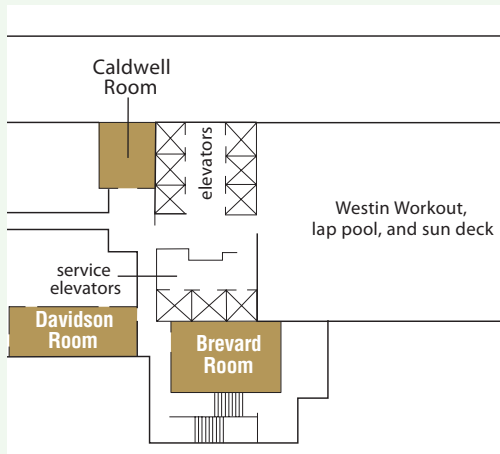
Street Level



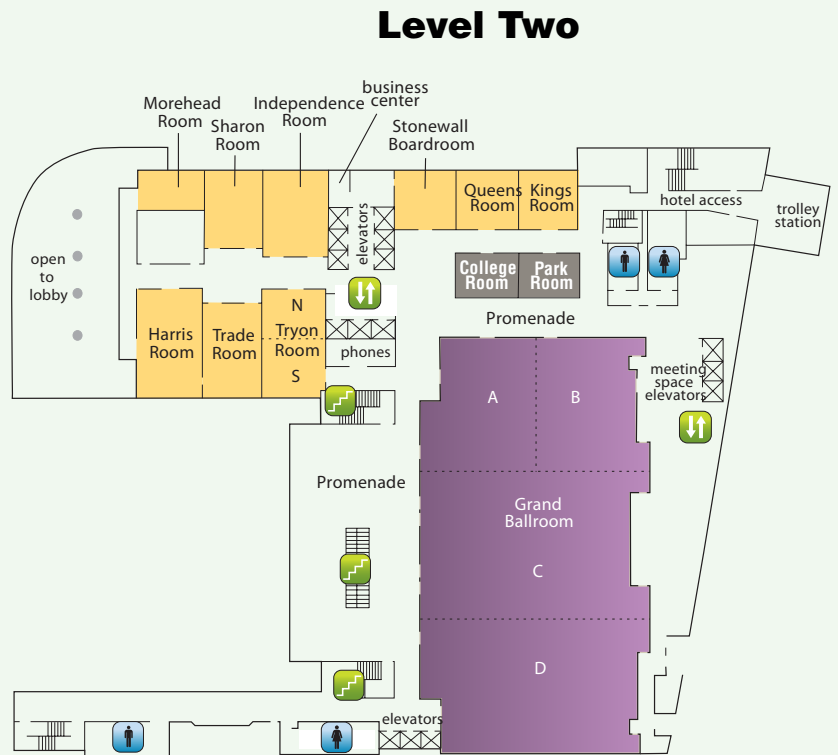
Hilton Charlotte Center City



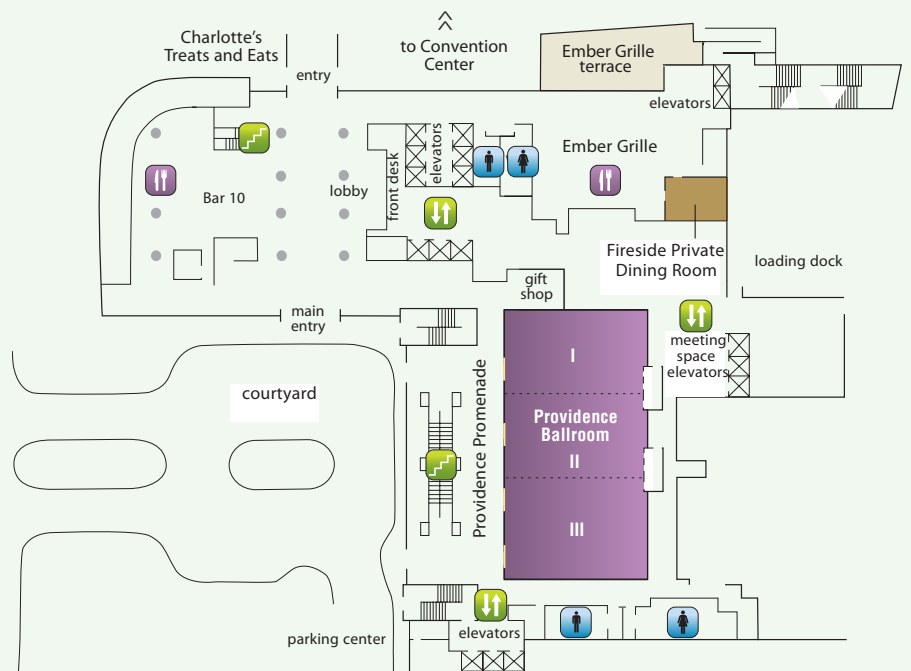
The Westin Charlotte



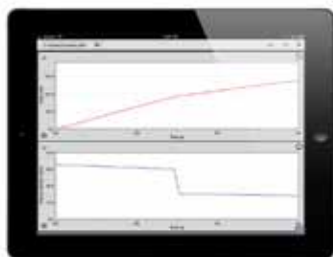
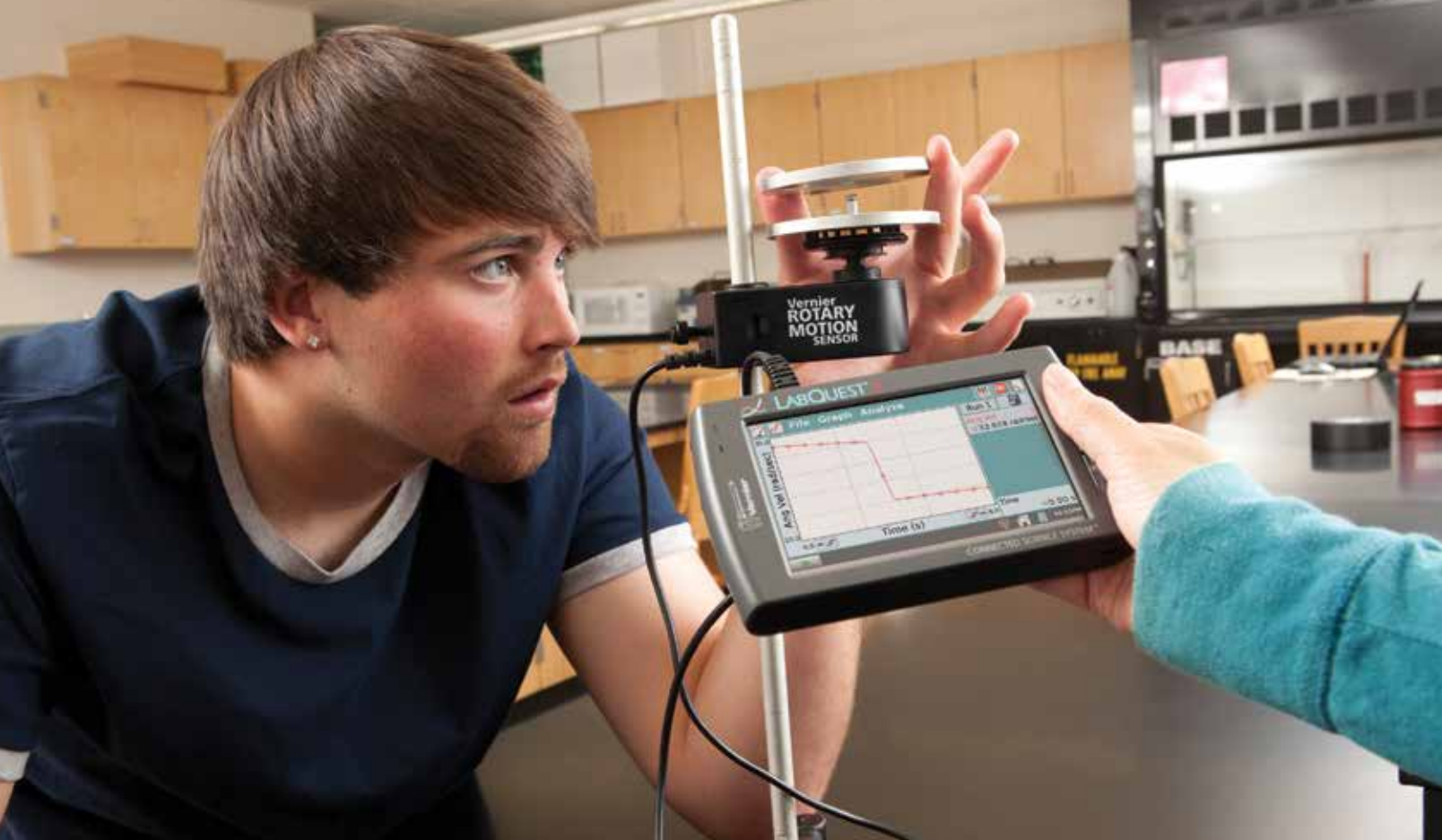
Level Three



Level Two



Lobby Level



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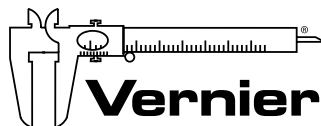
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NSTA Mission Statement

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

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All cities are subject to change pending final negotiation.

National Conferences on Science Education

Boston, Massachusetts
April 3–6, 2014

Chicago, Illinois
March 26–29, 2015

Nashville, Tennessee
March 31–April 3, 2016

2014 STEM Forum & Expo

New Orleans, Louisiana
May 14–17

Area Conferences on Science Education

2013 Area Conference

Denver, Colorado—December 12–14

2014 Area Conferences

Richmond, Virginia—October 16–18

Orlando, Florida—November 6–8

Long Beach, California—December 4–6
(in Collaboration with CSTA)

2015 Area Conferences

Reno, Nevada—October 22–24

Philadelphia, Pennsylvania—November 12–14

Kansas City, Missouri—December 3–5

SHARE YOUR IDEAS!

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

NSTA's 2014+2015 CONFERENCES

to enthuse and stimulate our
community of educators!

2014

Conferences on Science Education

Richmond, Virginia
October 16–18, 2014

Orlando, Florida
November 6–8, 2014

Long Beach, California
—in Collaboration with CSTA
December 4–6, 2014

Proposal Deadline:
1/15/2014

For more information, visit
www.nsta.org/conferences

2015

National Conference on Science Education

Chicago, Illinois
March 26–29, 2015

Proposal Deadline:
4/15/2014

NSTA National
Science
Teachers
Association

literacy principals inspired connected
 education teacher ngss STEM
 professional development math resources
Teach. Lead. Grow.
 science workshops activities engineering presentations
 develop high school common core sessions
 elementary science store
 technology standards conference



PROFESSIONAL DEVELOPMENT STRANDS

- Science and Literacy: A Symbiotic Relationship
- Teaching Elementary Science with Confidence!
- Leading from the Classroom
- Engineering and Science: Technological Partners



WHAT AWAITS YOU IN BOSTON

- A wide range of Science, Technology, Engineering, and Mathematics (STEM), Next Generation Science Standards (NGSS), and Common Core sessions
- 2,000 sessions, workshops, field trips, and short courses for K–16 educators
- Content development and ready-to-use teaching techniques
- Exhibit Hall featuring new products and giveaways from more than 400 exhibitors
- NSTA Science Store with 100s of professional development books; attendees receive a 20% discount
- *And much more!*

NATIONAL CONFERENCE on SCIENCE EDUCATION

BOSTON

APRIL 3-6, 2014

For updates and information, visit
www.nsta.org/boston

NSTA National
 Science
 Teachers
 Association



—Photo courtesy of Discovery Place

Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday, 8:00–9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! There will also be a demo of our NSTA conference app. See page 45 for details.

Thursday, November 7

8:00–9:00 AM	First-Timer Conference Attendees' Orientation with special NSTA Conference App demo	45
	(Is This Your First NSTA Conference?)	
9:15–10:30 AM	General Session: Danny Forster	51
11:00–11:05 AM	Ribbon Cutting Ceremony/Exhibits Opening	53
11:05 AM–5:00 PM	Exhibits (<i>Exclusive hours: 11:00 AM–12:30 PM</i>)	53
11:10 AM–12:10 PM	Meet the Presidents and Board/Council	53
12:30–1:30 PM	Featured Presentation: Stephen L. Pruitt.	54
2:00–3:30 PM	Featured STEM Panel:	65

Friday, November 8

8:00–10:00 AM	NSTA ESP Symposium	82
8:00 AM–6:00 PM	Engineering Day.	30
8:00 AM–6:00 PM	Chemistry Day (For Grades 9–12)	31
8:00 AM–6:00 PM	Middle School Chemistry Day	31
8:00 AM–6:00 PM	Physics Day	32
9:00 AM–5:00 PM	Exhibits (<i>Exclusive hours: 12 Noon–2:00 PM</i>).	83
9:30–10:30 AM	Featured Presentation: Page Keeley	84
2:00–3:00 PM	Featured Presentation: David Warlick.	95
5:00–7:00 PM	Special Gallery Reception at McColl Center (<i>Free Admission</i>)	109
5:00–9:00 PM	Discovery Place Event (<i>Free Open House for NSTA attendees</i>)	109

Saturday, November 9

9:00 AM–12 Noon	Exhibits	114
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Win a round-trip
Southwest travel
scholarship to
the **BOSTON**
conference.

Thanks to the generosity of **Southwest Airlines**, we're giving away two Southwest Airline travel scholarships to the NSTA Boston National Conference on Science Education, April 3–6, 2014!

The drawings will be held at **4:00 PM** on Nov. 7 and Nov. 8 during the conference. You must be present to win. Stop by The NSTA John Glenn Center for Science Education booth in the Exhibit Hall for all the details!



[illegible]

Visit us at booth #535



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



Engineering: Promoting the “E” in STEM

There is a great untapped potential for implementing engineering practices into the science classroom. To become more effective teachers, we need to integrate the use of engineering design into STEM instruction. This strand will emphasize engineering across the NRC *Framework’s* disciplinary core ideas—“Earth and space sciences,” “life sciences,” “physical sciences,” and “engineering, technology, and applications of science” in relation to the Next Generation Science Standards.



Merging Literacy into Science Instruction

With the growing demands on the school day, can educators afford to continue to teach science as a separate subject? This strand focuses on authentic ways to integrate the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects with science instruction. Students will become adept at utilizing such Common Core skills as gathering information, evaluating sources, citing materials accurately, and reporting findings from their research and analysis of sources in a clear and cogent manner when teaching science.



Accelerating the Skills of Digital Learners

The effective use of technology can facilitate relevant science experiences for students in a way that is cost-effective and versatile. This strand focuses on enhancing science instruction through the use of technology to motivate students to research and solve real-world problems by collaborating, collecting and analyzing data, and communicating results.

Engineering: Promoting the “E” in STEM

Thursday, November 7

8:00–9:00 AM

The North Carolina Engineering STEM Connections

12:30–1:30 PM

My 5Es—Engaging, Entertaining, Elementary, Engineering, Easy!

2:00–3:30 PM

Featured Panel: How to Get Your Students to Think, Problem Solve, and Achieve Using STEM

(Moderator: Terence (Terry) D. Jordan; Panelists: Donald Blackmon, Laura Bottomley, and Greg Tucker)

2:00–5:00 PM

SC-3: Engineering Using Underwater ROVs (Tickets required: \$13)

3:30–4:30 PM

Fly To Learn, Powered by X-Plane—Building Engineers One Student at a Time!

Friday, November 8

8:00–9:00 AM

Challenge Your High School Students: *Engineer Your World*

8:45 AM–12:15 PM

SC-6: Putting Excitement into Engineering (Tickets required: \$36)

9:30–10:30 AM

Rev It Up with Pasta Pod Cars!

11:00 AM–12 Noon

Integrating the Engineering Grand Challenges into the Science Classroom

2:00–3:00 PM

Our Nuclear World: The Engineering Behind Nuclear Power Production

3:30–4:30 PM

Make a Bouncy Ball! Science and Math Connections to Manufacturing a Fun Product

5:00–6:00 PM

MacGuyver Windmills: Wind Power and Energy Transfers

Saturday, November 9

8:00–9:00 AM

Vertically Aligning the Science Curriculum

9:30–10:30 AM

The Magic of Engineering

11:00 AM–12 Noon

Bring the Science of Cars into the Classroom

Merging Literacy into Science Instruction

Thursday, November 7

8:00–9:00 AM

Science Notebooking: Integrating Literacy and Science Instruction in the Elementary Classroom

12:30–1:30 PM

Solar Energy—Let the SUNSHINE In!

1:00–4:00 PM

SC-1: Home and School Science Activities (Tickets required: \$56)

2:00–3:00 PM

How Do You Spell Science?

3:30–4:30 PM

Disciplinary Literacy in Middle School Science: Reading, Writing, and Talking as Active Learning Processes

5:00–6:00 PM

Introducing the *ChemMatters* Compilation Project

Friday, November 8

8:00–9:00 AM

Rev It Up! Energize Science and Literacy Connections

9:30–10:30 AM

Featured Presentation: Speaking, Listening, and Learning in Science—Supporting Conceptual Change Through Science Talk (Speaker: Page Keeley)

Science and Literacy: A Natural Fit

11:00 AM–12 Noon

Literacy and iPads—Where Technology Meets the Science Textbook

2:00–3:00 PM

Literacy in the Biology Classroom

3:00–5:00 PM

SC-7: Using Literacy to “Unpack” Content and Build Prior Knowledge (Tickets required: \$29)

3:30–4:30 PM

Let’s Get Physical: Force and Motion at the Primary Level

Saturday, November 9

8:00–9:00 AM

Science Vocab Out of the Box: Unique Ways to Help Students Master Vocab

9:30–10:30 AM

Science Literacy at the Secondary Level

11:00 AM–12 Noon

Nanotechnology in Elementary and Middle School, Oh My!

Accelerating the Skills of Digital Learners

Thursday, November 7

8:00–8:30 AM

Argumentation and Inquiry with Electronic Science Notebooks

12:30–1:30 PM

Teach Microbiology, Reinforce Process Skills, and Incorporate Technology into Your Curriculum with Medical Mysteries Web Adventures

1:30–5:30 PM

SC-2: Tech-rich Investigations Through Apptivities (Tickets required: \$17)

2:00–3:00 PM

Using Technology as a Tool for Differentiated Instruction in the Science Classroom

3:30–4:30 PM

Edmodo in the Classroom

5:00–6:00 PM

Time Is Money: Save Both Using Online Lab Simulations

Friday, November 8

8:30 AM–12:30 PM

SC-5: NASA Preservice Teacher Workshop (Tickets required: \$36)

9:30–10:00 AM

Integrating Web GIS in the Earth Science Curriculum to Investigate Tectonics

11:00 AM–12 Noon

I Have an iPad—Now What?

2:00–3:00 PM

Featured Presentation: Cracking the Code of the “Native” Learning Experience (Speaker: David Warlick)

The Seismic Use of Smart Devices

5:00–6:00 PM

EarthScope: A Hubble Space Telescope for Earth’s Interior That’s in Your Neighborhood!

Saturday, November 9

8:00–9:00 AM

Science in the One-to-One Classroom

9:30–10:30 AM

Don’t Flip Out About Flipping Your Classroom

11:00 AM–12 Noon

Skynet Junior Scholars

NSTA Exemplary Science Program (ESP)

Unique Features of Programs That Meet
"More Emphasis" Features in the NSES



Friday, November 8, 8:00–10:00 AM
Ballroom B, Convention Center

The National Science Education Standards offered four goals/justifications for science in K–6 settings, namely that all students would: 1) Experience the richness and excitement of knowing about and understanding the natural world; 2) Use appropriate scientific processes and principles in making personal decisions; 3) Engage intelligently in public discourse and debate about matters of scientific and technological concern; and 4) Increase their economic productivity through the use of the knowledge, understandings, and skills of the scientifically literate person in their careers.

The ESP series identifies people and places where the reforms recommended have emerged. The exemplars include 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; and 7) Exemplary Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching.

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

See page 82 for complete details.

Engineering Day at NSTA

Sponsored by the American Society
for Engineering Education



Friday, November 8, 8:00 AM–6:00 PM
South Carolina Hall, Hilton Center City

The American Society for Engineering Education (ASEE) has put together a public/private partnership to develop ways of engaging elementary, middle school, and high school students and teachers in engineering. Participants will learn about innovative, hands-on, project-based engineering activities, courses, curriculum options, events, outreach programs, professional development, and competitions designed to increase engineering and technological literacy of all students; encourage more and more diverse students to pursue engineering careers; and enable teachers to learn about and experience engineering. Presenters will share lessons learned and examples of inquiry and design activities that have been developed in partnership with K–12 science teachers for use in the classroom and in informal educational settings. The materials result from a collaboration of engineering educators and STEM professionals working with NASA, *TeachEngineering.org*, Engineering is Elementary, and Colleges of Engineering across the nation who actively engage in K–12 engineering in collaboration with partner teachers and schools. All sessions will help teachers understand the new ETS Engineering Design portion of the Next Generation Science Standards (NGSS).

8:00–9:00 AM	ASEE's K–12 Engineering Resources, Including Engineering, Go For It! (p. 79)
9:30–10:30 AM	Power Generation for the Developing World (p. 87)
11:00 AM–12 Noon	Introducing Engineering to Elementary School Students (p. 92)
2:00–3:00 PM	Think Like an Engineer/Think Like a Scientist (p. 97)
3:30–4:30 PM	Engineering in Support of Middle Grades Science and Math (p. 105)
5:00–6:00 PM	Engineering the Future with TeachEngineering.org (p. 108)



ACS
Chemistry for Life™

Chemistry Day at NSTA

Sponsored by the American Chemical Society

Chemical Concepts in a Changing World

For Grades 9–12

*Friday, November 8, 8:00 AM–6:00 PM
Providence II, Westin*

Engage in activities, discussion, analyses, and assessment that help understand the relationships among basic chemical concepts, human activities that are changing the planet, and their roles in moving toward a more sustainable use of Earth's resources.

Research on teaching and learning indicates a positive correlation between teacher content knowledge and student learning. The goals of Chemistry Day are to enhance and enrich secondary chemistry teachers' knowledge of and interrelationships among chemical concepts and their consequences through engagement in activities, discussion, and analyses that demonstrate how lessons on these concepts can be presented in a way that stimulates student thinking and prompts exploration of the complexity of the concepts as they relate to sustainability.

The content and structure draws on several decades of experience the American Chemical Society has in activity-based curricula development, including incorporation of sustainability and Green Chemistry principles. This series of sessions includes bonding, entropy, and acid/base rates and equilibria—topics central to understanding the behavior of matter and chemical change in the environment. A complementary theme is incorporating activities as part of the assessment of student learning.

8:00–9:00 AM	Chemical Bonding—Why Water Is Different (p. 80)
9:30–10:30 AM	Entropy: Mixing and Unmixing (p. 88)
11:00 AM–12 Noon	Entropy: Energy Transfer (p. 93)
2:00–3:00 PM	Electromagnetic Radiation Energy (p. 100)
3:30–4:30 PM	Rates: Concentration and Half-Life (p. 105)
5:00–6:00 PM	Acid/Base Reactions: Carbon Dioxide (p. 109)

Middle School Chemistry Day

Sponsored by the American Chemical Society

Middle School Chemistry— Big Ideas About the Very Small

*Friday, November 8, 8:00 AM–6:00 PM
Providence III, Westin*

Come to one, two, or as many sessions as you like during this full day of activities and information for teaching and learning middle school chemistry. Staff from the American Chemical Society will introduce participants to the new free online resource *middleschoolchemistry.com*. Each of the six sessions will include hands-on activities and explanations from the website that participants can easily incorporate into their teaching to support their current textbook and curriculum. Handouts of the session activities will be available for all participants.

8:00–9:00 AM	Matter: Solids, Liquids, and Gases (p. 80)
9:30–10:30 AM	Changes of State: Evaporation and Condensation (p. 88)
11:00 AM–12 Noon	Density—A Molecular View (p. 93)
2:00–3:00 PM	The Periodic Table, Energy Levels, and Bonding (p. 100)
3:30–4:30 PM	Polarity of the Water Molecule and Its Consequences (p. 105)
5:00–6:00 PM	Chemical Change—Breaking and Making Bonds (p. 109)

Physics Day at NSTA

Sponsored by the American Association of Physics Teachers (AAPT)
and the North Carolina Section of AAPT



Friday, November 8, 8:00 AM–6:00 PM
Providence I, Westin

The American Association of Physics Teachers offers a full day of physics content. Physics Days consists of interactive hands-on workshops covering important physics topics for today's world. Each of these workshops is organized by experienced science

educators and designed to deal with hard-to-express concepts that can be immediately applied in your classroom. Physics Day in Charlotte is being organized by the North Carolina Section of the American Association of Physics Teachers.

8:00–9:00 AM	Modeling What You See Using Video Analysis (p. 80)
9:30–10:30 AM	PhysicsQuest: Spectra's Turbulent Times (p. 88)
11:00 AM–12 Noon	Supernova Remnants, Cosmic Rays, and Cosmology (p. 91)

2:00–3:00 PM	Astronomy Make-and-Take (p. 100)
3:30–4:30 PM	Using Video and Animation in Physics Instruction (p. 103)
5:00–6:00 PM	Physics from the Junk Drawer (p. 109)

Special Invite for NSTA Conference Attendees

Come attend a **Special Gallery Reception**
with kinetic artist **Joseph Herscher**
Friday, November 8, 5:00–7:00 PM

McColl Center for Visual Art invites NSTA Charlotte conference attendees to a special gallery reception. Visit with kinetic artist Joseph Herscher and view his exhibition **"Technology Sphere of Impact"** in the center's first floor galleries.

Inspired by Pulitzer prize-winning cartoonist Rube Goldberg's absurd and humorous inventions, he employs principles of physics and engineering as well as wit and humor to create highly complicated devices that perform simple, energy-saving tasks.

Free admission with cash bar and dollar beers.

You are also welcome to visit during public hours on

- **Thursday evening, November 7**, or attend Herscher's special performance of his machine on
- **Saturday, November 9, from 1:00–5:00 PM.**



Joseph Herscher, 2013. Photo: Fletcher Lawrence

www.mccollcenter.org

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

NSTA 2013 Charlotte Area Conference Professional Development Documentation Form

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

Beginning November 26, 2013, Charlotte transcripts can be accessed at the NSTA Learning Center (learningcenter.nsta.org) by logging on with your Charlotte Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Charlotte transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

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

Evaluate sessions via your smartphone using our conference app (download instructions page 13), or go to www.nsta.org/evaluations to evaluate sessions (workshops, presentations, and exhibitor workshops) online. See page 14 of the conference program for instructions. ***And don't forget, the more sessions you attend and evaluate, the more chances you have to win a NEW Kindle Fire HDX 7"!***

Sample Questions:

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

Sample Responses:

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

Wednesday, November 6 8:00 AM–5:00 PM

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

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

Thursday, November 7 8:00 AM–7:00 PM

Start Time	End Time	Activity/Event Title

Friday, November 8 8:00 AM–6:00 PM

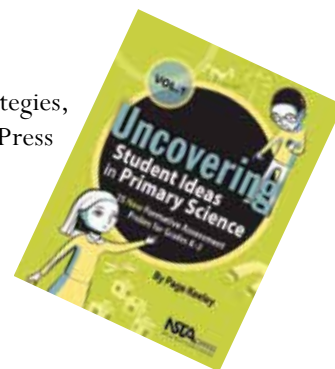
Start Time	End Time	Activity/Event Title

Saturday, November 9 8:00 AM–12 Noon

Start Time	End Time	Activity/Event Title

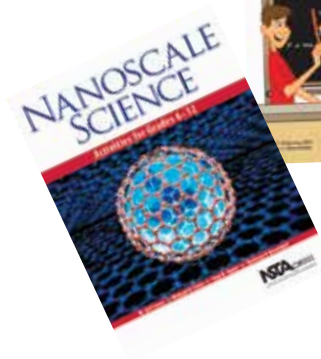
NSTA Press Sessions

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



Thursday, November 7

- | | |
|---------------|--|
| 8:00–9:00 AM | Geometry of Life: The Engineered World (p. 47) |
| 12:30–1:30 PM | Including Students with Disabilities in Advanced Science Classes (p. 54) |
| | Uncovering Elementary Students' Ideas in Science (p. 57) |
| 2:00–3:00 PM | Inquiring Scientists, Inquiring Readers (p. 62) |
| 3:30–4:30 PM | <i>Earth Science Puzzles, Making Meaning from Data</i> (p. 70) |
| 5:00–6:00 PM | Next Time You See a Sunset, a Seashell, a Firefly... (p. 74) |



Friday, November 8

- | | |
|------------------|--|
| 8:00–9:00 AM | <i>Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry</i> (p. 78) |
| 9:30–10:30 AM | <i>Exemplary Science: Best Practices in Professional Development</i> (p. 84) |
| 11:00 AM–12 Noon | The Authors' Picks! Teaching Science Through Trade Books (p. 92) |
| 2:00–3:00 PM | Special Needs Students in Science (p. 96) |
| 3:30–4:30 PM | Classroom Activities for <i>Stop Faking It: Force and Motion</i> (p. 104) |
| 5:00–6:00 PM | Argumentation in the Science Classroom (p. 108) |

Saturday, November 9

- | | |
|------------------|---|
| 8:00–9:00 AM | Uncovering Students' and Teachers' Ideas in Science (p. 113) |
| 9:30–10:30 AM | Stop Faking It! Finally Understand LIGHT AND SOUND So You Can Teach It (p. 116) |
| 11:00 AM–12 Noon | Outdoor Science and Bringing It In (p. 120) |

Conference Program • Meetings and Social Functions

Wednesday, November 6

FOSS Middle School Institute: Implementing Scientific and Engineering Practices

By Invitation Only

Graves, Hilton Center City 8:00–11:30 AM

The North Carolina Department of Public Instruction (NCDPI) Fall Science Supervisors Meeting

For North Carolina Educators; By Preregistration Only

Charlotte Hall, Hilton Center City 8:00 AM–1:00 PM

FOSS Third Edition: Scientific Literacy—FOSStering Connections to the Common Core

By Invitation Only

Graves, Hilton Center City 12:30–4:00 PM

North Carolina Science Leadership Association Meeting

Charlotte Hall, Hilton Center City 1:00–5:00 PM

North Carolina Science Leadership Association Dinner

By Preregistration Only

Charlotte Hall, Hilton Center City 6:00–9:00 PM

Thursday, November 7

NSTA/CAEP Development of Program Report Workshop

By Invitation Only

Dunn, Hilton Center City 2:00–5:00 PM

NCSTA Meeting and Awards (with speaker Stephen L. Pruitt)

Grand Ballroom C, Westin Charlotte 4:00–7:00 PM

Friday, November 8

Association for Multicultural Science Education (AMSE) Town Hall Meeting

By Registration Online

Dunn, Hilton Center City 1:00–3:00 PM

Reception at McColl Center for Visual Art

McColl Center for Visual Art 5:00–7:00 PM

Free Open House at Discovery Place

Discovery Place 5:00–9:00 PM

Saturday, November 9

South Carolina Science Council (SC)² Breakfast

North Carolina Hall, Hilton Center City 7:00–8:00 AM

AMSE Board Meeting

By Invitation Only

Biltmore Boardroom., Hilton Center City 10:00 AM–12 Noon

Picture-Perfect Science Preconference Workshop (C-1)

Tickets for this preconference workshop were available by preregistration only.



Karen Ansberry

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



Emily Morgan

Level: Grades K–5

Date: Wednesday, November 6

Time: 8:30 AM–3:30 PM

Location: Tryon, Westin

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



— Courtesy of Karen Ansberry and Emily Morgan

reading in a meaningful way, so you can teach both subjects at once. In this full-day workshop, you will participate in model lessons that integrate science and reading, learn the benefits and cautions of using children's picture books in science, become familiar with the BSCS 5E model, and receive a bibliography of recommended science-related picture books. All attendees will also receive a copy of *Even More Picture-Perfect Science Lessons*, a \$37.95 value containing 15 classroom-ready lessons for grades K–5. Come to this Picture-Perfect Science Workshop and rejuvenate elementary science instruction in your school!

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

Tickets for this preconference workshop were available by preregistration only.



Page Keeley

Page Keeley, 2008–2009 NSTA President; author of 14 books, including the best-selling *Uncovering Student Ideas in Science* series, and numerous journal articles, and recognized expert in science formative assessment.

Level: Grades K–12

Date: Wednesday, November 6

Time: 8:30 AM–3:30 PM

Location: Grand Ballroom A, Westin

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

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



Home and School Science Activities (SC-1)

Bernard A. Horvath, (bgrizwald@aol.com), Retired Educator, Jeffersonville, Ind.

Level: Upper Elementary—Middle Level

Date: Thursday, November 7, 1:00–4:00 PM

Location: North Carolina Hall, Hilton Center City

Registration Fee: \$56

Come engage in innovative physical science demonstrations for grades 4–8 that promote inquiry, problem solving, and literacy. We'll compare and contrast basic activities related to the periodic table, its origination, and order. Next, we'll perform demonstrations providing circumstantial evidence for the kinetic molecular theory. Concepts will be physical and chemical changes, including expansion, contraction, evaporation, condensation, and melting. Activities include several variations of air pressure experiments—from the ideas of empty and full to the idea of a real tornado with the help of a vacuum cleaner to apply some Bernoulli's principle and surface tension. The related effects of gravity, friction, inertia, and centripetal force are from the viewpoints of airplane flight, the space shuttle, NASCAR, planetary orbits, and even ice skaters. Participants will receive two resource books with 65 hands-on activities plus other activities, lesson plans, and handouts.



Tech-rich Investigations Through Appivities (SC-2)

Amy Pruitt (pruittat@rss.k12.nc.us) and **Tonya Brinegar-German** (brinegargermantg@rss.k12.nc.us), Horizons Unlimited, Salisbury, N.C.

Level: Elementary—Middle Level

Date: Thursday, November 7, ★ 1:30–5:30 PM

Location: Off-site: STEM Mobile Lab

(located at Preferred Parking Service Lot, 705 W. 4th Street, spaces 210–237)

Registration Fee: \$17

Participants will board a STEM Mobile Lab and be engaged in two technology-rich lab investigations. One investigation will use Vernier probeware while participants collect and analyze data using invertebrates and microorganisms to solve real-world problems addressing water quality. The second investigation will explore iPad applications that can be transformed into appivities allowing students to visualize science concepts and become responsible digital learners. Formative assessment techniques will be demonstrated throughout the short course to incorporate into a technol-

ogy-rich science classroom. A variety of digital resources will be available to take home. Visit bit.ly/18XKRR1 for more information

★ Short course time factors in a 20–30 minute walk from the Convention Center to the STEM Mobile Lab and back.



Engineering Using Underwater ROVs (SC-3)

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

Level: Middle Level—High School

Date: Thursday, November 7, 2:00–5:00 PM

Location: Johnson, Hilton Center City

Registration Fee: \$13

Introduce engineering to students through learning to design underwater remotely operated vehicles while diving into North Carolina maritime cultural resources. Exploring the wonders of the deep ocean is often difficult, but you will discover how ROVs offer scientists and researchers an opportunity to explore the ocean safely while recording valuable data. In this short course, you will learn the science of ROVs to teach students about Newton's laws of motion, buoyancy, air pressure, Archimedes' principle, and more. Design, engineer, and build an ROV and then test it in an "underwater" competition. Create reusable kits for your classroom and find out how to do the program in just three hours of classroom time. You will also hear about the many shipwrecks off North Carolina's coast and how NOAA's Monitor National Marine Sanctuary uses ROVs and maritime archaeologists to document and survey these priceless cultural resources. Take home a complete set of lesson plans with hands-on activities introducing the concepts, details for how to create the kits, and the engineering design process.

North Carolina Geology Rocks! (SC-4)

Beverly Owens (owensscience@hotmail.com), Schiele Museum of Natural History, Gastonia, N.C.

Level: General

Date: Friday, November 8, 8:15 AM–12:30 PM

Location: Off-site, Schiele Museum of Natural History

Registration Fee: \$50

Unearth the fascinating world of geology! Review basic principles of geology, discuss informative websites and resources, and learn about local geological formations and features. Examine rock, mineral, and fossil specimens with inquiry-based applications. Participants will receive a sample kit of



—Courtesy of Horizons Unlimited



ns Unlimited.

rocks and minerals and learn how to use these resources in the classroom. Hear about opportunities to take part in paleontology research, excavate insect and plant fossils, go gem mining, hunt for mini fossils, and enjoy a tour of the Schiele Museum. All activities can be easily modified to

fit the needs of students at any grade level. We'll be excavating some fossils and gem mining, so participants will need to wear clothing that they don't mind getting dirty. It's also a good idea to bring a bag for rock and fossil samples and handouts.

Participants will meet their short course leader at the Martin Luther King, Jr. Boulevard entrance to the Convention Center 15 minutes prior to departure time.



NASA Preservice Teacher Workshop (SC-5)

Rebecca Jaramillo (rebecca.jaramillo@nianet.org) and **Sharon Bowers** (sharon.bowers@nianet.org), The Center for Integrative STEM Education, Hampton, Va.

Level: Elementary–Middle Level

Date: Friday, November 8, 8:30 AM–12:30 PM

Location: Graham, Hilton Center City

Registration Fee: \$36

Join other preservice teachers in exploring NASA resources and cutting-edge digital tools to engage students in engineering challenges. Become part of a sustainable, collaborative network while learning about space exploration beyond low-Earth orbit. Tackle one of the major challenges of exploration—radiation. Participants will incorporate hands-on activities, effective instructional technologies, and modeling/simulation tools into standards-based integrated lessons created to inspire students and extend student understanding of STEM.



Putting Excitement into Engineering (SC-6)

David C. Taylor (david.taylor@cms.k12.nc.us), McClintock Middle School, Charlotte, N.C.

Tom Dubick (tomdubick@gmail.com), Charlotte Latin Middle School, Charlotte, N.C.

Terence Fagan (terence.fagan@cpcc.edu), Central Piedmont Community College, Charlotte, N.C.

Level: Middle Level–College/Informal

Date: Friday, November 8, 8:45 AM–12:15 PM

Location: Off-site: Central Piedmont Community College

Registration Fee: \$36

In this short course, you will try out different “maker” technologies at various work stations. Each work station will include a different technology as well as curricula ideas for implement-

ing these technologies in the classroom in accordance with the emerging national science standards. Put the design process into action and gain real-world skills as you make decisions regarding performance trade-offs and see how engineering advances science as well as how science advances engineering. Find out how advances in STEM—including engineering—are driving down the financial and environmental costs of manufacturing in our society. Participants will use 3-D printers, assorted robots, and examples of physical computing, including the Raspberry Pi computers. Tools like these permit students to actively engage in the engineering process as they use math and science to solve problems. In this short course, you will gain innovative skills to lead students toward becoming not just consumers but technology creators. Bring materials to take notes.

Participants will meet their short course leader at the Martin Luther King, Jr. Boulevard entrance to the Convention Center 15 minutes prior to departure time.



Using Literacy to “Unpack” Content and Build Prior Knowledge (SC-7)

Karen Meadows (karen.meadows@cms.k12.nc.us), Collinswood Language Academy, Charlotte, N.C.

Level: Middle Level–High School

Date: Friday, November 8, 3:00–5:00 PM

Location: Graham, Hilton Center City

Registration Fee: \$29

This short course will demonstrate how to build a student's prior knowledge while increasing his or her literacy and comprehension of nonfiction text. Various activities using Unpacked Content from North Carolina Science Essential Standards will be modeled. Initial activities include annotation, summarizing, making scientific connections, and identifying key science terms within text. The second tier activity will use graphic organizers to visually display relationships among concepts. The third tier activity will involve creating notes from graphic organizers. The fourth and final step will be presenting a PowerPoint-type lesson on the concepts, while students fill in any missing “gaps” in their notes. Participants are encouraged to bring their state/district science curriculum.

Tickets for field trips may be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader at the Martin Luther King, Jr. Boulevard entrance of the Convention Center 15 minutes before departure time.

Charlotte Motor Speedway STEM Tour

\$53

#T-1 Thurs., Nov. 7 8:20 AM–12:30 PM

This field trip has two components: a STEM activity portion and a site tour. The field trip begins with participants rotating through four stations—Station 1 “Traction/Friction,” Station 2 “Acceleration,” Station 3 “Balance,” and Station 4 “Radio-controlled (RC) Cars.” Following the activity portion, participants will get a close-up look at areas that are off-limits on race days with the “refueled” 1.5 hour Feel the Thrill Tour. The tour includes the NASCAR Sprint Cup Series Garage, navigating through two infield racetracks, making your way down Pit Road, and taking a picture in Victory Circle. Plus, you will visit zMAX Dragway and The Dirt Track at Charlotte.

Note: All participants must sign a liability waiver form, and wear comfortable shoes and clothing appropriate for outdoors. All tour participants under 18 years of age must be accompanied by an adult. You are responsible for providing your own car seat for children. All on-track events are subject to track availability.

Ice Age to Space Age at the Museum of York County **\$39**

#T-2 Thurs., Nov. 7 8:30 AM–2:00 PM

Travel through space and time at the Museum of York County! Participate in a hands-on fossil program in our Naturalist Center, the only Smithsonian-style learning environment in South Carolina with more than 1,800 specimens. A tour of the exhibition “Ice Age Beasts of Carolina” will take you back to a time when zebras, mastodons, and dire wolves called the Carolinas home. In the newly renovated, all-digital Settlemire Planetarium, participants will learn the latest astronomical facts and theories, including the truth behind commonly held misconceptions. Courtesy of the Museum of York County, enjoy a tasty buffet lunch with a selection of wraps and sandwiches, chips, fresh fruit, and home-made sweet treats. Lunch, a 15% store discount, door prizes, and an educators’ resource bag are all included. Visit www.chmuseums.org/myco to learn more about the museum. Travel time is an hour each way.

T-1: Charlotte Motor Speedway STEM Tour



—Photo courtesy of Charlotte Motor Speedway

Sustainability in Action

\$50

#T-3 Thurs., Nov. 7 9:30 AM–12 Noon

Take a guided tour of the largest greenhouse in the world (162 acres under one roof) and see all of the biology and technology behind the scenes that create beautiful yards in the spring and festive poinsettias in winter. On top of all this, the facility is one of the “greenest” in the nation when it comes to sustainable practices! Automate or stagnate has been a long-standing credo at Metrolina. To this end, the greenhouses feature many technological innovations, such as automatic transplanter that pick up plants and put them in finished pots, so that no hands have to touch the plants. The transplanter average roughly 30,000 plants per hour. Recently, Metrolina invested in a new greenhouse that will capture 100% of the rainwater for reuse and use open-roof technology and energy curtains. Metrolina is incorporating flood floors to lower water usage and wood boiler heating. This field trip is for all grade levels and all subject areas. There’s plenty of engineering happening here!

Note: Close-toed shoes or sneakers required. Golf carts are available for individuals that might have concerns walking long distances.

Educational Adventures at the U.S. National Whitewater Center

\$86; by preregistration only

#F-1

CANCELED

Fri., Nov. 8

8:00 AM–6:00 PM

Along with its multiple-channel, customized whitewater river, the USNWC has nearly 400 acres of woodlands, meadows, and ponds...most of which border the banks of the Catawba River, making it the perfect outdoor classroom. This field trip includes two educational programs: Environmental Debate and Engineering of the Whitewater Channels. For the Environmental Debate program, participants will hike down to the Catawba River to test water quality and discuss how dams affect the environment. For the Engineering of the Whitewater Channels program, a systems operations and project manager will explain the engineering of the whitewater channels while walking around the channels and taking a tour of the pump house, followed by a hydrology discussion. The CoolSport Pass allows access to all land and water activities (*weather dependent*), with the exception of whitewater rafting and whitewater kayaking. Lunch is included in the ticket price. Participants will be given a lunch voucher for either a hamburger, chicken tenders, or a veggie burger, which will include a choice of chips and a drink.

Note: All programs and activities will be outdoors, and participants should wear comfortable clothes and dress for the weather.

Close-toed shoes are required (tennis shoes, etc.).

Special Note: Participants must sign an Assumption of Risk, Waiver, and Release Agreement at the facility (to be prepared by USNWC on behalf of USNWC and NSTA).

Owl Prowl with Carolina Raptor Center

\$58

#F-2

Fri., Nov. 8

6:30–10:15 PM

Silent hunters grace the night at this dinner presentation at Carolina Raptor Center. Put on your walking shoes and join the education team on an Owl Prowl adventure. You'll see (or hear!) seven species of native and exotic owls on the 3/4 mile Raptor Trail, featuring more than 25 different raptor species. Soup and sandwiches from Jason's Deli and a presentation with live birds of prey will warm you up for an evening of fun and nature in the woods at Latta Plantation Nature Preserve. Participants will receive lesson plans and hands-on teaching aids for how to integrate birds of prey into their science curriculum. Goody bag included—HOOT magnet, owl pellet kit, and program discount.

Note: If it rains, the event will be moved inside the Visitor Center, which is not wheelchair accessible. The classroom is on the second floor and requires visitors to be able to climb stairs to access it.

F-2: Owl Prowl with Carolina Raptor Center



—Photo courtesy of Carolina Raptor Center

Conference Program • Affiliate Sessions

Association for Multicultural Science Education (AMSE)

President: Robert Ferguson

Friday, November 8

11:00 AM–12 Noon	A Glimpse at the Science Education in India	Tryon, Westin
1:00–3:00 PM	Town Hall Meeting: Association for Multicultural Science Education (AMSE)	Dunn, Hilton Center City
5:00–6:00 PM	Creating Project Based Learning (PBL) Experiences	Graves, Hilton Center City

Saturday, November 9

10:00 AM–12 Noon	AMSE Board Meeting	Biltmore Boardroom, Hilton Center City
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Council for Elementary Science International (CESI)

President: Julie Thomas

Thursday, November 7

12:30–1:30 PM	Get on Board with CESI and NASA's International Space Station	Ballroom B, Conv. Center
2:00–3:00 PM	Council for Elementary Science International Share-a-Thon	Ballroom B, Conv. Center

National Association for Research in Science Teaching (NARST)

President: Lynn Bryan

Thursday, November 7

2:00–3:00 PM	Increasing Student Performance in Large Lecture STEM Courses: A Team Approach to Successful Learning	Providence Ballroom II, Westin
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Friday, November 8

2:00–3:00 PM	Comparison of the Knowledge Structures and Problem-solving Ability of AP Physics Students in a Traditional Course and a Modeling Instruction Course: An Exploration	Queens, Westin
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National Middle Level Science Teachers Association (NMLSTA)

President: Patty McGinnis

Friday, November 8

8:00–9:00 AM	Science and Special Education—How to Make It Work	Queens, Westin
9:30–10:30 AM	Win Big! Write a Grant and Your Students Win, Too!	Queens, Westin

National Science Education Leadership Association (NSELA)

President: Darlene Ryan

Friday, November 8

8:00–9:00 AM	Tools for Science Leaders, Part I	Caldwell, Hilton Center City
9:30–10:30 AM	Tools for Science Leaders, Part II	Caldwell, Hilton Center City

Society for College Science Teachers

President: Nancy L. Elwess

Friday, November 8

3:30–4:30 PM	Using Mainstream Science Fiction Films as an Instructional Strategy to Teach Nature of Science and Scientific Inquiry	Caldwell, Hilton Center City
	Introducing, Nurturing, and Strengthening Sustainability Concepts with Preservice Teachers and the Greater University Community	
5:30–6:00 PM	Integrating Geoscience Education and Environmental Monitoring on Yap, Micronesia	Caldwell, Hilton Center City

Special Offer for NSTA Conference Attendees

Welcome to Charlotte. You are invited to a **Free Open House at Discovery Place** Friday, November 8, 5:00–9:00 PM.

The entire museum will be open, including showings of *Hubble*, its IMAX film for the 2013–2014 school year.

Show your NSTA badge at the Admissions Desk for complimentary admission to this special Open House offered exclusively to NSTA Charlotte Area Conference attendees.

Discovery Place brings science to life with inquiry-based hands-on state-of-the-art labs, live animals, interactive exhibits, and much more. Visit www.discoveryplace.org to find out the latest happenings at this ever-changing dynamic museum.



#1. Stay current in your field—**enjoy 20% savings** on more than 267 NSTA Press® books.

#2. Access to learning modules and **customized lesson plans** in the NSTA Learning Center.

#3. Free subscription to a **journal** of your choice—designed for all grade levels.

#4. Enjoy a **free subscription** to our monthly newspaper, *NSTA Reports*.

#5. Download journal articles—members have **unlimited access**.

#9. Access to **NGSS@NSTA** resources—they'll provide a pathway for incorporating the Standards into classroom instruction.

#10. Year-round, face-to-face, and **online learning opportunities**.

#8. Enjoy up to \$95 off our **National and Area Conferences**—an unparalleled professional development opportunity.

#7. Participate in our **14 vibrant listservs**—collaborate with teachers who ask questions on everything from general pedagogy to “how do I use this piece of equipment?”

#6. **Network** and contribute to the NSTA Blog, an easy-to-use platform.

10

REASONS TO BECOME AN NSTA MEMBER

For more information or to become a member,
www.nsta.org/membership or call **1.800.722.6782**

NSTA National
Science
Teachers
Association

8:00–11:30 AM Meeting

FOSS Middle School Institute: Implementing Scientific and Engineering Practices

(By Invitation Only)

Graves, Hilton Center City

8:00 AM–1:00 PM Meeting

The North Carolina Department of Public Instruction (NCDPI) Fall Science Supervisors Meeting

(North Carolina Educators Only) Charlotte Hall, Hilton Center City

By Preregistration Only

This meeting is for North Carolina science supervisors, curriculum leaders, lead teachers, and science leaders.

8:30 AM–3:30 PM Preconference Workshops

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

(Grades K–12)

Grand Ballroom A, Westin

By Preregistration Only

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, Jefferson, Maine

For description, see page 35.

Picture-Perfect Science Preconference Workshop (C-1)

(Grades K–5)

Tryon, Westin

By Preregistration Only

Karen Ansberry (karen@pictureperfectscience.com) and **Emily Morgan** (emily@pictureperfectscience.com), Picture-Perfect Science, LLC, Lebanon, Ohio

For description, see page 35.

12:30–4:00 PM Meeting

FOSS Third Edition: Scientific Literacy—FOSStering Connections to the Common Core

(By Invitation Only)

Graves, Hilton Center City

1:00–5:00 PM Meeting

North Carolina Science Leadership Association Meeting

Charlotte Hall, Hilton Center City

This is NCSLA's biannual meeting. The focus will be on providing leadership for the implementation of the NGSS. The meeting will be followed by a dinner. Visit www.ncsla.net for more information.

6:00–9:00 PM Dinner

NCSLA Dinner

(By Preregistration Only)

Charlotte Hall, Hilton Center City

NCSLA's evening meeting will feature a dinner with presentation of the Gatling Award and speaker Page Keeley who will address "Teaching for Conceptual Change." All are welcome.

Science Area

A science area category is associated with each session. These categories are abbreviated in heavy type at the right immediately following the session title. On page 141, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

Glossary

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

Strands

The Charlotte Conference Committee has planned the conference around the following three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 28.



Engineering: Promoting the "E" in STEM



Merging Literacy into Science Instruction



Accelerating the Skills of Digital Learners

The following icon will be used throughout this program.



NSTA Press® Sessions

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.



—Photo courtesy of the U.S. Department of Defense.

Students at Garinger High School in Charlotte prepare kit cars for a race. Use of military imagery does not imply or constitute endorsement of NSTA, its products, or services by the U.S. Department of Defense.

8:00–8:30 AM Presentation

SESSION 1



Argumentation and Inquiry with Electronic Science Notebooks (Gen)

(Elementary)

206 A/B, Convention Center

Eric Wiebe (eric_wiebe@ncsu.edu), North Carolina State University, Raleigh

The Leonardo Project developed an electronic science notebook to enhance the elementary science classroom by teaching through inquiry and facilitating argumentation.



8:00–9:00 AM Presentations

SESSION 1



The North Carolina Engineering STEM Connections (Gen)

(General)

205, Convention Center

Laura J. Bottomley (laurab@ncsu.edu) and **Elizabeth Parry** (elizabethparry204@gmail.com), North Carolina State University, Raleigh

Nancy Shaw (nshaw@duke.edu), Duke University, Durham, N.C.

The role that the “E” plays in STEM is largely dependent on its underlying definition. This session will outline engineering from the standpoint of learning objectives in the North Carolina Engineering Connections recently announced by the North Carolina Department of Public Instruction.

SESSION 2

First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference? (Gen)

(General)

Ballroom B, Convention Center

NSTA Board and Council

Feeling overwhelmed by all there is to see and do at an NSTA conference? Join us for an interactive walk through the conference program, and you’ll learn how to get the most from your conference experience. We’ll also have a brief demo of our NSTA conference app. Door prizes!

SESSION 3

Making Science Process Skills Stick with Students! (Gen)

(Elementary–High School)

Ardrey, Hilton Center City

Aimee Wagner (aimee.wagner@gmail.com), West Charlotte High School, Charlotte, N.C.

Cole J. Entress (cole.entress@gmail.com), Relay Graduate School of Education, New York, N.Y.

We are not just teachers of content. We are teachers of literacy, math, critical thinking, and analysis. The most effective science teachers find ways to make these skills memorable for students by expertly breaking down the steps and making them “sticky.” Join us as we create and share memorable ways to explicitly teach science practices that will have you—and your students—singing, acting and (possibly) dancing!

SESSION 4

Use a Social Networking Tool to Facilitate Scientific Skills and New Literacies (Gen)

(General)

Gwynn, Hilton Center City

Hui-Yin Hsu (hhsu02@nyit.edu) and **Shiang-Kwei Wang** (skwang@nyit.edu), New York Institute of Technology, Old Westbury

Let’s discuss middle school science teachers’ experience using a social networking tool (Edmodo) to facilitate their students’ scientific and new literacies skills.



SESSION 5

Science Connections Using Fiction Books (Gen)

(Elementary–High School) Walker A/B, Hilton Center City

Kyla Gentry (kgentry@searcyschools.org) and **Cristy Farley**, Ahlf Junior High School, Searcy, Ark.

Challenge students to discover science while reading fiction novels. Incorporate Common Core literacy standards by researching the science fiction in a nonfiction book.

SESSION 6

STEM Projects for the Middle School Classroom

(Gen)

(Middle Level–High School) Grand Ballroom B, Westin

DJ West (djwest78@gmail.com), Schoolcraft College, Livonia, Mich.

Walk away with a variety of projects that can be used in middle school science to integrate STEM concepts into the classroom. Take home instructions for each of the projects discussed.

SESSION 7

Crosscutting Concepts: Ice Core Records—From Volcanoes to Supernovas (Earth)

(High School–College/Informal Education) Harris, Westin

Donna L. Young (donna@aavso.org), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Experience a unique ice core investigation that incorporates absolute and relative dating, history, volcanoes, solar proton events, energy cycles, Earth systems, terrestrial events, and supernovas.

SESSION 8

Changing the Face of Science: A STEM Biography Project (Bio)

(General)

Independence, Westin

Jessica L. Parsons (jessica.parsons@woodward.edu), Woodward Academy, College Park, Ga.

Adopt or adapt this STEM biography project to ignite curiosity and affirm the diverse learners in your classroom! Enduring digital citizenship and inquiry skills connect students to global STEM professionals. This project meets standards for CCSS, the NGSS, and ISTE-NETS.

SESSION 9

BioPlastic—Going from Synthetic to Natural Polymers (Chem)

(High School)

Kings, Westin

Sherri C. Rukes (lucchem@gmail.com), Libertyville High School, Libertyville, Ill.

Many of the items that we use today are becoming more Earth friendly. Learn how a bioplastic is made and what plant materials are used. A CD with information and activities will be provided.

SESSION 10

Using Synthetic Data to Enhance Inquiry (Bio)

(High School)

Queens, Westin

Robin E. Bulleri (rbulleri@chccs.k12.nc.us), Carrboro High School, Carrboro, N.C.

Presider: Samantha Dassler Barlow, North Carolina State University, Raleigh

This session will introduce the use of scientific databases and technology to form hypotheses and foster scientific inquiry in science classrooms.

SESSION 11

Explore Earthquakes! (Earth)

(Middle Level–High School)

Sharon, Westin

David A. Buehler (dbuehler@geosociety.org), The Geological Society of America, Boulder, Colo.

Using several inquiry-based activities, we will explore earthquakes in a way that will allow students to become actively engaged in the learning process. Free resources!

8:00–9:00 AM Workshops

Engineering K–5

(Elementary)

(Earth)

203A, Convention Center

Barbara A. Lydick (barbara_lydick@catawbасchools.net), Mountain View Elementary School, Hickory, N.C.

Angel Lafone (angel_lafone@catawbасchools.net) and **Debra Manasco**, St. Stephens Elementary School, Conover, N.C.

Dianna Freestone, Sherrills Ford Elementary School, Sherrills Ford, N.C.

Erin Whisnant (erin_whisnant@catawbасchools.net) and **Julia LaRochelle** (julia_larochelle@catawbасchools.net), Snow Creek Elementary School, Hickory, N.C.

The engineering process is as simple as—question, imagine, plan, create, and improve. Join us and design and build an anemometer or a weather vane.



NSTA Press® Session: Geometry of Life: The Engineered World

(Gen)

(Middle Level–High School)

203B, Convention Center

M. Gail Jones, Gina Childers, and Elysa Corin (encorin@ncsu.edu), North Carolina State University, Raleigh

Amy R. Taylor, University of North Carolina, Wilmington
 President: Rebecca Hite (rlhite@ncsu.edu), North Carolina State University, Raleigh

Explore the amazing shapes and sizes that make up our world. Build an icosahedral virus and a bucky ball...and explore amazing patterns in nature.



Need help navigating?

If this is your first NSTA conference, please join us at our conveniently offered session for first-time conference attendees where we'll walk through the program, and you'll learn how to get the most from your conference experience. We'll also have a brief demo of our **NSTA conference app**. Door prizes!

● **First-Timer Attendee Session** • **Thursday, November 7, 8:00–9:00 AM**
Ballroom B, Charlotte Convention Center





Science Notebooking: Integrating Literacy and Science Instruction in the Elementary Classroom (Gen)

(Elementary—Middle Level) 207A, Convention Center

Brande M. Flaitz (bflaitz@gstboces.org), The Greater Southern Tier BOCES, Elmira, N.Y.

With recent shifts in literacy instruction related to the English Language Arts (ELA) Common Core State Standards, science notebooking can provide a bridge between science instruction and these changes.

Bringing Literacy and STEM Together: B.L.A.S.T. (Gen)

(Elementary) 207 B/C, Convention Center

Renee G. O’Leary, Holy Angels School, Newark, Del.

Peggy Vavalla (vavallme@comcast.net), DuPont, Wilmington, Del.

B.L.A.S.T for Success at School and Home (ages 3–5) uses hands-on explorations and “fractured fairy tales” as catalysts to introduce STEM concepts to early learners. Pick up sample plans and materials that utilize multisensory and integrated practices that you can use in your classroom next week.

Teaching Engineering Is a Snap with Science Olympiad (Gen)

(Middle Level) 207D, Convention Center

Kelly R. Price (kprice@forsyth.k12.ga.us), NSTA Director, Coordination & Supervision of Science Teaching, and Forsyth County Schools, Cumming, Ga.

Science Olympiad is so much more than just a competition. Come find out how Science Olympiad activities can add the “E” to your lessons!

Problem Solving with Science and Math (Gen)

(Middle Level—College) Charlotte Hall, Hilton Center City

Mary Kay Bacallao (bacallao_mk@mercer.edu), Mercer University, McDonough, Ga.

Using math, the language of science, your students will travel back in time and into the future. Real problems, data, and answers to tough questions.

STEM @ Your Library (Gen)

(General) South Carolina Hall, Hilton Center City

Kelly N. Czarnecki (kczarnecki@cmlibrary.org) and **Rene Kimray**, ImaginOn, Charlotte, N.C.

The public library is a great resource for STEM activities beyond the collection. From science storytime to digital animation, engage students in creative adventures!



Who Did It? Inquiry-based Forensic Serology and DNA Analysis in the Classroom (Bio)

(High School—College) Grand Ballroom A, Westin

Kimberly S. Farah (kfarah@lasell.edu), Lasell College, Newton, Mass.

Learn the basics of forensic serology and DNA analysis as you solve crime scene scenarios using blood typing, paternity testing, and DNA profiles.

Come Play with a Purpose (Phys)

(High School) Grand Ballroom C, Westin

Nina M. Daye (nina.daye@orange.k12.nc.us) and **Andromeda Cook**, Orange High School, Hillsborough, N.C.

Presider: Nina M. Daye

This workshop uses games to teach chemistry and physics. Some of the activities use common games and some are teacher generated. Handouts!

More Than Mud—The “Hole” Story Behind Seafloor Sediments (Earth)

(Middle Level—High School) Grand Ballroom D, Westin

Clifton D. Hudson (astronaut72603@yahoo.com), Riverside High School, Williamston, N.C.

Leigh Ann Hudson (mrshudson0726@gmail.com), North Pitt High School, Bethel, N.C.

Learn how to use real ocean data from the *JOIDES Resolution* to create exciting and engaging lessons about climate, microbes, and plate tectonics.

How to Turn Your Lessons into Inquiry (Gen)

(High School) Providence Ballroom I, Westin

Leah R. Warble and **Michelle M. Lynn** (mlynn@bcps.org), Patapsco High School & Center for the Arts, Dundalk, Md.

Come learn how to evaluate current science lessons to assess the level of student-based learning in order to demonstrate how to incorporate higher levels of inquiry into daily lessons.

Engineering a Kenan Classroom (Gen)
(Supervision/Administration) Providence Ballroom II, Westin
Shelly Henry (henrys@gcsnc.com), Southeast Guilford High School, Greensboro, N.C.

Danielle McCaslin (dmccaslin@wcpss.net), Mills Park Middle School, Cary, N.C.

Kimberly Mawhiney (kmawhiney@currituck.k12.nc.us), Currituck County High School, Barco, N.C.

Kenan Fellows share engineering activities and experiences gained on their yearlong journey through the Kenan Fellows Program. Fellowships include NASA, Future Renewable Electric Energy Delivery and Management (FREEDM) Systems Center, North Carolina's Department of Public Instruction (DPI), and Lenovo.

Literacy in the Lab (Env)
(High School) Providence Ballroom III, Westin

Samantha Gleiser (samantha.gleiser@cms.k12.nc.us), **Nichole Pace** (nicholel.pace@cms.k12.nc.us) and **Kimberly Etheridge** (kimberly.etheridge@cms.k12.nc.us), Myers Park High School, Charlotte, N.C.

Using the Common Core State Standards, this workshop will focus on making connections between content and language objectives by demonstrating a variety of literacy strategies.

Transforming Minds in a Transitioning Community (Env)
(General) Tryon, Westin

Lynn Sametz (l_sametz@uncg.edu), **Brian R. Fannon** (brfannon@uncg.edu), **Christopher Hylton**, and **Stephanie Dappenbrook** (sddappen@uncg.edu), The University of North Carolina at Greensboro

Kathleen Melious (meliousk@gcsnc.com), T.W. Andrews High School, High Point, N.C.

Graduate students partner with K–12 teachers to provide cutting-edge science that engages students in discovery and inquiry-based learning.

Meet the Presidents and Board/Council

Come “meet and greet” with your elected NSTA officers on your way to the exhibits. Share some face-to-face time with the President, President-Elect, and Retiring President along with your Board and Council members. This Thursday special session runs from 11:10 AM to 12:10 PM at the entrance to the Exhibit Hall (page 53)

8:00–9:15 AM Exhibitor Workshops

Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (Bio)

(Grades 6–12) 208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, shark, and frog. Participants use hands-on dissection to identify characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring our very best Carolina's Perfect Solution specimens. Free dissection supplies and great door prizes.

Mastering the Chemical Formula: An Effective Way to Teach Subscripts and Coefficients (Chem)

(Grades 9–12) 208B, Convention Center

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 fundamental chemistry 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 from the new high school program *A Natural Approach to Chemistry*, which enables students of all levels to master the chemical formula and thereby move confidently into a deeper understanding of chemistry.

“FOSStering” the Common Core: Science-centered Language Development (Gen)

(Grades K–6) 213 B/C, Convention Center

Sponsor: Delta Education/School Specialty Science—FOSS

Ellen Mintz, Charleston County Schools, Charleston, S.C.

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

Discover the ways language is used to help elementary students make sense of their active learning FOSS experiences. We will model a FOSS investigation using listening and speaking, reading and writing, and language-development strategies to further content knowledge, scientific practices, and academic literacy.

STEM Projects, Science Fair, and Student Performances (Gen)

(Grades K–8)

213D, Convention Center

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

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



33 Strategies for Integrating Disciplinary Literacy (Gen)

(Grades K–6)

217 B/C, Convention Center

Sponsor: Amplify Education, Inc.

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

Discover how to increase reading comprehension, disciplinary literacy skills, and science knowledge simultaneously for ALL students. Take away 33 ready-to-use strategies for incorporating science trade books into your classroom. Learn integration strategies that provide a better way to teach both science and literacy. Free classroom materials!

Chemistry and the Atom: Fun with Atom Building Games! (Chem)

(Grades 6–9)

217A, Convention Center

Sponsor: CPO Science/School Specialty Science

Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students with opportunities to grasp atomic structure and its connection to the periodic table.

8:30–9:45 AM Exhibitor Workshop

Using Enzyme-linked Immunosorbent Assay (ELISA) to Detect West Nile Virus Outbreak (Bio)

(Grades 9–College)

210A/B, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian, **Danielle Snowflack**, and **Lucia Dussan** (info@edvotek.com), Edvotek Inc., Washington, D.C.

The 2012 outbreak of the West Nile virus was the largest ever documented in the U.S.—more than 1,100 cases were reported to the CDC. Join us to discover how ELISA can be used as a diagnostic tool for detecting disease outbreaks. Participants will perform our new simple, foolproof single-antibody ELISA. Much faster than a traditional ELISA, this assay can be completed in 40 minutes or less. Participants receive a free flash drive and entry into a T-shirt drawing at the end of the workshop.

9:15–10:30 AM General Session

Building Our World Through STEM Education

(General)

Ballroom C/D, Convention Center

Sponsored by Discovery Education



Danny Forster, Chief Architecture and Engineering Expert and Host, *Build it Bigger*, New York City, N.Y.

@dannyforster

Presider: Bill Badders, NSTA

President, and Retired Director, Cleveland Math and Science Partnership, Cleveland, Ohio

Introduction of Speaker: Nancy Addison, Local Arrangements Coordinator, Charlotte Area Conference, and, Charlotte-Mecklenburg Schools, Charlotte, N.C.

Platform Guests: Danny Forster; Bill Badders; Nancy Addison; Karen L. Ostlund, NSTA Retiring President, and Retired Professor, The University of Texas at Austin; Juliana Texley, NSTA President-Elect, and Palm Beach State College, Boca Raton, Fla.; Carrie Jones, NSTA Director, District VI, and Middle Creek High School, Apex, N.C.; Michelle Benigno, NCSTA President, Fletcher, N.C.; Alisa Wickliff, Chairperson, Charlotte Area Conference, and The University of North Carolina at Charlotte; Manley W. Midgett, Program Coordinator, Charlotte Area Conference, and North Carolina Dept. of Public Instruction, Raleigh; David L. Evans, NSTA Executive Director, Arlington, Va.

Danny Forster, chief architecture and engineering expert for Discovery Education and host of *Build It Bigger*, will share his experience traveling the world in search of incredible feats of architecture and engineering and discuss the science behind the structural design of buildings from around the globe. He also will discuss the importance of STEM education to develop the curiosity, critical thinking, and reasoning skills necessary to meet the technology challenges that lie ahead in the world.

As a global architecture expert, Danny Forster has built a career out of the ingenious solution: celebrating it as a television host, lecturing about it as a speaker and professor, and finding it himself as a practicing designer. Leading up to the 10th anniversary of the 9/11 tragedy at the World Trade Center, Danny worked with Steven Spielberg on a special series, The Rising: Rebuilding Ground Zero, documenting the reconstruction efforts. In 2008, he joined the faculty at Harvard's Graduate School of Design, teaching an upper level graduate architecture studio on sustainable design.

9:30–10:30 AM Exhibitor Workshop

Investigating Stem Cell Differentiation (Bio)

(Grades 9–12)

208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

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

10:00–11:15 AM Exhibitor Workshops

Introduction to Wisconsin Fast Plants® (Bio)

(Grades K–12)

208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Students can actively take part in science with new hands-on activities using Wisconsin Fast Plants. These minuscule and quick-growing plants are ideal classroom tools for exploring environmental effects, variation, life cycle, and nutrient cycling. Participants work with hands-on activities such as planting seeds. Free materials!

Scientific Practices: What Does Argumentation Look Like in an Elementary Classroom? (Gen)

(Grades K–6)

213 B/C, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

Ellen Mintz, Charleston County Schools, Charleston, S.C.

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

Join FOSS developers to learn about the scientific practices within the context of the FOSS program. We'll analyze and interpret data, construct explanations, and engage in argumentation from evidence as tools to deepen student learning within a FOSS lesson.

Integrating Online Learning into the Science Classroom (Gen)

(Grades 1–10)

213A, Convention Center

Sponsor: NewPath Learning

Melissa Hughes, NewPath Learning, Victor, N.Y.

Experience NewPath's Online Learning Program, which allows teachers to assign and present ready-to-use, standards-based multimedia lessons; interactive activities; lab simulations; and assessments, as well as track and report student progress. The program also provides easy-to-use authoring tools and templates to develop customized, interactive lessons. Each participant will receive a free trial subscription.

Science, the Literacy Connection, and the Common Core English Language Arts (Gen)

(Grades K–8) 213D, Convention Center

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

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

Genetics: Crazy Traits (Bio)

(Grades 6–12) 217A, Convention Center

Sponsor: CPO Science/School Specialty Science

Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they experience genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity come alive as you use a unique kit to create crazy creatures and study the resulting population.

Get Results with Science and Literacy Integration: Seeds of Science/Roots of Reading® (Gen)

(Grades 2–6) 217 B/C, Convention Center

Sponsor: Amplify Education, Inc.

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

Investigate Models of Matter with the Seeds of Science/Roots of Reading unit! Experience next generation science practices using content-rich science books, scientific discourse, and writing activities. Together these provide rich and varied opportunities to learn core science ideas and vocabulary. Effectiveness data will be shared. Free samples!

Evaluate Your Sessions Online or on Your Smartphone!

This year, we're giving away a Kindle Fire HDX 7" to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See page 13 for details.)

New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (Chem)

(Grades 9–12)

217D, Convention Center

Sponsor: Flinn Scientific, Inc.

Irene Cesa (icesa@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

This hands-on interactive workshop can help you implement the revised laboratory investigations and curriculum framework for AP Chemistry! Join Flinn Scientific as we present two new guided inquiry chemistry experiments that support the integrated learning objectives and applied science practice skills your students will need for success. Pre-lab preparation and preliminary activities for each investigation have been optimized so teachers can effectively guide students and provide maximum opportunities for inquiry. Handouts provided for all activities!

Comets—Beauties or Beasts? (Earth)

(Grades 6–12)

218 A/B, Convention Center

Sponsor: Simulation Curriculum Corp.

Seth Meyers (mgabber@sympatico.ca), Simulation Curriculum Corp., Minnetonka, Minn.

Join us as we use Simulation Curriculum's award-winning Starry Night High School to study the origin, importance, and possible dangers of comets. Watch as Earth passes through the tail of Halley's Comet, predict the path of Comet ISON, and explore the relationship between comets and meteor showers.

10:15–11:30 AM Exhibitor Workshop

Solving the Case of the Missing Archive Using DNA Fingerprinting (Bio)

(Grades 9–College)

210A/B, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian, Danielle Snowflack, and Lucia Dussan (info@edvotek.com), Edvotek Inc., Washington, D.C.

Are you ready to perform a cutting-edge classroom forensic experiment? Complete a DNA fingerprinting exercise to determine who stole priceless historical documents from the Historical Society. We will identify the thief by comparing a DNA sample collected by forensic scientists at the crime scene to DNA from different suspects. Your students can solve the crime! Participants receive a free flash drive and entry into a T-shirt drawing at the end of the workshop.

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

Exhibit Hall A, Convention Center

Presider: Bill Badders, NSTA President, and Retired Director, Cleveland Math and Science Partnership, Cleveland, Ohio

Welcoming Remarks: Alisa Wickliff, Chairperson, Charlotte Area Conference, and The University of North Carolina at Charlotte

Special Guests: Karen L. Ostlund, NSTA Retiring President, and Retired Professor, The University of Texas at Austin; Juliana Texley, NSTA President-Elect, and Palm Beach State College, Boca Raton, Fla.; Carrie Jones, NSTA Director, District VI, and Middle Creek High School, Apex, N.C.; Michelle Benigno, NCSTA President, Fletcher, N.C.; Nancy Addison, Local Arrangements Coordinator, Charlotte Area Conference, and Charlotte-Mecklenburg Schools, Charlotte, N.C.; Manley W. Midgett, Program Coordinator, Charlotte Area Conference, and North Carolina Dept. of Public Instruction, Raleigh; David L. Evans, NSTA Executive Director, Arlington, Va.; Jason Sheldrake, Assistant Executive Director of Sales, NSTA, Arlington, Va.; . Ellen McIntyre, The University of North Carolina at Charlotte; Valerie Truesdale, Charlotte-Mecklenburg Schools, Charlotte, N.C.

Musical Entertainment: Bailey Middle School Jazz Band under the direction of Ruth Peterson

11:00 AM–12 Noon Exhibitor Workshop

Constructive Destruction (Earth)

(Grades 6–8) 208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

When is the last time you engineered a coastal breakwater? Here's your chance! Engineer a Coastal Breakwater is an activity from SEPUP's middle school Erosion and Deposition unit. Analyze the trade-offs of the design and explore how the natural world is influenced by our engineered world, which in turn creates more societal issues that must be solved through science and engineering practices. Activities exemplify the NGSS and show how SEPUP embeds the engineering practices and uses real issues to powerfully deliver content learning.

11:05 AM–5:00 PM Exhibits

Exhibit Hall A, Convention Center

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

11:10 AM–12:10 PM Special Session

Meet the Presidents and Board/Council (Gen)

(General) Entrance to Exhibit Hall, Convention Center

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

12:30–1:00 PM Presentation

SESSION 1

Using Daybooks in the Science Classroom (Gen)

(Middle Level–High School) Grand Ballroom B, Westin

Jazmine Blake (jazmine_blake@abss.k12.nc.us), Broadview Middle School, Burlington, N.C.

Learn how to use a composition notebook for daily science classroom needs rather than a binder.

12:30–1:00 PM Exhibitor Workshop

A Change of Seasons (Earth)

(Grades 5–8) Booth #523, Exhibit Hall, Convention Center

Sponsor: Science First®/STARLAB®

Helmut Albrecht (halbrecht@starlab.com), Science First®/STARLAB®, Yulee, Fla.

In this in-dome workshop, we will introduce one of the Starry Night Small Dome lessons. Join us as we take a look at why we have seasons here on Earth.

12:30–1:30 PM Featured Presentation

Implementing the NGSS: Shifts in Classroom Practice (Gen)

(General)

Ballroom C/D, Convention Center



Stephen L. Pruitt, Senior Vice President, Achieve, Inc., Washington, D.C.

@DrSPruitt

Presider: David L. Evans, NSTA Executive Director, Arlington, Va.

Stephen will update the audience on current adoption and implementation efforts around the Next Generation Science Standards as well as discuss the vision for how classroom practice will shift as a result of the NGSS.

Stephen Pruitt is senior vice president at Achieve. For the past three years, he has been leading the development of the Next Generation Science Standards. Stephen began his career as a high school chemistry teacher in Georgia, where he taught for 12 years. In 2003, he joined the Georgia Department of Education as the Program Manager for Science. Until 2010, he held various roles in the agency culminating with him being named Chief of Staff to State School Superintendent, coordinating the work of the agency.

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

12:30–1:30 PM Presentations

SESSION 1



NSTA Press® Session: Including Students with Disabilities in Advanced Science Classes (Gen)

(High School)

203B, Convention Center

Lori A. Howard, Marshall University, South Charleston, W.Va.

Ed Linz (coachlinz@cox.net), Author and Education Consultant, Springfield, Va.

Elizabeth A. Potts, University of Virginia, Northern Virginia Center, Falls Church

This session will focus on what AP science teachers need to know when including students with disabilities. Discussion includes labs, testing accommodations, and practical advice.

SESSION 2

An Inquiry Approach to Teaching Sedimentary and Metamorphic Rocks (Earth)

(Informal Education)

204, Convention Center

David A. Buehler (dbuehler@geosociety.org), The Geological Society of America, Boulder, Colo.

Come see numerous inquiry-based activities for rocks that you can easily incorporate into your rock unit. They're sure to engage your students!

SESSION 3



Solar Energy—Let the SUNSHINE In! (Gen)

(Elementary–Middle Level)

205, Convention Center

Teresa H. Cowan (thcowan@ncsu.edu), The Science House, North Carolina State University, Raleigh

Rev it up with The Science House...explore solar energy using an interdisciplinary unit. STEM becomes reality as students use real-world lessons to investigate solar energy—potentially the energy of their future.



SESSION 4 (two presentations)

(General) 206 A/B, Convention Center



Flipping the Classroom with a Kenan Fellow (Gen)

Kirk M. Kennedy, East Duplin High School, Beulaville, N.C.

Join me for an introduction to flipping the classroom. I'll provide a list of tools to flip your classroom effectively.



Teach Microbiology, Reinforce Process Skills, and Incorporate Technology into Your Curriculum with Medical Mysteries Web Adventures (Bio)

Yvonne Klisch (yvonne.klisch@rice.edu) and **Kristi G. Bowling** (kristi.bowling@rice.edu), Rice University, Houston, Tex.

Experience this free online adventure game that promotes scientific inquiry and STEM careers while teaching about infectious diseases, immunity, and the scientific method. Handouts!

SESSION 5

The Amazing Writing Race—Just Zoo It! (Bio)

(Elementary) 215, Convention Center

Teresa Randall (trandall@okczoo.com), Oklahoma City Zoo, Oklahoma City, Okla.

Presider: Tamara Lookabaugh, Moore High School, Moore, Okla.

The Oklahoma City Zoo is home to The Amazing Writing Race. Students are challenged to write poetry, personal narratives, descriptive paragraphs, and short stories while racing to animal exhibits looking for writing prompts.

SESSION 6

Partners in Progress: Best Practices for Building Partnerships with STEM-based Groups (Gen)

(General) Ardrey, Hilton Center City

Tevfik Eski, Kenilworth Science and Technology School, Baton Rouge, La.

Learn how a Title I middle school developed effective partnerships with academic, business, and industry association groups to become a STEM pioneer in South Louisiana.

Project Learning Tree

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

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



Get free PLT materials at NSTA

Visit Exhibit Booth 505

Participate in PLT sessions

- Use Service Learning/STEM Projects to Turn Your School into a GreenSchool!
– Thurs, Nov 7, 2:00-3:00pm (Charlotte Convention Center, 207A)
- Enhancing Forest Field Study with PLT
– Thurs, Nov 7, 3:30-4:30pm (Charlotte Convention Center, 201 A/B)
- Forests, Carbon, and Climate Change
– Sat, Nov 9, 9:30-10:30am (Westin Charlotte, Providence Ballroom II)

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

www.plt.org

SESSION 7

Teaching Problem-solving Strategies in the Elementary Classroom: Helping Students See the Interconnectedness of Science, Technology, Engineering, and Mathematics (Gen)

(General) *Graves, Hilton Center City*

Donna L. Knoell (dknoell@sbcglobal.net), Educational Consultant, Shawnee Mission, Kans.

I will identify and discuss essential problem-solving strategies and process skills, demonstrate how to develop these process skills across the curriculum, and showcase a wide range of engineering applications for these skills. Handouts!

SESSION 8

Got HERPS? There's an App for That! (Gen)

(General) *Gwynn, Hilton Center City*

Catherine E. Matthews (theherpproject@uncg.edu), **Heidi Carlone** (hbcarlone@uncg.edu), **Melony Allen** (mhallen@uncg.edu), **Lacey Huffling** (ldhuffli@uncg.edu), **Tess Hegedus** (tahegedu@uncg.edu), and **Aerin W. Benavides** (awbenavi@uncg.edu), The University of North Carolina at Greensboro

Terry M. Tomasek (ttomasek@elon.edu), Elon University, Elon, N.C.

Mary Ash (mary.ash@uncp.edu), The University of North Carolina at Pembroke

Presider: Terry M. Tomasek

Find out how students have been using mobile technologies and communication/networking tools to manage, integrate, and collect data on reptile and amphibian field science projects.

SESSION 9

An Authentic Literacy-driven Classroom! (Gen)

(Middle Level–College) *Walker A/B, Hilton Center City*

Bradley B. Lanier (lanier.brad@wintonwoods.org), Academy of Global Studies at Winton Woods High School, Cincinnati, Ohio
Have you ever wondered how to incorporate literacy into your classroom? This presentation uses a master teacher's toolkit to help guide you through the process.

SESSION 10

MY NASA DATA Across the Curriculum for the Digital Classroom (Earth)

(Elementary–High School) *Independence, Westin*

Preston M. Lewis (preston.lewis@nasa.gov), NASA Langley Research Center, Hampton, Va.

Engage your digital learners by using MY NASA DATA as a visualization tool for NASA Earth Systems satellite data. Plenty of online lessons and activities!



SESSION 11

iGEM: Synthetic Biology in High School (Bio)

(High School) *Queens, Westin*

Anne M. Byford (abyford@gastonday.org), Gaston Day School, Gastonia, N.C.

Synthetic Biology is the intersection of molecular biology and engineering. Join me as I cover the competition, the high school division, and starting a team.

SESSION 12

Science Olympiad Coaches Clinic: Astronomy and Reach-for-the-Stars Events (Earth)

(Middle Level–High School/Informal) *Sharon, Westin*

Donna L. Young (donna@aavso.org), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Science Olympiad coaches will be provided information on team-building strategies, extensive resources, and content for the 2014 national competition by the National Astronomy Event Supervisor.

SESSION 13

Seamlessly Integrating Common Core and the Next Generation Science Standards Within Your Classroom (Gen)

(Middle Level–High School) *Trade, Westin*

Rebekah Carter, Pendleton High School, Anderson, S.C.
Robbie L. Higdon (rhigdon@clemson.edu), Clemson University, Greenville, S.C.

Elizabeth M. Moon (emoon@clemson.edu), Dreher High School, Columbia, S.C.

Stephanie Green, Belton Honea Path High School, Honea Path, S.C.

Discover strategies to achieve a seamless integration of your instructional methods and existing inquiry lessons to CCSS and the NGSS.

12:30–1:30 PM Workshops

**NSTA Press® Session: Uncovering Elementary Students' Ideas in Science (Gen)***(Preschool–Elementary)*

202 A/B, Convention Center

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, Jefferson, Maine

Learn and experience how formative assessment probes can be used to engage young learners, promote thinking, and inform instruction.

**My 5Es—Engaging, Entertaining, Elementary, Engineering, Easy! (Gen)***(Elementary–Middle Level)*

207A, Convention Center

Eva M. Ogens (eogens@ramapo.edu), Ramapo College of New Jersey, Mahwah

By using entertaining children's books, "hook" students into becoming actively involved in problem-solving challenges that promote K–12 STEM learning. *Note:* Hands-on activities limited to the first 25 attendees.

Portable Affordable Simple STEM (P.A.S.S.) (Gen)*(Preschool–Elementary)*

207 B/C, Convention Center

Renee G. O'Leary, Holy Angels School, Newark, Del.**Peggy Vavalla** (vavallme@comcast.net), DuPont, Wilmington, Del.

P.A.S.S. (K–2) provides teachers of early learners with developmentally appropriate, integrated materials to introduce STEM concepts using simple multisensory childhood/elementary explorations delivered in zippered plastic bags with take-home and multidisciplinary follow-up. Walk away with sample lesson plans and material bags.

Student Ambassadors for the Environment Using Technology to Educate Their Peers (Env)*(Middle Level)*

207D, Convention Center

Lynn B. Tarant (ltarant@paterson.k12.nj.us) and **Sarah Laldee** (patersonstem@gmail.com), Paterson Education Fund, Paterson, N.J.

Find out how we engage teens to become agents of change by incorporating the water quality of Paterson Great Falls and technology to spread the word.

A Student-centered Science Experience (Gen)*(General)*

Ballroom A, Convention Center

Anna Strassner (anna_strassner@discoveryeducation.com), Discovery Education, Charlotte, N.C.

A visit to the Discovery Education Science Techbook Classroom will blow you away! Experience a model lesson

designed to expose students to a variety of resources and maximize engagement. This self-paced experience will give you a glimpse of how digital tools can improve the way teachers teach and students learn.

CESI Session: Get on Board with CESI and NASA's International Space Station (Earth)*(Elementary–Middle Level)*

Ballroom B, Convention Center

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

Participate in K–8 hands-on activities and learn how NASA's Teaching From Space resources provide classroom access to NASA missions, NASA experts, and NASA equipment.

Science Notebooking: Integrating Literacy and Science Instruction in the Secondary Classroom (Gen)*(Elementary–High School)*

Charlotte Hall, Hilton Center City

Brande Flaitz (bflaitz@gstbores.org), The Greater Southern Tier BOCES, Elmira, N.Y.

With recent shifts in literacy instruction related to the CCSS English Language Arts (ELA), science notebooking can provide a bridge between science instruction and these changes.

Drugs, Drug Targets, and You—A Molecular Perspective (Bio)*(High School–College)*

Grand Ballroom A, Westin

Shannon Colton (colton@msoe.edu) and **Tim Herman** (herman@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Let's talk about drugs! Join us for an exploration of the molecular nature of drugs and drug targets using engaging hands-on materials.

A Sensor in Your Belly Button? Explore Cool New Sensors and Ethical Issues (Gen)*(Middle Level–High School)*

Grand Ballroom C, Westin

M. Gail Jones (gail_jones@ncsu.edu) and **Elysa Corin** (encorin@ncus.edu), North Carolina State University, Raleigh
Amy R. Taylor, University of North Carolina, Wilmington
 Presider: **Rebecca Hite** (rlhite@ncsu.edu), North Carolina State University, Raleigh

New nanoscale sensors can monitor your health and track your movement in the world. Get lessons for teaching about constructing sensors, ethics, and privacy issues.

Energy in the Physics Classroom (Phys)
(Middle Level–High School) Grand Ballroom D, Westin

Amy Constant (aconstant@need.org), The NEED Project, Manassas, Va.

Caryn Turrel (cturrel@need.org), The NEED Project, Greenwood, Ind.

Energy transfer, transformation, and use are governed by the laws of physics. Show your students how physics concepts permeate their world of conspicuous energy consumption. Activities will focus on thermodynamics, nuclear physics (nuclear chemistry), electromagnetism, and electrical circuits.

Ignite Student Interest in Anatomy with Hands-On Teaching Techniques (Bio)

(Middle Level–College/Supv.) Providence Ballroom II, Westin

Aundrea Rue, Carolina Forest High School, Myrtle Beach, S.C.

Join me for this hands-on workshop where you will experience the power of building body systems with clay. Witness

how this pedagogy promotes student collaboration, problem-solving skills, and motivation.

Wiggling into Biochar (Env)

(Middle Level–High School) Providence Ballroom III, Westin

Indya Z. Evans (ize001@bravemail.uncp.edu) and **Deborah Hanmer** (deborah.hanmer@uncp.edu), The University of North Carolina at Pembroke

President: Rita A. Hagevik (rita.hagevik@uncp.edu), The University of North Carolina at Pembroke

Biochar is a relatively new sustainable way to sequester carbon and improve soil fertility. Come learn about biochar and experience ways to use it.

12:30–1:45 PM Exhibitor Workshops

The Next Generation Science Standards Are Here... Now What? Focus and Exploration of Implementation with Integrity K–8 (Gen)

(Grades K–8) 208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Focus on getting started and learn to easily read, interpret, and implement the Next Generation Science Standards. Explore the structure of the NGSS, develop your knowledge to communicate, and create a dynamic district interest that can highly engage your staff in implementation integrity. Leave with tools to accelerate your NGSS journey.

Using Climate Proxies to Learn About Earth's Climate History (Earth)

(Grades 9–12) 208B, Convention Center

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 the climate unit of *EDC Earth Science*, a new NSF-supported high school Earth science program that uses an active (more than 60 labs and activities!) approach to the study of Earth science and Earth systems.

Detection of Mad Cow Disease Using a Two-Step PCR Process (Bio)

(Grades 10–College) 210A/B, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian, Danielle Snowflack, and Lucia Dussan (info@edvotek.com), Edvotek Inc., Washington, D.C.

Bovine spongiform encephalopathy (Mad Cow Disease) is a fatal neurological condition characterized by the spongelike appearance of degenerated brain tissue. To prevent domestic cattle infection, the FDA inhibits the use of cow parts in bovine-specific DNA present in cattle feed. This quick and easy experiment can be completed in one lab session using Edvotek's user-friendly Edvocycler™! Participants receive a free flash drive and entry into a T-shirt drawing at the end of the workshop.



Online Assessment That Informs Instruction (Gen)

(Grades 3–6)

213 B/C, Convention Center

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

Join developers for an introduction to the new assessment system created for FOSS 3rd Edition, including computer software (FOSSmap). Experience how formative assessment plays an integral role throughout the FOSS program. Grades 3–6 students can now take benchmark assessments online with most items automatically coded to generate useful reports.

DSM and STEM: Challenges for the Elementary Student (Gen)

(Grades K–8)

213D, Convention Center

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Activities from the Delta Science Modules program provide ample opportunity for elementary students to engage in STEM-based challenges. Discover a process that fosters the STEM initiative and receive a workshop packet and related Delta materials.

33 Strategies for Integrating Disciplinary Literacy (Gen)

(Grades K–6)

217 B/C, Convention Center

Sponsor: Amplify Education, Inc.

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

Discover how to increase reading comprehension, disciplinary literacy skills, and science knowledge simultaneously

for ALL students. Take away 33 ready-to-use strategies for incorporating science trade books into your classroom. Learn integration strategies that provide a better way to teach both science and literacy. Free classroom materials!

Motion Comes Alive with CPO's Velocity Sensor (Phys)

(Grades 6–12)

217A, Convention Center

Sponsor: CPO Science/School Specialty Science

Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

Our new Velocity Sensor uses sound waves to measure and display position, velocity, and acceleration data of moving objects. We'll investigate how the Energy Car moves on CPO's SmartTrack to explore Newton's Laws, kinematics, friction, and the law of conservation of energy in this inquiry-based learning activity.

Applying Common Core State Standards for English Language Arts Through Active Science Instruction in the K–8 Classroom (Gen)

(Grades K–8)

219 A/B, Convention Center

Sponsor: Sangari Active Science

Ellen Mintz, Charleston County Schools, Charleston, S.C.

The Common Core State Standards for English Language Arts require students to read using informational text and write using skills encouraged through science instruction. Using a hands-on/minds-on activity, we will investigate and use the data we collect to write a claims and evidence response. Reading strategies will be used to tie our investigation to informational text.

1:00–4:00 PM Short Course



Home and School Science Activities (SC-1)

(Elem.—Middle Level) North Carolina Hall, Hilton Center City
Tickets Required; \$56

Bernard A. Horvath (bgризwald@aol.com), Retired Educator, Jeffersonville, Ind.

For description, see page 36.

1:30–5:30 PM Short Course



Tech-rich Investigations Through Appivities (SC-2)

(Elementary—Middle Level) STEM Mobile Lab, Off-site
Tickets Required; \$17

Amy Pruitt (pruittat@rss.k12.nc.us) and **Tonya Brinegar-German** (brinegargermantg@rss.k12.nc.us), Horizons Unlimited, Salisbury, N.C.

For description, see page 36.

Note: The STEM Mobile Lab will be at Preferred Parking Service (705 W. 4th Street). Short course time factors in a 20–30 minute walk from the Convention Center to the STEM Mobile Lab and back.

2:00–2:30 PM Presentation

SESSION 1

Using Virtual Field Trips to Bring Research into the Classroom (Gen)

(High School)

Grand Ballroom B, Westin

Denise Renfro (deniserenfro@gmail.com), Douglas Byrd High School, Fayetteville, N.C.

Lynn Sametz (l_sametz@uncg.edu), The University of North Carolina at Greensboro

Low-cost, flexible video field trips connect research labs with urban and rural high school classrooms to motivate problem solving, college aspirations, and STEM career awareness.

**I Want
to Be a
Science
Teacher—
Now What?**

Are you a preservice or new teacher interested in learning more about the science education profession? Join us for an interactive session with experienced teachers and NSTA Staff.

Thursday, November 7

5:00–6:00 PM

**Hilton Charlotte Center City
Ardrey**



NSTA National
Science
Teachers
Association

2:00–3:00 PM Presentations

SESSION 1

Discrepant Events: More Bang for Fewer Bucks

(Gen)

(Preschool–Elementary)

202 A/B, Convention Center

Gary Bradley (gbradley@uscupstate.edu), University of South Carolina Upstate, Spartanburg

Discover more than 100 easy, affordable, and safe discrepant events (science experiments with unexpected outcomes) that can bring your K–5 science class to life.

SESSION 2

Community Problem Solving with Elementary Students

(Gen)

(Elementary–Middle Level)

204, Convention Center

Gabor Zsuppan (gaborz@discoveryplace.org), **Tim Pula**, and **Robby Stanley** (roberts@discoveryplace.org), Discovery Place, Charlotte, N.C.

Jessica K. Miller (jessica.k.miller.edu@gmail.com), Sugar Creek Charter School, Charlotte, N.C.

Through a partnership with a local charter school's after-school program, we engaged grades 1–8 students in community science-based problem-solving projects that ran the course of eight three-hour sessions and included both community-based outcomes and community partners.

SESSION 3



How Do You Spell Science?

(Gen)

(Elementary/College)

205, Convention Center

Jennifer C. McCain, Morehead State University, Ashland, Ky.

Sometimes in our quest for science, we tend to forget to adhere to the rules of modern English. In this session, strategies are presented for participants to use to ensure spelling and grammar are not neglected while still having lots of fun with inquiry-based science!

SESSION 4



Using Technology as a Tool for Differentiated Instruction in the Science Classroom

(Gen)

(Elementary)

206 A/B, Convention Center

Robert C. Snyder (robert.snyder@sru.edu), Slippery Rock University, Slippery Rock, Pa.

Join me as I demonstrate differentiated instruction techniques and technology-based tools designed to help elementary teachers effectively employ differentiated instruction for any science topic.

SESSION 5

Crosscutting Science with Literacy: A Daily Dose of Nonfiction

(Gen)

(Elementary)

215, Convention Center

Teri V. Fulton, Kansas City (Kans.) USD 500

Using nonfiction for your daily interactive read-alouds is a proven way to boost your students' comprehension skills and vocabulary development, and it gives authentic writing opportunities.

SESSION 6

Patterson Science Center—Who Are We and What Is Our Mission for Caldwell County Schools?

(Gen)

(Elementary–High School)

Ardrey, Hilton Center City

Amy H. Bradley (abradley@caldwellschools.com), Patterson Science Center, Lenoir, N.C.

Find out about Patterson Science Center—a new STEAM initiative and a department of Caldwell County Schools.

SESSION 7 (two presentations)

(General)

Graves, Hilton Center City

Using Blended Learning Methods to Accelerate Students' Digital Skills

(Gen)

Cathy J. Macdonald, Clermont County Educational Service Center, Batavia, Ohio

Blended learning integrates technology and traditional teaching. This session gives ideas for using blended learning methods to increase students' digital skills such as making podcasts, online videos, electronic portfolios, and online collaborative projects.

Wikispaces: Free Evaluation Projects

(Gen)

Karen E. Clark (clarkk@icdurham.org), Immaculata Catholic School, Durham, N.C.

Using Wikispaces in and out of the classroom allows for collaboration, evaluation, problem analysis, and discussion while teaching two topics simultaneously. Plus, no e-mail or home computer required!

SESSION 8

Media Literacy and Science—The Eyes Have It

(Gen)

(General)

Gwynn, Hilton Center City

Jeffrey M. Goodman (goodmanjm@appstate.edu), Appalachian State University, Boone, N.C.

We will explore the use of clips from popular media (television, film, and YouTube) to engage students in scientific inquiry and promote critical media literacy skills.

SESSION 9

Pedagogical Practices in Literacy to Enhance Inquiry-based Instruction (Gen)

(General)

Walker A/B, Hilton Center City

Amy S. Beavers (abeavers@utk.edu) and **Jennifer Richards** (jennifer.richards@utk.edu), University of Tennessee, Knoxville
Scientific inquiry intrinsically supports literacy skills and concepts. This session presents creative ways to integrate strong pedagogical practice enhancing science instructional quality and student learning.

SESSION 10

“Mining” for Sea Scallops (Env)

(High School–College)

Harris, Westin

Anne M. Byford (abyford@gastonday.org), Gaston Day School, Gastonia, N.C.

This data analysis unit is designed to introduce students to some of the complexities of asking environmental questions. At the conclusion, students present results of their research.

SESSION 11

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

(Elementary–High School)

Independence, Westin

Britta Culbertson (brittaculbertson@gmail.com), Einstein Fellow, NOAA Office of Education, Washington, D.C.

Grab your students’ attention by incorporating coral reefs into your existing curriculum. Several NOAA resources will be highlighted, including demos, labs, activities, and multimedia.

SESSION 12

Stoichiometry with Rufus (Chem)

(High School)

Kings, Westin

Maria G. Thurmond (maria_thurmond@gwinnett.k12.ga.us) and **Beth Feustel** (beth_feustel@gwinnet.k12.ga.us), Peachtree Ridge High School, Suwanee, Ga.

Stoichiometry through dimensional analysis is made easy for all students to learn with the use of a new graphic organizer. Come learn more.

SESSION 13

The Solar System and Its Formation: Kinesthetic Instructional Strategies (Earth)

(Middle Level–High School)

Sharon, Westin

KeriAnn E. Rubin (keriannrubin@gmail.com), The Pennsylvania State University, University Park

Discover students’ ideas about the solar system and engage in a kinesthetic activity that addresses common student misconceptions about the solar system formation process.

SESSION 14

Students Engineering Labs (Phys)

(Middle Level–High School)

Trade, Westin

Ryan E. Monson (monsonr@gcsnc.com), High Point Central High School, High Point, N.C.

Find out how to transition students from doing labs to creating labs in both virtual and classroom laboratory environments.

2:00–3:00 PM Workshops

How to Choose and Use the Best in Children’s Literature (Gen)

(Preschool–Middle Level)

201 A/B, Convention Center

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

Presider: Juliana Texley, NSTA President-Elect, and Palm Beach State College, Boca Raton, Fla.

NSTA’s database of 8,000 teacher-generated book reviews includes the best of the best—42 years of Children’s Book Council award winners. Find out why they won and how they can be used in the classroom. This workshop will include active participation in the process of reviewing books, learning to search and select books, and take-home ideas for integration with science, mathematics, and social studies. The winners of the 2013 NSTA/CBC Outstanding Trade Books will be announced at this session.

Scale the Universe (Gen)

(Middle Level)

203A, Convention Center

Christine A. Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

How big is big? How small is small? Let us “scale the universe” as we investigate a variety of different scaling activities.



NSTA Press® Session: Inquiring Scientists, Inquiring Readers (Gen)

(Elementary)

203B, Convention Center

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

Come experience a fun inquiry investigation that illustrates how to integrate science and nonfiction text sets into your grades 3–5 science instruction.

Use Service Learning/STEM Projects to Turn Your School into a GreenSchool! (Env)

(Informal Education) 207A, Convention Center
James R. McGirt (jmcgirt@plt.org), Project Learning Tree, Washington, D.C.

Learn more about Project Learning Tree's (PLT) GreenSchools! program, a PLT K–12 national model program that connects Project Learning Tree with service learning, STEM, professional development, and environmental action.

Elastic Power—Wind Up Your Engines and Explore (Phys)

(Elementary—Middle Level) 207 B/C, Convention Center
Norm B. Barstow (barstow@hartford.edu), Hartford, Conn. Use an elastic-powered wooden car to explore concepts, including energy transfer, force, and motion. Continued exploration focuses on mass, friction, inertia, motion, momentum, and force.

DNA Is Elementary! (Bio)

(Elementary—Middle Level) 207D, Convention Center
Michelle Ventura (mventura@gsu.edu) and **Chandan Morris Robbins** (biocfm@gsu.edu), Georgia State University, Atlanta

Let us introduce you to a program built on the premise that the principles involved in understanding DNA closely parallel the concepts used by novice learners to build language arts skills.

A Student-centered Science Experience (Gen)

(General) Ballroom A, Convention Center
Anna Strassner (anna_strassner@discoveryeducation.com), Discovery Education, Charlotte, N.C.

A visit to the Discovery Education Science Techbook Classroom will blow you away! Experience a model lesson designed to expose students to a variety of resources and maximize engagement. This self-paced experience will give you a glimpse of how digital tools can improve the way teachers teach and students learn.

CESI Session: Council for Elementary Science International Share-a-Thon (Gen)

(Elementary—Middle Level) Ballroom B, Convention Center
Julie Thomas (julie.thomas@unl.edu), CESI President, and University of Nebraska—Lincoln

Join CESI as we share a wealth of ready-to-use, classroom-tested hands-on activities created for the K–8 teacher. Handouts and website links will be provided.

A Picture Is Worth a Thousand Words: Teaching Scientific Visual Literacy (Gen)

(General) Charlotte Hall, Hilton Center City
Robert Stremme, Eastern University, St. Davids, Pa.

Is a picture really worth a thousand words? Find out as you construct 3-D graphic organizers to help your “eye generation” students become visually literate.

Teaching Evolution by Exploring the Tree of Life (Bio)

(High School—College) Grand Ballroom A, Westin
Kefyn M. Catley (kcatley@wcu.edu), Western Carolina University, Cullowhee, N.C.

Discover a hands-on/minds-on activity for teaching evolution using tree thinking that is aligned to the North Carolina Essential Standards and available free to participants.

Disciplinary Literacy, the NGSS, and Common Core in Secondary Science Classrooms (Earth)

(Middle Level—College/Supervision) Grand Ballroom C, Westin
Carmen Woodhall (woodhallc@ecu.edu), East Carolina University, Greenville, N.C.

Join me as I present hands-on activities on science instruction that are aligned with the NGSS and Common Core, and that promote scientific learning and inquiry.

STEM Astronomy—From Photons to Images (Earth)

(Middle Level—High School/Informal) Grand Ballroom D, Westin
Donna L. Young (donna@aavso.org), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Experience data and image processing with actual data to create a supernova photon intensity map and then produce a public release image based on the map.

Science, Engineering, and the Common Core (Gen)

(High School) Providence Ballroom I, Westin
Jacklyn Bonneau (bonneau@wpi.edu), Massachusetts Academy of Math & Science at WPI, Worcester

Explore strategies for identifying, implementing, and reinforcing science and engineering practices using technology. Strategies and outcomes use the NGSS and focus on technology, engineering, and mathematics.

NARST Session: Increasing Student Performance in Large Lecture STEM Courses: A Team Approach to Successful Learning (Chem)

(High School–College) *Providence Ballroom II, Westin*
Kate Popejoy (kate.popejoy@unc.edu), The University of North Carolina at Charlotte

We will immerse participants in alternative approaches to actively engage students in chemistry content, increasing mastery of concepts and problem-solving skills via a Peer-Led Team Learning (PLTL) approach.

Epigenetics: Integrating This Emerging Field into Your Biology Curriculum (Bio)

(High School) *Providence Ballroom III, Westin*
Dana B. Haine (dhaine@unc.edu), The University of North Carolina at Chapel Hill

Introduce your students to the emerging field of epigenetics

by considering the role of an individual's environment in influencing DNA structure and function.

Attack Science Journal Articles Head On with Your Students—Demystifying the Graphics and Charts (Earth)

(Middle Level–College) *Tryon, Westin*
Margie Turrin (mkt@ldeo.columbia.edu), Lamont-Doherty Earth Observatory, Palisades, N.Y.

This hands-on workshop provides tools and strategies students need to dissect the complex figures they face when reading science journal articles. Students also learn how to create their own graphics.

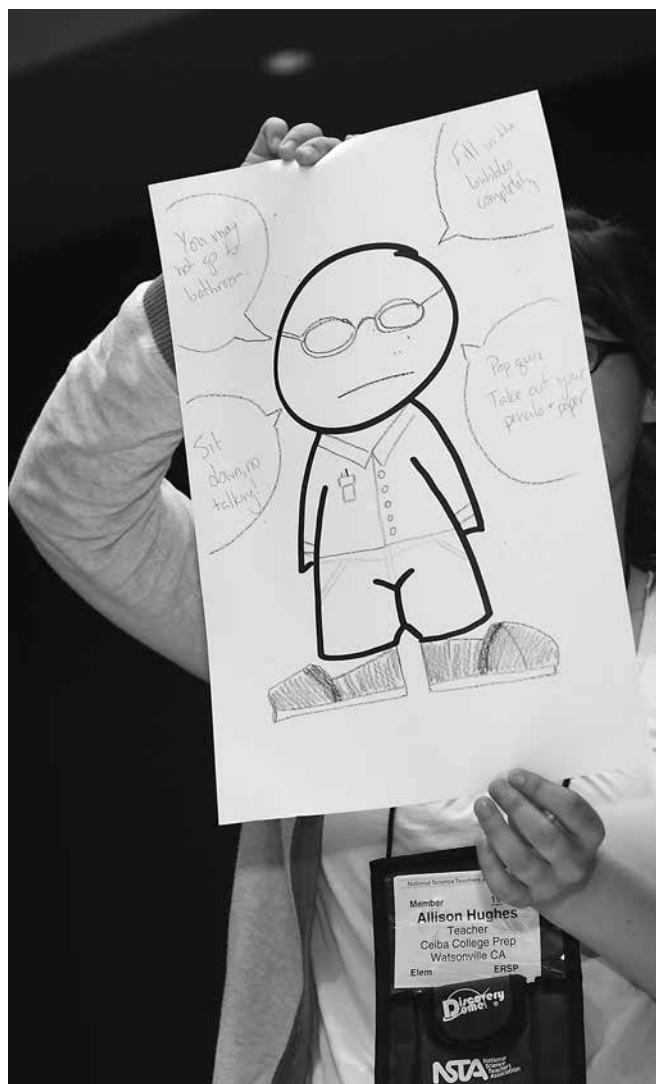
2:00–3:00 PM Exhibitor Workshop

Waves, Energy, and Color (Phys)

(Grades 6–8) *208B, Convention Center*
Sponsor: LAB-AIDS, Inc.

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

Although we live an EM waves-enabled lifestyle, most of us, including our middle school students, have no idea how they actually work. The Next Generation Science Standards specifically call for students to understand Waves and Their Applications in Technologies for Information Transfer. Join LAB-AIDS for an activity from the waves unit of SEPUP's *Issues and Physical Science* program. Explore properties of light by investigating colors of the visible spectrum and investigate the energy levels of the different colors of white light through the use of a phosphorescent material. Activities show how SEPUP embeds research-based practices and real issues to deliver powerful content learning.



2:00–3:30 PM Featured Panel



How to Get Your Students to Think, Problem Solve, and Achieve Using STEM

(Gen)

(General)

Ballroom C/D, Convention Center



Terry Jordan



Donald Blackmon



Laura Bottomley



Greg Tucker

Panelists:

Donald Blackmon (dbblackm@unc.edu), Freshman Lecturer, Academic Advisor, and Director of the Leadership Academy, The University of North Carolina at Charlotte
Laura Bottomley (laura.j.bottomley@gmail.com), Director, Women in Engineering and K–12 Outreach, College of Engineering, North Carolina State University, Raleigh
Greg Tucker (getucker@charlottecatholic.com), Engineering Teacher, Charlotte Catholic High School, Charlotte, N.C.
 Moderator: **Terence (Terry) D. Jordan** (tdjordan@unc.edu), Director, Industrial Solutions Lab in the College of Engineering, The University of North Carolina at Charlotte

How can STEM be effective in helping students achieve higher goals and meet essential and core standards? How can we help students to think and solve real-world problems? Why do we need to emphasize the “E” for engineering in STEM in K–12 schools? Many schools attempt to implement STEM ideas and activities, but the “E” is often left out. Come to this panel and hear several STEM Education and Engineering experts share their experiences in implementing STEM in and out of the classroom. They will discuss how problem solving is global and that the individual parts of STEM cannot be separated. Discover activities you can use to motivate your students to create, evaluate, analyze, and apply...and learn how to get your students to collaborate with their peers and take responsibility for their learning.

Moderator **Terence (Terry) D. Jordan** is director of Industrial Solutions Lab in the College of Engineering at The University of North Carolina at Charlotte. In this position, he is the liaison with industry for the Senior Design Program as well as for using the College of Engineering facilities for industrial research.

Donald Blackmon serves as a freshman lecturer and academic advisor, as well as director of the Leadership Academy in the Lee College of Engineering at The University of North Carolina at Charlotte. His engineering career began at Duke Engineering & Services where he held various positions. As an engineer, Donald was responsible for the design of two earthen dams at the Belews Creek Steam Station, the siting and licensing of the McGuire and Catawba Nuclear stations, and the Bad Creek Pumped Hydro Station.

Laura Bottomley joined North Carolina State University in 1997 with the mission of creating a Women in Engineering program. She soon realized the need for and originated a K–12 outreach program in 1999. She is responsible for the oversight of the Engineering Place and its strategic operations. Laura also runs the Women in Engineering program, advises students, and teaches the E 101 Introduction to Engineering and Problem-Solving class for first-year students.

Greg Tucker left the corporate world to become a high school teacher, after many successful years running an engineering company and then managing a digital services division for ADTRAN. Greg teaches engineering at Charlotte Catholic High School. This year, the MACS Education Foundation for Educational Excellence awarded Greg with a grant to fund an engineering lab.

2:00–5:00 PM Short Course



Engineering Using Underwater ROVs (SC-3)

(Middle Level–High School) Johnson, Hilton Center City
Tickets Required; \$13

Shannon Ricles (shannon.ricles@noaa.gov) and **Lauren Heesemann** (lauren.heesemann@noaa.gov), NOAA's Monitor National Marine Sanctuary, Newport News, Va.
For description, see page 36.

2:00–5:00 PM Workshop

NSTA/CAEP Development of Program Report Workshop

(By Invitation Only)

Dunn, Hilton Center City

2:15–3:30 PM Exhibitor Workshops

Engineer Excitement in Your Classroom with a Carolina STEM Challenge™ (Phys)

(Grades 6–12) 208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

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

Wait! Were the Chips I Ate Genetically Modified? (Bio)

(Grades 10–College) 210A/B, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian, Danielle Snowflack, and Lucia Dussan (info@edvotek.com), Edvotek Inc., Washington, D.C. It is difficult to determine which products in your grocery store contain genetically modified ingredients because the FDA does not require foods to be labeled as such. In this workshop, participants will extract DNA from common snack foods like Fritos™ and soy chips. Using the polymerase chain reaction (PCR) and agarose gel electrophoresis, we will determine which snacks contain genetically modified ingredients. Participants receive a free flash drive and entry into a T-shirt drawing at the end of the workshop.

Improv in the Science Classroom: Helping Students Open Their Minds (Gen)

(Grades 6–9)

211 A/B, Convention Center

Sponsor: eCYBERMISSION

Matthew C. Hartman (mhartman@nsta.org), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

Improvisation is the art of making things up as you go. While some science students are a little too good at this when they are taking tests, improv can actually help students in science by opening their minds to new ideas and ways of looking at the world. This workshop will focus on short improv games and exercises that can help make your students better thinkers. Also, there will be an explanation of the eCYBERMISSION competition and its connection to improv in the science class. Come ready to participate!

Create a Digital Wi-Fi Classroom! (Gen)

(Grades 6–College)

212 A/B, Convention Center

Sponsor: Swift Optical Instruments, Inc.

David Doty (david@swiftoptical.com) and **Cynthia Syverson-Mercer** (cynthia@swiftoptical.com), Swift Optical Instruments, Inc., Schertz, Tex.

Go digital...using STEM and Wi-Fi technology. Transform your labs, lesson plans, and activities into digital formats. Engage your students by incorporating Motic software, the new Wi-Fi Moticam X, and Swift microscopes into your lessons. Learn how to integrate digital Wi-Fi technology, student assessment, and motivation into your current curriculum. BYOD (bring your own device) for a true interactive experience.

Asteroid! Will Earth Be Hit Again? (Earth)

(Grades 5–8)

213 B/C, Convention Center

Sponsor: Delta Education/School Specialty Science—FOSS
Virginia Reid and **Jessica Penchos**, The Lawrence Hall of Science, University of California, Berkeley
Earth has been hit in the past, but what lies ahead? Using data from the Moon, we will calculate frequency of impacts and consider implications for Earth. We'll discuss how these questions guide students' exploration, and overview strategies, content, materials, and NGSS connections in the revised FOSS Planetary Science Course.

Meet the Polar Bears and Help Change the World (Env)

(Grades K–12)

213A, Convention Center

Sponsor: *Siemens We Can Change the World Challenge*

Kyle Schutt, Discovery Education, Silver Spring, Md.

Join us for a unique opportunity as we connect virtually for a live presentation from the Canadian tundra in Churchill, Manitoba. You'll hear from leading scientists and learn about the impact climate change is having on polar bear habitats. In addition, we will provide ongoing opportunities for you and your students to make a positive change in your schools, communities, and around the world through the *Siemens We Can Change the World Challenge* (www.wecanchange.com) the premier national K–12 environmental sustainability competition.

Teaching Argumentation for Our Next Generation (Gen)

(Grades K–8)

213D, Convention Center

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

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

The Best of Both Worlds: How to Engage Students in NGSS Practices Through Science and Literacy (Gen)

(Grades 2–6)

217 B/C, Convention Center

Sponsor: Amplify Education, Inc.

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

Explore an instructional approach that capitalizes on the synergies between science and literacy. The integrated units from Seeds of Science/Roots of Reading® are designed to

help students learn and express essential science concepts while developing a set of cognitive skills that are generative and transferable across disciplines.

Wind Turbine and the STEM Approach to Science Concepts (Phys)

(Grades 6–12)

217A, Convention Center

Sponsor: CPO Science/School Specialty Science

Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

Explore energy transformations, electricity, and magnetism through hands-on experiences. Apply your knowledge to engineering a wind turbine. Build, test, and revise your model so that it generates as much power as possible. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

New Advanced Inquiry Labs for AP Biology from Flinn Scientific (Bio)

(Grades 9–12)

217D, Convention Center

Sponsor: Flinn Scientific, Inc.

Maureen Hunt (mhunt@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Four big ideas, more great labs! The revised AP Biology curriculum integrates scientific inquiry and reasoning through a series of student-directed, inquiry-based laboratory investigations. Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided inquiry labs for AP Biology. We will share proven strategies for improving students' ability to generate meaningful questions, design experiments, and analyze scientific evidence. Handouts provided for all activities include alignment with the new AP Biology curriculum.

Stars—From Cradle to Grave (Earth)

(Grades 6–12)

218 A/B, Convention Center

Sponsor: Simulation Curriculum Corp.

Seth Meyers (mgabber@sympatico.ca), Simulation Curriculum Corp., Minnetonka, Minn.

Where do stars come from? Why do they form? What happens during their lifetime? How do we know a star is dying? Where are the stellar graveyards? Join us as we answer these and other questions using Simulation Curriculum's award-winning Starry Night lessons and our feature-rich supplementary materials.

3:30–4:00 PM Presentation

SESSION 1

Making Sense Out of Curve Fitting: Using Matching Tables to Translate Between Mathematics and the Real World (Phys)

(High School–College)

Harris, Westin

Jeff Milbourne (milbourne@ncssm.edu) and **Zodiac T. Webster** (websterz@ncssm.edu), North Carolina School of Science and Mathematics, Durham

This session explores the use of matching tables, a technique/scaffold that helps students interpret the physical meaning of graphs and their corresponding mathematical fits.



3:30–4:30 PM Presentations

SESSION 1

Using Children’s Literature to Celebrate Seasons, Solstices, and Equinoxes in Diverse Cultures (Earth)

(Preschool–Elementary)

202 A/B, Convention Center

Gary Bradley (gbradley@uscupstate.edu), University of South Carolina Upstate, Spartanburg

Camille McCutcheon (cmccutcheon@uscupstate.edu), University of South Carolina Upstate Library, Spartanburg

Presider: Camille McCutcheon

Children’s literature will be used to introduce young children to the celebration of seasons and equinoxes in diverse cultures.

SESSION 2

The Science of Cooking Local Foods: Integrating Farm-to-School Activities and Physical Science (Chem)

(Elementary–Middle Level)

204, Convention Center

Patricia Bricker (bricker@email.wcu.edu) and **Baldwin Sanders** (bsanders@email.wcu.edu), Western Carolina University, Cullowhee, N.C.

Amanda Clapp (aclapp@jcpsmail.org), Cullowhee Valley School, Cullowhee, N.C.

We will share a middle school chemistry unit centered around the school garden that combined cooking, local foods, and partnerships between students, teachers, and scientists.

SESSION 3



Disciplinary Literacy in Middle School Science: Reading, Writing, and Talking as Active Learning Processes (Gen)

(Middle Level/Supervision)

205, Convention Center

Gregory D. MacDougall (gregm@usca.edu), University of South Carolina, Aiken

Susanne Teague (teagues@winthrop.edu), S²TEM Centers SC, Rock Hill, S.C.

This session will focus on research-based disciplinary literacy strategies aligned to the NRC *Framework* that engage middle school science students and result in higher achievement.

SESSION 4



Edmodo in the Classroom (Gen)

(Middle Level–High School)

206 A/B, Convention Center

Patrick M. Goff (patrick.goff@fayette.kyschools.us), Beaumont Middle School, Lexington, Ky.

Discover a way to take your classroom into the digital age.

SESSION 5

Engaging K–6 Science Students with Scientific Inquiry, Supported by Science Literacy Skills and Extraordinary Print Resources (Gen)

(Elementary)

215, Convention Center

Donna L. Knoell (dknoell@sbcbglobal.net), Educational Consultant, Shawnee Mission, Kans.

Join me as I share strategies to engage K–6 science students and stimulate inquiry and develop student competence while teaching science literacy skills, science process skills, and hands-on explorations in tandem. Handouts!



SESSION 6

The NSTA Learning Center: A Tool to Develop Preservice Teachers (Gen)

(General)

Ardrey, Hilton Center City

Flavio Mendez (fmendez@nsta.org), Senior Director, NSTA Learning Center, NSTA, Arlington, Va.

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

SESSION 7

Motivating Students to Engage in Science and Engineering Activities (Gen)

(General)

Graves, Hilton Center City

Brett D. Jones (brettjones@vt.edu), **Jonathan Fink** (finkjr@vt.edu), **Asta Schram** (astabs1@vt.edu), and **Jessica R. Chittum** (chittumj@vt.edu), and Virginia Tech, Blacksburg

Enrich your classroom with this current motivation model (www.MotivatingStudents.info) and gain skills for using it to engage students in instructional settings.

SESSION 8

Linking Science Writing and Research Through the DuPont Challenge (Gen)

(General)

Walker A/B, Hilton Center City

Brian P. Short (bshort@nsta.org), Director, Science Education Competitions, NSTA, Arlington, Va.

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

Join us to learn a natural way of integrating research and writing into your curriculum that encourages developmental skills necessary for success in STEM and meets local, state, and national standards.

SESSION 9

Literacy and Science Skills United in a Transdisciplinary Unit (Gen)

(High School)

Grand Ballroom B, Westin

Jeannette C. Adkins (jadkins@christchurchschool.org) and **Charlotte Charlton**, Christchurch School, Christchurch, Va.

Find out how a grade-level team uses a transdisciplinary unit to encourage creative thinking about the future of STEM applications through a multifaceted research project with interdepartmental objectives.

SESSION 10

Win a Shell Science Lab Makeover for Your School (Chem)

(Middle Level–High School)

Kings, Westin

Ruth Ruud (ruth.ruud@yahoo.com), Venice, Fla.

Are you a middle school or high school science teacher in need of a science lab makeover? Attend this session and learn how you can apply to win the Shell Science Lab Makeover! You will have an opportunity to actually begin to complete the application and have your questions answered.

SESSION 11

Reinforce Scientific and Engineering Practices Through Clinical Research with Virtual Clinical Trials (Bio)

(High School)

Queens, Westin

Yvonne Klisch (yvonne.klisch@rice.edu) and **Kristi G. Bowling** (kristi.bowling@rice.edu), Rice University, Houston, Tex.

Experience this FREE online game that engages high school students in scientific and biomedical engineering practices through the design and evaluation of virtual clinical trials.

SESSION 12

E-books: Addressing Student and District Needs—It's Easier Than You Think (Bio)

(Middle Level–High School/Supv.)

Trade, Westin

Cheryl A. Everett and **Rose Marsh** (rosem@cciu.org; rojmarsh@gmail.com), Chester County Intermediate Unit, Downingtown, Pa.

Join us as we describe the process behind the development of an interactive e-book using open education resources to address student remediation needs in biology.

3:30–4:30 PM Workshops

Enhancing Forest Field Study with PLT (Env)
(Informal Education) 201 A/B, Convention Center

Renee Strnad (renee_strnad@ncsu.edu), North Carolina State University, Raleigh

Learn to teach about global forests (and the trees in your own backyard!) using two new Project Learning Tree resources that feature STEM connections. Explore this vital Earth system and take home PLT curriculum materials.



NSTA Press® Session: Earth Science Puzzles, Making Meaning from Data (Earth)

(Middle Level–High School) 203B, Convention Center

Margie Turrin (mkt@ldeo.columbia.edu), Lamont-Doherty Earth Observatory, Columbia University, Palisades, N.Y.

Data are the foundation of science. Teach your students to build understanding of Earth processes through the use of real Earth data.



Fly To Learn, Powered by X-Plane—Building Engineers One Student at a Time! (Gen)

(Middle Level/Informal Education) 207A, Convention Center

Thomas Dubick (tomdubick@charlottelatin.org), Charlotte Latin Middle School, Charlotte, N.C.

Discover this one-of-a-kind partnership among seasoned educators and world-renowned software developers, which takes STEM education to new heights. Excite and challenge your students through this inquiry-based STEM program.



A Student-centered Science Experience (Gen)
(General) Ballroom A, Convention Center

Anna Strassner, (anna_strassner@discoveryeducation.com), Discovery Education, Charlotte, N.C.

A visit to the Discovery Education Science Techbook Classroom will blow you away! Experience a model lesson designed to expose students to a variety of resources and maximize engagement. This self-paced experience will give you a glimpse of how digital tools can improve the way teachers teach and students learn.

Literacy to Learn Science (Gen)

(Elem.–High School) South Carolina Hall, Hilton Center City

Diane H. Johnson (diane.johnson@uky.edu) and **Susan Mayo** (susan.mayo1961@att.net), University of Kentucky, Lexington

Learn a framework for incorporating reading, writing, and science into a coherent instructional module that can help students understand, deepen, and apply the science.

Polygenerific: Using Neuroscience Research to Enhance Genetics and Biotechnology Lessons (Bio)

(Middle Level–College) Grand Ballroom A, Westin

Tamica A. Stubbs (tamica.stubbs@cms.k12.nc.us), Phillip O. Berry Academy of Technology, Charlotte, N.C.

Come explore the genetics of risk-taking behavior by performing a self-analysis of your finger length ratios and correlating it to polygenic inheritance! It's Polygenerific!

Our Cosmic Connection: Stellar Evolution and Planet Earth (Earth)

(Middle Level–High School/Informal) Grand Ballroom D, Westin

Donna L. Young (donna@aavso.org), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Use images of stellar nurseries, protostars, supernova remnants, planetary nebulae, white dwarfs, neutron stars, pulsars, and black holes to model stellar evolution and planet formation.

The ABCDs of Modeling: How to Add the Next Generation Science Standards Practice of Modeling to Your Classroom (Gen)

(Middle Level–High School) Providence Ballroom I, Westin

Tim Herman (herman@msoe.edu) and **Shannon Colton** (colton@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Join us for hands-on activities that can help you integrate the NGSS practice of modeling into your curriculum.

Facing the Future: Understanding Sustainability and Global Connections (Env)

(Middle Level–High School) Providence Ballroom II, Westin
Pamela Whiffen (pwpwr@aol.com), NASA Educator Ambassador, Phoenix, Ariz.

Experience a hands-on, inquiry-based curriculum that guides students through examinations of issues surrounding global climate change. Interdisciplinary small group activities provided on CD.

What Is Your Cosmic Connection to the Elements? (Chem)

(Middle Level–High School) Providence Ballroom III, Westin
Cheryl Niemela, Universities Space Research Association, Puyallup, Wash.

Discover activities and curricula from NASA on the origin of the periodic elements. A workbook, poster, and *Imagine the Universe* DVD are highlighted and given to participants.

Engineering Units from Base 2 to Base 10

(Elementary–High School) Tryon, Westin
Mary Kay Bacallao (bacallao_mk@mercer.edu), Mercer University, McDonough, Ga.

Learn to build understanding of measurement conversions through unit engineering projects. Flow from standard to metric and back as you engineer your own capacity units.

3:30–4:30 PM Exhibitor Workshop

Integrate Math Modeling and Problem Solving Through Racing (Phys)

(Grades 6–12) 208B, Convention Center
 Sponsor: LAB-AIDS, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.
 Problem solving and math modeling are learned skills. Join us to explore and learn to explain them. In this workshop, you'll maximize the power of electric radio-controlled vehicles through data collection and graphing and then apply the same process to solve a number of issues professionals face. You'll maximize torque through gearing, apply Newton's laws of motion to get the best handling, and use battery chemistry to explain an effective driving strategy...and you'll take home lessons (learned and in print). This activity is from the new Race Engineering Certifications curriculum module, part of the Ten80 Student Racing Challenge.

4:00–5:15 PM Exhibitor Workshops

Hands-On Science with Classroom Critters (Bio)

(Grades K–12) 208A, Convention Center
 Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Here's a surefire boost to your class—live organisms. Whether you use a hands-on curriculum or develop your own lessons, animals broaden students' inquiry-based explorations and increase their interest in science. Participate in fun, simple hands-on activities with bessbugs, pill bugs, termites, and more. Free materials provided.

The Drunken Worms: Exploring Gene Function with *C. elegans* (Bio)

(Grades 10–College) 210A/B, Convention Center
 Sponsor: Edvotek Inc.

Jack Chirikjian, Danielle Snowflack, and Lucia Dussan (info@edvotek.com), Edvotek Inc., Washington, D.C.
 Model organisms allow us to study fundamental questions in developmental, neurological, and behavioral biology that may be difficult to study in humans. Join us for an exciting experience exploring alcohol metabolism using the nematode *C. elegans* as a model organism. Learn how to grow and feed *C. elegans* and how to test the effects of alcohol on the locomotion and health of normal and mutant worms. Participants receive a free flash drive and enter for a T-shirt drawing at the end of the workshop.

Evidence for Plate Movement (Earth)

(Grades 5–8) 213 B/C, Convention Center
 Sponsor: Delta Education/School Specialty Science–FOSS

Virginia Reid and Jessica Penchos, The Lawrence Hall of Science, University of California, Berkeley
 What evidence from rocks informs us about the history of our planet? Explore Earth history concepts with hands-on activities and multimedia, and identify connections to the NGSS scientific and engineering practices. Be among the first to preview the revised FOSS Earth History Course, including new features, strategies, content, and materials.

Solving the Mystery of STEM Using Forensic Science (Earth)

(Grades 4–12)

213D, Convention Center

Sponsor: Frey Scientific/School Specialty Science

Lou Loftin, Consultant, Reno, Nev.

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

Sound and Waves (Phys)

(Grades 6–12)

217A, Convention Center

Sponsor: CPO Science/School Specialty Science

Scott W. Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

Create standing wave patterns on a vibrating string with CPO’s wave machine. Investigate properties of waves, including amplitude, wavelength, and frequency. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

4:00–7:00 PM NCSTA Meeting and Awards

Implementing a Vision of the Framework: Teaching to Meet the North Carolina Essential Standards and the Next Generation Science Standards

Grand Ballroom C, Westin



Featured Speaker: **Stephen L. Pruitt**, Senior Vice President, Achieve, Inc., Washington, D.C.

@DrSPruitt

Acceptance of the Next Generation Science Standards is sweeping the nation. Science educators in North Carolina face the task

of meeting both sets of standards. As we implement the newly adopted North Carolina Essential Standards for Science, it is imperative for science educators to know how to provide science experiences for students that meet both sets of standards. Stephen will explain how you can implement a framework for teaching science that can help students construct conceptual understanding of science principles and develop their basic and integrated science process skills. You’ll leave this session with a “vision” of the framework of science that will direct and provide focus for the important work you do every day.

This presentation is followed by the NCSTA Awards Ceremony and a reception sponsored by the Burroughs Welcome Fund. Visit www.ncsta.org for more information.

5:00–6:00 PM Presentations

SESSION 1

How Does Your Garden Grow? (Env)

(Preschool–Middle Level)

201 A/B, Convention Center

Steve Rich (bflywriter@comcast.net), NSTA Director, Professional Development, and University of West Georgia, Carrollton

School gardens are ideal ways to integrate science, mathematics, design, and technology in a way that attracts the enthusiasm of all members of your school community. This session will show inside laboratories; outside activities in science, mathematics, and social studies; trade books; and valuable community resources.

SESSION 2

Engaging Girls in Renewable Energy STEM (Gen)

(Informal Education)

204, Convention Center

Joseph T. Rand, KidWind Project, St. Paul, Minn.

Address the gender gap in STEM fields through renewable energy science. The larger social purpose of this field engages girls more equally in STEM.

SESSION 3



Introducing the ChemMatters Compilation Project (Chem)

(High School)

205, Convention Center

Patrice Pages (p_pages@acs.org) and **Marta Gmurczyk** (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Steven Long (sjlong@rps.k12.ar.us), Rogers High School, Rogers, Ark.

Are you looking for free, high-quality, engaging reading materials and activities to integrate reading and chemistry? Come learn about this new resource from American Chemical Society! Join us as we present the new *ChemMatters* compilation project, including past articles from *ChemMatters* with inquiry-based lesson plans correlated with the Common Core State Standards for English Language Arts as well as the Next Generation Science Standards.

SESSION 4



Time Is Money: Save Both Using Online Lab Simulations (Gen)

(Elementary–High School)

206 A/B, Convention Center

Richard G. Smith (rgsmith@oceanisle-nc.net), Author/National Science Consultant, Ocean Isle Beach, N.C.

All three dimensions of the NGSS are implemented using online inquiry lab simulations. This technology enhances science instruction by providing students with science research experiences.

SESSION 5

Integrating Hands-On STEM Activities with Math and Reading Common Core State Standards (Gen)

(Elementary) 215, Convention Center

Chih-Che Tai (cctai.etsu@gmail.com) and **Karin Keith** (keithkj@etsu.edu), East Tennessee State University, Johnson City
Jamie Price (jhprice@milligan.edu), Milligan College, Milligan, Tenn.

Attention will be paid to ideas on integrating math, reading, and science to build confidence and understanding about using reading and math as tools to understand STEM literacies.

SESSION 6

I Want to Be a Science Teacher—Now What? (Gen)

(General) Ardrey, Hilton Center City

Teshia Birts (tbirts@nsta.org), Senior Manager, Chapter Relations, NSTA, Arlington, Va.

Preservice teachers will join with experienced teachers and NSTA staff to guide an interactive, hands-on session for students and new professionals.

SESSION 7

Exploring the World and Bringing It Back to the Classroom (Gen)

(General) Graves, Hilton Center City

Samuel Wheeler (wheelers@einsteinfellows.org), Einstein Fellow, U.S. Dept. of Energy, Washington, D.C.

This session describes the travels I took in the Earth Expeditions and Educators of Excellence programs. Learn about these opportunities and how to earn a Master of Arts (MA) or Master of Arts in Teaching (MAT) degree.

SESSION 8 (two presentations)

(General) Gwynn, Hilton Center City

Presider: Darlene Smalley, University of South Carolina, Aiken

Helping You Put the “E” in STEM Through the National Engineers Week Future City Program (Gen)

John M. Hutchens (johnh@usca.edu), University of South Carolina, Aiken

Discover how this project-based experience can help your students understand the engineering design process. Give students an opportunity to do the things that engineers do.

Mud, Cows, Bats, and Insects—Getting the Dirt on STEM Careers (Gen)

Lucy B. Laffitte (llaffitte@unctv.org), UNC-TV: North Carolina Science Now, Research Triangle Park

More than 100 young STEM professionals on film! Take STEM career inspiration home to your students with free clips from www.pbslearningmedia.org. PBS prizes!

SESSION 9

Science 2.0: Integrating Technology into the Science Classroom (Gen)

(Middle Level—College) Walker A/B, Hilton Center City

DJ West (djwest78@gmail.com), Schoolcraft College, Livonia, Mich.

Walk away with a variety of strategies available to middle and high school teachers to engage students through practical uses of technology in the classroom.

SESSION 10

Using Writing to Learn Science (Gen)

(Middle Level—High School) Grand Ballroom B, Westin

Jennifer T. Ellis (jennifer-t-ellis@utc.edu) and **Lauren Ingraham** (lauren-ingraham@utc.edu), The University of Tennessee at Chattanooga

Presider: Lauren Ingraham

This session introduces two teaching strategies that are ideal for use with the CCSS and the NRC *Framework*—Writing to Learn and the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) Instructional Model.

SESSION 11

Beyond X and Y: Recent Discoveries About the Mechanisms Governing Sex Determination and Differentiation (Bio)

(High School—College) Harris, Westin

Terry Maksymowych (tmaksymowych@ndapa.org), Academy of Notre Dame de Namur, Villanova, Pa.

Recent research has shown that human sex determination and differentiation is no longer as simple as XX/XY chromosome identification!

SESSION 12

Sliding Classrooms (Chem)

(General) Independence, Westin

Maria G. Thurmond (maria_thurmond@gwinnett.k12.ga.us) and **Beth Feustel** (beth_feustel@gwinnett.k12.ga.us) Peachtree Ridge High School, Suwanee, Ga.

An entire chemistry department used large-scale differentiated instruction based on continued assessment to meet the needs of all students (Gifted, ESOL, general education, special education, and RTI students). As a result, success for all was significantly increased.

SESSION 13

High School Science Disciplinary Literacy: Reading, Writing, and Talking as Active Learning Processes (Gen)

(High School/Supervision)

Kings, Westin

Gregory D. MacDougall (gregm@usca.edu), University of South Carolina, Aiken

Susanne Teague (teagues@winthrop.edu), S²TEM Centers SC, Rock Hill, S.C.

Presider: Susanne Teague

This session will focus on research-based disciplinary literacy strategies aligned to the NRC *Framework* that engage high school science students and result in higher achievement.

SESSION 14

CSI Web Adventures (Bio)

(Middle Level–High School)

Queens, Westin

Yvonne Klisch (yvonne.klisch@rice.edu) and **Kristi G. Bowling** (kristi.bowling@rice.edu), Rice University, Houston, Tex.

Add some excitement to your classroom by using these free online resources to engage your students in accurate, up-to-date forensic science and to encourage STEM careers.

SESSION 15

Study Strategies for Science Students (Gen)

(Middle Level–High School)

Sharon, Westin

Cole J. Entress (cole.entress@gmail.com), Relay Graduate School of Education, New York, N.Y.

Aimee Wagner (aimee.wagner@gmail.com), West Charlotte High School, Charlotte, N.C.

Many students do not know how to study effectively. Join us and encounter a number of strategies that help students study science content—and build their literacy skills!

SESSION 16

Engaging the 21st-Century Learner Through Collaboration, Inquiry, and Technology (Earth)

(Middle Level–High School/Supv.)

Trade, Westin

Edward Souders (esouders@gvgsd.org), **Chad Sindaco**

(csindaco@gvgsd.org), **Michael Fuguet** (mfuguet@gvgsd.org),

and **Derek Brogan** (dbrogan@gvgsd.org), Great Valley Middle School, Malvern, Pa.

Join us as we highlight how teachers and administrators can actively use the power of collaboration, inquiry, and technology to positively impact student learning in the area of science.

5:00–6:00 PM Workshops

UTeach Engineering Activities: Step 1 and Step 2 Upper Elementary and Middle School Engineering Lessons (Gen)

(Elementary–Middle Level/College) 203A, Convention Center

Lynn Kirby (lkirby@mail.utexas.edu) and **Daniel L. Fitzpatrick** (dfitzpatrick@austin.utexas.edu), The University of Texas at Austin

The UTeach Program has science, math, and engineering undergraduates teach elementary and middle school students hands-on engineering lessons. Engineering lessons will be shared!



NSTA Press® Session: Next Time You See a Sunset, a Seashell, a Firefly... (Gen)

(Elementary)

203B, Convention Center

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

The author of NSTA's new *Next Time You See* picture book series will demonstrate some before- and after-reading activities that can inspire a sense of wonder in your students!

OUTBREAK! (Bio)

(Middle Level)

207 B/C, Convention Center

Kierstan A. Snyder (kiersnyder48@gmail.com) and **Ryan F.**

Pentoney (pentoneyr@person.k12.nc.us), Northern Middle School, Roxboro, N.C.

Help stop a possible “pandemic” in this multistage lab that allows participants to be a part of a theatrical production of a mock outbreak.

A Student-centered Science Experience (Gen)

(General)

Ballroom A, Convention Center

Anna Strassner (anna_strassner@discoveryeducation.com), Discovery Education, Charlotte, N.C.

A visit to the Discovery Education Science Techbook Classroom will blow you away! Experience a model lesson designed to expose students to a variety of resources and maximize engagement. This self-paced experience will give you a glimpse of how digital tools can improve the way teachers teach and students learn.

Igniting Interest and Engaging Learning with 3-D Graphic Organizers (Gen)

(General) Charlotte Hall, Hilton Center City

Evalee S. Parker (jewelrystar@mindspring.com), Dinah-Might Adventures, LP, Durham, N.C.

See how to turn on the motivation factor with 3-D graphic organizers and discover how to morph student notebooks into dimensional, individualized, and brain-smart tools.

Fueling the Future: Energy Interconnections and Sustainable Choices (Gen)

(General) South Carolina Hall, Hilton Center City

Dave Wilton (dave@facingthefuture.org), Facing the Future, Seattle, Wash.

Think critically about the science behind the headlines. Experience hands-on lessons that demonstrate the interconnections between energy sources, human choices, economic challenges, and environmental impacts. Free curriculum!

Preparing Students for Guided Inquiry in AP Chemistry (Chem)

(High School–College) Grand Ballroom A, Westin

Serena Magrogan (smagrogan@collegeboard.org), The College Board, Duluth, Ga.

Engage in a guided inquiry learning experience and learn how to transform teacher-directed labs into inquiry-based labs for the redesigned AP Chemistry course.

Preparing to Teach Chemistry with the NGSS: Real Lessons from Real Teachers (Chem)

(High School) Grand Ballroom D, Westin

Michelle Dean (mdean28@kennesaw.edu), Kennesaw State University, Kennesaw, Ga.

Come join me to work through several chemistry lessons that integrate big ideas, crosscutting concepts, and scientific practices!

Classroom Activities for *Stop Faking It: Energy* (Phys)

(Elementary–High School) Providence Ballroom I, Westin

Bill Robertson (wrobert9@ix.netcom.com), Bill Robertson

Science, Inc., Woodland Park, Colo.

In response to teacher demand, I'm developing a set of classroom activities on Energy to accompany the *Stop Faking It! Energy* book. We incorporate the learning cycle in an easy-to-use, teacher-friendly, research-based curriculum for upper elementary and conceptually based high school curricula that can help your students truly understand energy concepts. Join the author for activities from the upcoming book.

JetStream: An Online School for Weather (Earth)

(Elementary–High School) Providence Ballroom II, Westin

Dennis Cain (dennis.cain@noaa.gov), National Weather Service, Fort Worth, Tex.

Brainstorm ideas as you explore this free website with its various topics. JetStream is a useful resource for students or for educators desiring information and help in teaching weather.

The Hidden Lives of Galaxies (Earth)

(Middle Level–High School) Providence Ballroom III, Westin

Cheryl Niemela, Universities Space Research Association, Puyallup, Wash.

Come discover activities and curricula from NASA that uncover new information about galaxies. A workbook, poster, and *Imagine the Universe* DVD are highlighted and given to participants.

Engineering: The Integrated STEM Activity (Gen)

(High School) Tryon, Westin

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

See how engineering projects can do ALL that STEM requires. Not just talking about it but doing it...and having fun along the way.



—Photo courtesy of Discovery Place

8:00–9:00 AM Presentations

SESSION 1

A “Short Story” of Science: Integrating Children’s Literacy into the Science Classroom! (Gen)

(Elementary–Middle Level)

201 A/B, Convention Center

Amy H. Bradley (abradley@caldwellschools.com) and **Jennifer A. Biddix**, Patterson Science Center, Lenoir, N.C.

Learn how Patterson Science Center engages K–8 students into science exploration through the integration of children’s literacy.

SESSION 2

The “Extreme STEM Tour”

(Gen)

(Middle Level)

204, Convention Center

Carol L. Moore (carol_moore@catawbaschools.net), Catawba County Schools, Newton, N.C.

Tracy Hall (thall@educationmattersincatawba.org), Catawba Valley Community College, Hickory, N.C.

Let us share with you how we developed our Extreme STEM Tour—which involves more than 1,400 students visiting 25+ local STEM businesses in five days!

SESSION 3



Challenge Your High School Students: Engineer Your World (Gen)

(High School/Supervision)

205, Convention Center

Cheryl Farmer (cheryl.farmer@mail.utexas.edu), The University of Texas at Austin

Discover how *Engineer Your World* engages students in authentic engineering practice through design. Learn about implementation grants to help bring this innovative course to your school.

SESSION 4

Evolution Teaching Resources and Activities from NESCent (Bio)

(Informal Education)

215, Convention Center

Jory P. Weintraub (jory@nescent.org), National Evolutionary Synthesis Center, Durham, N.C.

Learn about new, engaging resources and classroom activities offered by NESCent (The National Evolutionary Synthesis Center) to liven up the way you teach evolution.

SESSION 5

Creative Problem Solving with Toshiba/NSTA ExploraVision (Gen)

(General)

Ardrey, Hilton Center City

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

Motivate students and challenge them to think creatively! Learn how the ExploraVision competition encourages devel-

opmental skills necessary for success in STEM and utilizes the natural curiosity of students to enhance their science achievement. ExploraVision activities illustrate standards based connections between science and technology. Session participants have an increased chance to win a Toshiba product!

SESSION 6

NSELA Session: Tools for Science Leaders, Part I

(Gen)

(General)

Caldwell, Hilton Center City

Darlene Ryan (dryan@chccs.k12.nc.us), NSELA President, and Glenwood Elementary School, Chapel Hill, N.C.

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

Join us as we share various tools and strategies to support you in your work to enhance teaching and learning in your context.

SESSION 7

Creating and Maintaining a Culture of Science Fair in Your School (Gen)

(Elementary–High School)

Graves, Hilton Center City

Cary W. Sell (cwsell@comcast.net), Parkview High School, Lilburn, Ga.

Two veteran science teachers address questions of how to start the science fair process—handling details of introducing science fairs to both students and other science teachers, how to plan and hold a local school science fair, and, most importantly, how to build this culture of science fair.

SESSION 8

Want to Be an Einstein Fellow?

(Gen)

(General)

Walker A/B, Hilton Center City

Samuel Wheeler (wheelers@einsteinfellows.org), Einstein Fellow, U.S. Dept. of Energy, Washington, D.C.

This session will highlight the experiences of two recent Einstein Fellows and their adventures in the Department of Energy and on Capitol Hill.

SESSION 9

Earthquake! Catch the Wave (Earth)

(General) *Independence, Westin*

Tim Martin (timmartin@greensboroday.org) and **Cheryl Love** (lovec@greensboroday.org), Greensboro Day School, Greensboro, N.C.

Not only can students model seismic waves, they can measure waves using small (and inexpensive) USB seismometers and/or smartphones. Join us and find out how.

SESSION 10

Demos for the Holidays! Excite Students with Chemical Demonstrations (Chem)

(Middle Level–High School) *Kings, Westin*

Sherri C. Rukes (luvchem@gmail.com), Libertyville High School, Libertyville, Ill.

Come learn about demonstrations you can use to spice up your classroom, especially around various holidays. Handouts!

SESSION 11

NMLSTA Session: Science and Special Education—How to Make It Work (Gen)

(Middle Level–High School) *Queens, Westin*

Kathleen Brooks, Walter C. Polson Middle School, Madison, Conn.

Strategies will be offered for working with both special needs students and with special education teachers who do not know science.

SESSION 12

An Inquiry Approach to Teaching the Rock Cycle and Igneous Rocks (Earth)

(Middle Level–High School) *Sharon, Westin*

Davida Buehler (dbuehler@geosociety.org), The Geological Society of America, Boulder, Colo.

Walk away with numerous inquiry-based activities that you can use immediately in your upcoming lessons on the rock cycle and igneous rocks!

SESSION 13

Bringing Scientific Argumentation into the Science Classroom (Gen)

(Middle Level–High School) *Trade, Westin*

Rita A. Hagevik (rita.hagevik@uncp.edu) and **Corinne Ann Jordan** (cj018@bravemail.uncp.edu), The University of North Carolina at Pembroke

David Wimert (dawimert@bladen.k12.nc.us), Tar Heel Middle School, Tar Heel, N.C.

Scientific argumentation is one way to help students to not only learn more about science, but to read and write about science, too.

SESSION 14

Climate Change (Env)

(General) *Tryon, Westin*

William J. Licopoli (wlicopol@cbsd.org), Central Bucks West High School, Doylestown, Pa.

Created by Al Gore, this presentation focuses on the most current data concerning climate change.

8:00–9:00 AM Workshops

1, 2, 3, Look at Me—Genetic Differences and Similarities in Organisms (Bio)

(Elementary) *203A, Convention Center*

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

Alisa B. Wickliff (abwickli@uncc.edu), Chairperson, Charlotte Area Conference, and The University of North Carolina at Charlotte

Presider: Judith R. McDonald

Explore genetics by creating a genetic traits tree and delve into DNA by extracting DNA from a strawberry while integrating Common Core English Language Arts and mathematics.



NSTA Press® Session: Picture-Perfect Science Lessons: Using Picture Books to Guide Inquiry (Gen)

(Elementary) *203B, Convention Center*

Emily Morgan (emily@pictureperfectscience.com), Picture-Perfect Science, LLC, Lebanon, Ohio

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

Join the authors of NSTA's award-winning *Picture-Perfect Science* series to learn how to use picture books to teach science and reading together.



Rev It Up! Energize Science and Literacy Connections (Phys)

(Middle Level–High School) 207A, Convention Center
Melaine B. Rickard (melaine_rickard@abss.k12.nc.us), Turrentine Middle School, Burlington, N.C.

Lisa Grable, The Science House, North Carolina State University, Raleigh
 Engage in The Science House way with hands-on activities utilizing STEM principles to teach renewable energy concepts. Experience the integration of literacy and formative assessment strategies.

Make a Mirror, Make a Kaleidoscope: Fun with Chemistry and Engineering (Chem)

(Informal Education) 207 B/C, Convention Center
Joe Muskin and **Carrie O. Kouadio** (carrie.kouadio@gmail.com), University of Illinois, Urbana

Tara Bell (tbell@ista-il.org), Booker T. Washington STEM Academy, Champaign, Ill.
 Make silver mirrors with a fun chemical reaction, and then use them to make kaleidoscopes. Discover how to introduce students to engineering in this hands-on workshop.

Effective Strategies for Sharing Climate Change Science and Energy Consumption Implications in the Classroom (Earth)

(Elementary–High School) Ballroom A, Convention Center
Roberta Johnson (rmjohnsn@nestanet.org), NESTA, Boulder, Colo.

Margaret A. Holzer (mholzer@monmouth.com), Rutgers University, New Brunswick, N.J.
 Explore the scientific foundations of what we know about climate change, greenhouse gases, and energy consumption through effective hands-on and data-rich classroom activities from NESTA.

Planning and Designing Safe, Sustainable, and Flexible Facilities for STEM-based Science (Science Facilities 101) (Gen)

(General) Mecklenburg Hall, Hilton Center City
LaMoine L. Motz (llmotz@comcast.net), 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.

James T. Biehle (biehlej@sbcglobal.net), Inside/Out Architecture, Inc., Ballwin, Mo.
 Presider: LaMoine L. Motz

So you want new science facilities? Does your curriculum define your science teaching facility? In more than 20 years

of conducting visits and presentations of new and renovated school science facilities, join the author team of *NSTA Guide to Planning School Science Facilities*, 2nd edition, and learn the “basics” of science facility planning, design, and budgeting for safe, sustainable facilities.

ASEE Session: ASEE K–12 Engineering Resources, Including Engineering Go For It! (Gen)

(General) South Carolina Hall, Hilton Center City
Elizabeth Parry (elizabethparry204@gmail.com), North Carolina State University, Raleigh

The American Society for Engineering Education and its K–12 division will introduce participants to innovative ways to introduce engineering into the K–12 classroom.

Graphing a Pathway Through Mechanics: An Inquiry into Uniform Motion (Phys)

(Middle Level–High School) Grand Ballroom A, Westin
Peter Wish, **Tim Ritter** (tim.ritter@uncp.edu), and **Brian Postek** (brian.postek@uncp.edu), The University of North Carolina at Pembroke

Rachel A. McBroom (rachel.mcbroom@dpi.nc.gov), North Carolina Dept. of Public Instruction, Red Springs
 Engage in hands-on activities that lead to constructing, interpreting, and assessing graphs of velocity and uniform motion. Teacher’s guide and graphing rubric distributed.

Science Education for Global Citizenship: People, Food, Energy, and Sustainability (Env)

(Middle Level–High School) Grand Ballroom B, Westin
Patricia Patrick (trish.patrick@ttu.edu), Texas Tech University, Lubbock

Discover interdisciplinary hands-on activities to prepare all students to think critically and creatively about global challenges to the planet and human well-being.

Choose a Challenge: The Jet Car Project (Phys)

(General) Grand Ballroom C, Westin
Andrew Lammers (alammers@carolinaday.org), Carolina Day School, Asheville, N.C.

Supercharge your lessons. Let’s define an engineering challenge and build a jet car that meets the challenge using basic materials. We will prototype rapidly and fail forward.

Neuroscience for Your Biology Classroom (Bio)

(Middle Level—College) *Grand Ballroom D, Westin*

Tamica A. Stubbs (tamica.stubbs@cms.k12.nc.us), Phillip O. Berry Academy of Technology, Charlotte, N.C.

Would you like to use simple hands-on active learning lessons to introduce neuroscience concepts into your biology classroom? Join us and experience two sample neuroscience activities from the University of Rochester's Life Sciences Learning Center. Take home handouts and information on support for field testing in your classroom.

Modeling—Water, Water Everywhere (Bio)

(Middle Level—High School) *Harris, Westin*

Tim Herman (herman@msoe.edu) and **Shannon Colton** (colton@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Come use engaging magnetic water models to explore why water is so essential to life. We'll use an inquiry approach to explore water properties. Handouts!

AAPT Session: Modeling What You See Using Video Analysis (Phys)

(General) *Providence Ballroom I, Westin*

Wolfgang Christian (wochristian@davidson.edu), Davidson College, Davidson, N.C.

Presider: **Mario Belloni** (mabelloni@davidson.edu), Davidson College, Davidson, N.C.

We will demonstrate how the Tracker video analysis tool enables students to study the motion of real-world objects captured on video.

ACS Session One: Chemical Bonding—Why Water Is Different (Chem)

(High School) *Providence Ballroom II, Westin*

Jerry A. Bell (j_bell@acs.org), American Chemical Society, Washington, D.C.

The properties of water that are essential for life on Earth are very different from the properties of similar molecules. Simple bonding models help us understand why water is so different. Bring your USB flash drive and take away the presentation and activities to use in your class.

ACS Middle Level Session: Matter: Solids, Liquids, and Gases (Chem)

(Middle Level) *Providence Ballroom III, Westin*

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

Explore solids, liquids, and gases through hands-on activities and molecular animations from the free completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in middleschoolchemistry.com.

8:00–9:00 AM Exhibitor Workshop

Merging the Three Dimensions of the Next Generation Science Standards (Gen)

(Grades 6–8)

213D, Convention Center

Sponsor: It's About Time

Glenda S. Pepin, Clemson University, Greenville, S.C.

One way the NGSS differs from previous documents is by merging core ideas in science with practices and crosscutting concepts. This workshop will illustrate how *Project-Based Inquiry Science* (PBIS) combines all three dimensions as students design, build, and test “whirligigs” and other aerodynamic structures.

8:00–9:15 AM Exhibitor Workshops

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

(Grades 6–12)

208A, Convention Center

Sponsor: Carolina Biological Supply

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. Free materials and door prizes!

Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (Chem)

(Grades 9–12)

208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

We distill water to purify it, or so we think. So why does the clear distillate from apple cider smell like apples? Join us for this signature activity from the new high school program, *A Natural Approach to Chemistry*. Using a clever test tube distillation apparatus, distill the essence of vanilla and the scent of mint. Distillation is a crucial process in chemical engineering and technology, yet few students ever get to explore the process.

PASCO's SPARKscience for High School Students—Free Starter Kits for Attendees! (Gen)

(Grades 9–12) 210 A/B, Convention Center

Sponsor: PASCO scientific

Carla Johnson, PASCO Scientific, Roseville, Calif.

Learn how SPARKscience engages students in Scientific and Engineering Practices, affording a deeper understanding of scientific concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue® software. Free probeware starter kits, including five sensors and USB interface (a \$600 value), will be given to 20 lucky attendees!

“Hard” Doesn’t Mean “Bad”—Helping Students Understand That Facing Challenges Is a Good Thing (Gen)

(Grades 6–9) 211 A/B, Convention Center

Sponsor: eCYBERMISSION

Matthew C. Hartman (mhartman@ecybermission.com), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

How many times have you heard your grades 6–9 students say, “This is too hard” or “My data does not support my hypothesis so I failed” or “I’m no good at science”? Many students are ready to give up if they feel that something is too difficult or if they don’t succeed immediately. Since many scientific discoveries come from challenges, it’s important that students learn how to embrace these and help them be more comfortable with science. Participants will “do” science and walk away with some lesson plans and resources to take back along with information on a new NSTA competition, eCYBERMISSION, that can provide both rigor and relevance in your classroom.

GeoSTEAM in the K–2 Classroom (Gen)

(Grades K–3) 212 A/B, Convention Center

Sponsor: Ten80 Education

Jeff Thompson (carsrpi@gmail.com), Ten80 Education, Charlotte, N.C.

Jeannie Ruiz (jruiz@ten80foundation.org), Ten80 Foundation, Charlotte, N.C.

K–2 STEAM with math modeling! Where do art and STEM intersect? Engage students with real-world challenges that result in beautifully artistic, geometric art pieces. Come learn how to supplement problem solving, inquiry, data collection, data analysis, dexterity, geometry, mathematics, technology, science, and literacy components.

Science and Literature for the Young Learner

(Phys)

(Grades K–3)

216 A/B, Convention Center

Sponsor: SAE International’s A World In Motion®

Chris Ciuca and **Julie MacIntyre** (awim@sae.org), SAE International, Warrendale, Pa.

This workshop will demonstrate how easy it is to incorporate science into your literature lessons. Examples of literature-based STEM storybooks from the A World In Motion® program will be shared along with hands-on STEM learning challenges.

Engage Students in Anatomy—Help Discover Their Passion for Health-related Careers (Bio)

(Grades 6–College)

218 A/B, Convention Center

Sponsor: ANATOMY IN CLAY® Learning System

April Albrecht (april@anatomyinclay.com), ANATOMY IN CLAY® Learning System, Loveland, Colo.

Explore a hands-on, proven technique of building the human body in clay. This interactive experience promotes innovation; values all learning styles, interests, and talents; provides students with cohesive support; and prepares all students for health career success through an encouraging pedagogy of lifelong learning.

IQWST Tablet Edition: Blending the Effectiveness of Learning-by-Doing with the Power of Connected Mobile Technology (Gen)

(Grades 6–8)

219 A/B, Convention Center

Sponsor: Sangari Active Science

Brad Felix, Sangari Active Science, Norwalk, Conn.

IQWST stands for Investigating and Questioning our World through Science and Technology (pronounced I-quest). Tablet computers are beginning to fulfill the long-held belief that technology can radically improve educational outcomes for students. The IQWST Tablet Edition merges a Learning-by-Doing middle school science curriculum with tablet technology to create an interactive student science notebook built on top of our NGSS Standards Engine. Come join us to learn about the future of middle school science.

8:00–9:30 AM Exhibitor Workshop

Chemistry and Biology with Vernier (Chem)

(Grades 7–College) 209 A/B, Convention Center

Sponsor: Vernier Software & Technology

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

In this hands-on workshop, we will use various digital tools such as probeware to conduct experiments from our popular chemistry and biology lab books. Use LabQuest Mini with a computer or LabQuest 2 as a stand-alone device, with a computer, or wirelessly to iPad and BYOD environments.



8:00–10:00 AM NSTA ESP Symposium

ESP: Unique Features of Programs That Meet “More Emphasis” Features in the NSES (Gen)

(General) Ballroom B, Convention Center

The Standards offered but Four Goals/Justifications for Science in K–6 Settings, namely that all students would: 1) Experience the richness and excitement of knowing about and understanding the natural world; 2) Use appropriate scientific processes and principles in making personal decisions; 3) Engage intelligently in public discourse and debate about matters of scientific and technological concern; and 4) Increase their economic productivity through the use of the knowledge, understandings, and skills of the scientifically literate person in their careers.

The ESP series identifies people and places where the reforms recommended have emerged. The exemplars include: 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; 7) Exemplary Science for Resolving Societal Challenges; 8) Exemplary Programs for Building Interest in STEM Careers; and 9) Exemplary College Science Teaching.

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

Coordinators:

Robert E. Yager (robert-yager@uiowa.edu), 1982–1983 NSTA President, and University of Iowa, Iowa City; and **Brenda Wojnowski** (bwojnowski@gmail.com), WAI Education Solutions, Dallas, Tex.

Symposium Participants:

Bringing School Science to College

Sondra Akins (akinss@wpunj.edu), William Paterson University, Wayne, N.J.

Less and More

Brenda Wojnowski (bwojnowski@gmail.com), WAI Education Solutions, Dallas, Tex.

Community of Excellence in Mathematics and Science

Carol T. Mitchell (cmitchell@unomaha.edu), University of Nebraska at Omaha

8:00 AM–12 Noon Meeting**Training Session for Preservice Teachers on Engineering Practices***North Carolina Hall, Hilton Center City*

Join other preservice teachers in this unique opportunity to explore NASA resources and cutting-edge digital tools to engage students in engineering challenges.

Note: This training session is repeated Friday afternoon at 1:30 PM.

8:15 AM–12:30 PM Short Course**North Carolina Geology Rocks! (SC-4)***(General)**Schiele Museum of Natural History***Tickets Required; \$50**

Beverly Owens (owensscience@hotmail.com), Schiele Museum of Natural History, Gastonia, N.C.

For description, see page 36.

Note: Please meet your short course leader at the Martin Luther King, Jr. Boulevard entrance of the Convention Center 15 minutes prior to departure time.

8:30–11:00 AM Exhibitor Workshop**Generate a DNA Barcode and Identify Species (Bio)***(Grades 10–College)**213 B/C, Convention Center*

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Extract genomic DNA, amplify it with PCR, and classify species using sequencing and bioinformatics to determine if that fish you just bought is really what the label says it is. Learn about the International Barcode of Life, which uses barcoding, and find out how you can be a part of this initiative!

8:30 AM–12:30 PM Short Course**NASA Preservice Teacher Workshop (SC-5)***(Elementary–Middle Level)**Hampton, Hilton Center City***Tickets Required; \$30**

Rebecca Jaramillo (rebecca.jaramillo@nianet.org) and **Sharon Bowers** (sharon.bowers@nianet.org), The Center for Integrative STEM Education, Hampton, Va.

For description, see page 37.

8:45 AM–12:15 PM Short Course**Putting Excitement into Engineering (SC-6)***(Middle Level–College/Inf.) Central Piedmont Community College***Tickets Required; \$30**

David C. Taylor (david.taylor@cms.k12.nc.us), McClintock Middle School, Charlotte, N.C.

Tom Dubick (tomdubick@gmail.com), Charlotte Latin Middle School, Charlotte, N.C.

Terence Fagan (terence.fagan@cpcc.edu), Central Piedmont Community College, Charlotte, N.C.

For description, see page 37.

Note: Please meet your short course leader at the Martin Luther King, Jr. Boulevard entrance of the Convention Center 15 minutes prior to departure time

9:00 AM–5:00 PM Exhibits*Exhibit Hall A, Convention Center*

Did you know that NSTA offers Exclusive Exhibits Hall hours today from 12 Noon to 2:00 PM? During these hours there are no sessions or workshops scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

9:30–10:00 AM Presentation**SESSION 1****Integrating Web GIS in the Earth Science Curriculum to Investigate Tectonics (Earth)***(General)**206 A/B, Convention Center*

Alec M. Bodzin (amb4@lehigh.edu), Lehigh University, Bethlehem, Pa.

Lori Cirucci (lcirucci@beth.k12.pa.us), Broughal Middle School, Bethlehem, Pa.

President: Alec M. Bodzin

Learn about new tectonics investigations that use Web Geographic Information Systems (GIS) to promote student learning of important concepts in the Earth science curriculum.

9:30–10:30 AM Featured Presentation



Speaking, Listening, and Learning in Science—Supporting Conceptual Change Through Science Talk (Gen)

(General)

Ballroom C/D, Convention Center



Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, and Educator, Writer, and Public Speaker, Jefferson, Maine
@CTSKeeley

Presider: Patricia Shane, 2009–2010 NSTA President; Strand Co-Leader, Merging Literacy into Science Instruction, Charlotte Area Conference; and Educational Consultant, Chapel Hill, N.C.

Communicating and listening to scientific ideas contribute to language development, an important goal of teaching in the elementary grades, that is consistent with the Common Core State Standards for English language arts and the NGSS scientific practices. Furthermore, students construct scientific understandings through speaking and listening. In this presentation, Page Keeley will share examples of tools and strategies designed to support talking and listening, while providing a window into children's ideas as they experience a process of conceptual change.

Page Keeley now champions science education internationally as a science education delegation leader for the People to People Citizen Ambassador Program, leading the South Africa trip in 2009, China in 2010, India in 2011, and China in 2013.

A former middle and high school science teacher for 15 years, Page recently retired from the Maine Mathematics and Science Alliance. At MMSA, she was the senior science program director for 16 years, directing projects and developing resources in the areas of leadership, professional development, linking standards and research on learning, formative assessment, and mentoring and coaching. In 2008, Page served as NSTA president. She has also served as an adjunct instructor at the University of Maine and as a science literacy leader for the AAAS/Project 2061 Professional Development Program.

Widely published, Page is the author of 14 national best-selling books, including four books in the Curriculum Topic Study series, eight volumes in the Uncovering Student Ideas in Science series, and a science and a mathematics version of Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning. Currently, she provides consulting services to school districts and organizations throughout the U.S. on building teachers' and school districts' capacity to use diagnostic and formative assessment.

9:30–10:30 AM Presentations

SESSION 1



NSTA Press® Session: Exemplary Science: Best Practices in Professional Development (Gen)

(General)

203B, Convention Center

Brenda Wojnowski (bwojnowski@gmail.com), WAI Education Solutions, Dallas, Tex.

Explore professional development programs that work in various settings and serve as case study protocols, professional development implementation templates, strategic planning aids, and university resources.

SESSION 2

Examining Bioaccumulation and Biomagnification: Implications for Ecosystems and Human Health (Bio)

(Informal Education)

204, Convention Center

Dana B. Haine (dhaine@unc.edu) and **Sarah K. Yelton** (sarah.yelton@unc.edu), The University of North Carolina at Chapel Hill

Presider: Alfred Porter (apporter12@aol.com), Riverdale, Ga. Distinguish between bioaccumulation and biomagnification as you examine how pollutants move through trophic levels to impact ecosystems and human health.

SESSION 3

The Capture: Integrating Science and Language Arts Through Literature (Gen)

(Elementary–Middle Level)

205, Convention Center

Lisa A. Gross (grossla@appstate.edu), **Leslie U. Bradbury** (upsonlk@appstate.edu), and **Beth Frye** (bethfrye@gmail.com), Appalachian State University, Boone, N.C.

Using Lasky's *Guardians of Ga'Hoole* series, we'll share activities and resources used with intermediate-aged students to develop literacy skills while learning about animal adaptations.

SESSION 4

Using Award-winning Science Trade Books to Integrate ELA and Science (Gen)

(Elementary)

215, Convention Center

Ian C. Binns (ian.binns@uncc.edu), The University of North Carolina at Charlotte

Discover how to use award-winning science trade books to integrate English language arts and science into your classrooms.

SESSION 5**Authors Needed!****(Gen)***(General)**Ardrey, Hilton Center City*

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

Find out how to prepare and submit your manuscript for submission to an NSTA journal. Editors will be on hand to critique your article ideas.

SESSION 6**NSELA Session: Tools for Science Leaders, Part II****(Gen)***(General)**Caldwell, Hilton Center City*

Darlene Ryan (dryan@chccs.k12.nc.us), NSELA President, and Glenwood Elementary School, Chapel Hill, N.C.

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

Join us as we share various tools and strategies to support you in your work to enhance teaching and learning in your context.

SESSION 7**Roadmap: Science and Literacy Collaboration (Gen)***(General)**Graves, Hilton Center City*

Steve Canipe (steve.canipe@waldenu.edu), Walden University, Boone, N.C.

Barbara Weschke (barbara.weschke@waldenu.edu), Walden University, Minneapolis, Minn.

Common Core and the Next Generation Science Standards no longer support a narrow classroom focus. These two professors share ways to integrate the two areas.

SESSION 8**Getting Your Students on the Right Track for STEM Careers****(Gen)***(General)**Gwynn, Hilton Center City*

Tammy Lee (leeta@ecu.edu) and **Megan L. Garner** (garnerm06@students.ecu.edu), East Carolina University, Greenville, N.C.

Come learn about STEM and ways to integrate STEM initiatives into your classroom. Preservice teachers will share projects from their science concentration courses for engaging students in how concepts learned in science can be implemented in a STEM career.

**SESSION 9****Rev It Up with North Carolina Science Olympiad****(Gen)***(Elementary–High School)**Walker A/B, Hilton Center City*

Samantha Dassler Barlow, North Carolina State University, Raleigh

It's not too late! Join The Science House and Science Olympiad to learn how to start your own elementary, middle school, or high school Science Olympiad team.

SESSION 10**Polymer Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewVair (Chem)***(Middle Level–High School)**Kings, Westin*

Sherri C. Rukes (luvchem@gmail.com), Libertyville High School, Libertyville, Ill.

Polymers are found all around us. This presentation will give a better understanding of why some polymers are used in cooking and what polymers are found in food as well as in the tools we use to cook with. A CD of the activities and information will be given.

SESSION 11**NMLSTA Session: Win Big! Write a Grant and Your Students Win, Too!****(Gen)***(General)**Queens, Westin*

Patty McGinnis (pattymcginnis1@gmail.com), NSTA Director, Middle Level Science Teaching, NMLSTA President, and Arcola Intermediate School, Eagleville, Pa.

Kitchka Petrova (dr.k.petrova@gmail.com), Ponce de Leon Middle School, Coral Gables, Fla.

Learn what goes into a typical grant and gain valuable tips from two teachers who are experienced grant writers. Funding sources will also be addressed.

SESSION 12 (two presentations)

(Middle Level–High School)

Sharon, Westin

Integrating Bioethical Case Studies into the Science Curriculum (Bio)

Terry Maksymowych (tmaksymowych@ndapa.org), Academy of Notre Dame de Namur, Villanova, Pa.

The study of bioethics in the science classroom can encourage scientific literacy as well as the development of critical-thinking and problem-solving skills.

The Effects of Student-directed Service Learning on HIV Attitudes (Bio)

Molly S. Proudfit (proudfitm@ndapandas.org), Notre Dame Academy, Park Hills, Ky.

A service learning project was designed and implemented by an AP Biology Class. See how this experience influenced students' perceptions of and attitudes toward the HIV+ population.

SESSION 13

Let's Argue About It!

(Gen)

(Middle Level–High School)

Trade, Westin

Rita A. Hagevik (rita.hagevik@uncp.edu) and **Chris M. Spencer** (cspencer@scotland.k12.nc.us), The University of North Carolina at Pembroke

Current research indicates that student engagement and a better understanding of the concepts and the processes of science can be fostered through scientific argumentation. Come find out how to teach and assess inquiry-driven scientific argumentation.

SESSION 14

Geocaching 101

(Earth)

(General)

Tryon, Westin

Mark Case (markcase@aol.com), Southern Guilford High School, Greensboro, N.C.

Geocaching is one of the fastest growing hobbies in the world. Use technology and puzzle-solving skills to find “treasures” around the planet.

9:30–10:30 AM Workshops

Growing Up WILD!

(Bio)

(Preschool–Elementary)

201 A/B, Convention Center

Tanya Poole (tanya.poole@ncwildlife.org) and **C.C. King**, North Carolina Wildlife Resources Commission, Clyde

This early childhood program, geared for ages 3–7, builds on children's sense of wonder about nature and invites them to explore wildlife and their habitats.

Engineering—It's Elementary, My Dear

(Env)

(Elementary)

203A, Convention Center

Katie A. Thompson (kthompson@garesa.org), West Georgia RESA, Grantville

Join us for this awesome workshop that provides elementary educators with detailed information about the basics of engineering and why it is so important at the elementary level. You'll receive specific information on how to create a foundation for engineering at the elementary level and why engineering is needed for a successful STEM school. Take home a variety of ideas and resources for engineering and STEM. This session is for all elementary educators, including both teachers and administrators. Discover why engineering is truly elementary!



Science and Literacy: A Natural Fit

(Gen)

(General)

207A, Convention Center

Cathy Newton (newtonc@hartfordschools.net), Dothan Brook School, White River Junction, Vt.

Suzan Locke (lockes@hartfordschools.net), White River School, White River Junction, Vt.

Experience a science investigation that incorporates literacy strategies—specifically talk and notebook writing—deepening understanding of inquiry and connections to literacy.



Rev It Up with Pasta Pod Cars!

(Phys)

(Middle Level–High School/Inf.)

207 B/C, Convention Center

Pamela O. Gilchrist (pgilchr@ncsu.edu), North Carolina State University, Raleigh

Come design a stock car made of pasta with The Science House's Imhotep Academy! The engaging, low-cost activity reinforces critical science and engineering practices.

Rev It Up with a Rubber Band Car Drag Race!**(Phys)***(Elementary–Middle Level)**207D, Convention Center***Jason L. Painter** (*jlpainte@ncsu.edu*), North Carolina State University, Raleigh

Bring your students up to speed on science concepts. Come learn how to design, build, and race rubber band cars to engage your students in important physical science and math ideas.

Effective Approaches for Addressing the Next Generation Science Standards in the Earth and Space Science Classroom**(Earth)***(Elementary–High School)**Ballroom A, Convention Center***Roberta Johnson** (*rmjohnsn@nestanet.org*), NESTA, Boulder, Colo.**Margaret A. Holzer** (*mholzer@monmouth.com*), Rutgers University, New Brunswick, N.J.

This NESTA hands-on workshop highlights lessons and strategies using the NGSS crosscutting concepts to unite core ideas and science and engineering practices for the geoscience classroom.

Nature's Engineers: Connecting STEM Education with Environmental Literacy Through Engineering**(Gen)***(Elementary–High School)**Charlotte Hall, Hilton Center City***Dennis S. Kubasko** (*kubaskod@uncw.edu*) and **Sue M. Kezios** (*kezios@uncw.edu*), University of North Carolina, Wilmington

This novel preK–12 curriculum features nature as engineer and problem solver, introducing students to organisms that are able to engineer components of their habitat, and even entire ecosystems.

The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102)**(Gen)***(General)**Mecklenburg Hall, Hilton Center City***LaMoine L. Motz** (*llmotz@comcast.net*), 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.**James T. Biehle** (*biehlej@sbcglobal.net*), Inside/Out Architecture, Inc., Ballwin, Mo.

Presider: LaMoine L. Motz

Is your district designing new science facilities but you're not involved? You need to get involved before it is TOO LATE! In this advanced course on science facility planning and design (an extension of the Science Facilities 101 session, page 79),

the NSTA author team for *NSTA Guide to Planning School Science Facilities*, 2nd edition, will present more detailed information and examples of functional and flexible science facilities for STEM-based science. We'll look at budgeting, working with the architect, space requirements, technology, flexibility, safety, new types of spaces, and special adjacencies. Take home a packet of materials.

ASEE Session: Power Generation for the Developing World**(Gen)***(High School)**South Carolina Hall, Hilton Center City***James C. Conrad** (*jmconrad@uncc.edu*), The University of North Carolina at Charlotte

Spark new learning in your classroom. Examine the generation and use of electrical energy. Participants will learn through hands-on exercises...and take the materials home with them!

The Dating Game, STEM Career Edition**(Gen)***(Middle Level–High School)**Grand Ballroom A, Westin***Margaret R. Blanchard** (*meg_blanchard@ncsu.edu*), North Carolina State University, Raleigh

Use a game show–format to pique students' interest in STEM careers. Participants volunteer to be contestants. Raffle for iPod Touch and prizes.

Making Astronomy Fun and Interdisciplinary**(Earth)***(Middle Level–High School/Informal)**Grand Ballroom B, Westin***Darlene Smalley**, University of South Carolina, Aiken**Presider: John Hutchens** (*johnh@usca.edu*), University of South Carolina, Aiken

Students decode vocabulary using word roots, sort images, and make scale models of celestial objects...and then do kinesthetic activities to increase understanding of celestial motions.

Rev It Up with Modeling Biology, Chemistry, and Physics**(Gen)***(High School–College/Supervision)**Grand Ballroom C, Westin***Scott Ragan**, North Carolina State University, Raleigh

The Science House at NCSU presents modeling instruction to cultivate teachers as experts on the effective use of guided inquiry. Students learn to develop coherent scientific models in biology, chemistry, and physics.

The Cellular Landscapes of David Goodsell: Biology at the Mesoscale (Bio)

(High School–College) Grand Ballroom D, Westin

Tim Herman (herman@msoe.edu) and **Shannon Colton** (colton@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Connect microscopic and molecular views of the cell using a unique teaching tool—the vibrant, accurate, and engaging cellular landscapes painted by David Goodsell.

AAPT Session: PhysicsQuest: Spectra’s Turbulent Times (Phys)

(General) Providence Ballroom I, Westin

Rebecca C. Thompson, American Physical Society, College Park, Md.

Come use comics and ketchup to learn about fluid dynamics.

ACS Session Two: Entropy: Mixing and Unmixing (Chem)

(High School) Providence Ballroom II, Westin

Jerry A. Bell (j_bell@acs.org), American Chemical Society, Washington, D.C.

Approaching the concept of entropy from a molecular viewpoint gives it a more easily visualized and intuitive meaning. Using this molecular view helps us understand how both mixing and unmixing are spontaneous processes under the appropriate conditions. Bring your USB flash drive and take away the presentation and activities to use in your class.

ACS Middle Level Session: Changes of State: Evaporation and Condensation (Chem)

(Middle Level) Providence Ballroom III, Westin

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

Explore evaporation and condensation through hands-on activities and molecular animations from the free completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in middleschoolchemistry.com.

9:30–10:30 AM Exhibitor Workshops

Biomes and Invasive Species (Bio)

(Grades 9–12) 208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

How do the characteristics of a biome determine the plant and animal life found there? How do non-native species survive to become invasive species? In this activity from the SEPUP high school biology program, *Science and Global Issues: Biology*, students match a set of organism cards to proper climate/biome cards and then use literacy strategies to consider the impact of invasive species.

Engineering in the Next Generation Science Standards (Gen)

(Grades 9–12) 213D, Convention Center

Sponsor: It’s About Time

Johanna L. Bunn, Teachers 21, Wellesley, Mass.

The NGSS will break from previous documents by merging science and engineering. This workshop will illustrate how a new high school curriculum—Engineering the Future: Science, Engineering, and the Design Process—can help students learn core ideas about energy by designing, building, and testing various structures.

10:00–11:15 AM Exhibitor Workshops

Is Biology a Foreign Language? (Bio)

(Grades K–12) 208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Mon dieu! There are more new words in first-year biology than in first-year French! Scientific Minds™ will show you how to use Biology Science Starters to teach more than 1,000 vocabulary words and increase student success. Attendees will receive one month of FREE access to the research-based Biology Science Starters.

PASCO’s SPARKscience for K–8 Students—Free Starter Kits for Attendees! (Gen)

(Grades 6–8) 210 A/B, Convention Center

Sponsor: PASCO scientific

Carla Johnson, PASCO Scientific, Roseville, Calif.

Learn how SPARKscience engages students in Scientific and Engineering Practices, affording a deeper understanding of scientific concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue® software. Free probeware starter kits, including five sensors and USB interface (a \$600 value), will be given to 20 lucky attendees!

Experience the Power of a Digital Middle School Program (Gen)

(Grades 6–8)

211 A/B, Convention Center

Sponsor: Achieve3000®

Kathy Warnert (kathy.warnert@achieve3000.com), Achieve3000®, Lakewood, N.J.

Experience the power of digital with differentiated levels of rich content from National Geographic. eScience3000 is tightly aligned to Common Core, the NGSS, and STEM initiatives. See how science, literacy, and real-life experiences come together in this engaging middle school resource.

There's a New Robot in Class! LEGO® MINDSTORMS® Education EV3 in Your Classroom (Phys)

(Grades 5–9)

212 A/B, Convention Center

Sponsor: LEGO Education

Kimberly Forbes (kbrown@legoeducation.us), Ferndale Middle School, High Pont, N.C.

Are you already using LEGO® MINDSTORMS® Education NXT? If so, this hands-on session is for you. Experience the new LEGO MINDSTORMS Education EV3 platform through a sample lesson from the new Design Engineering Projects curriculum. See the robust capabilities and the cross-curricular applications the third generation has to offer.

HHMI's *The Day the Mesozoic Died* Classroom Resources (Earth)

(Grades 7–12)

213A, Convention Center

Sponsor: Howard Hughes Medical Institute

Mary Colvard, Deposit, N.Y.

Discover how HHMI's short film, *The Day the Mesozoic Died*, can enrich your teaching of the nature and power of the scientific method. The film follows scientists as they uncover the key clues leading to the stunning conclusion that an asteroid impact 66 million years ago triggered a mass extinction of animals, plants, and even microorganisms. Participants will receive free lessons and activities that address key concepts presented in the film, emphasizing the connections among all science disciplines.

Elementary Teacher Survival Kit (Gen)

(Grades K–6)

217 B/C, Convention Center

Sponsor: Educational Innovations, Inc.

Ken Byrne (ken@teachersource.com), Educational Innovations, Inc., Bethel, Conn.

This hands-on workshop—chock-full of easy-to-do science inquiry lessons—enables new and veteran teachers to expand

their bag of tricks. Using discrepant events, these activities give students a sense of mystery and awe. Topics include energy, air pressure, scientific method, data collection, and graphing. Door prizes and giveaways!

Flinn Scientific Presents Best Practices for Teaching Chemistry: Experiments and Demonstrations (Chem)

(Grades 9–12)

217D, Convention Center

Sponsor: Flinn Scientific, Inc.

Irene Cesa (icesa@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Join us as we present exciting and interactive demonstrations, show video clips, and showcase the features and benefits of our comprehensive resources for teaching chemistry. Imagine the opportunity to learn best practices from more than 25 award-winning master teachers who shared their favorite chemistry lab activities to help us create the *Flinn ChemTopic™ Labs* manuals and *Teaching Chemistry* video series. We will share stories, strategies, and inspiration culled from more than 700 experiments and demonstrations to help you build content knowledge and improve your pedagogical skills and confidence. Handouts provided for all lab activities!

Plate Tectonics: Continents on the Move (Earth)

(Grades 6–12)

218 A/B, Convention Center

Sponsor: Simulation Curriculum Corp.

Seth Meyers (mgabber@sympatico.ca), Simulation Curriculum Corp., Minnetonka, Minn.

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

The NGSS and Scientific Practices—More Than Photoshopping Models' Flaws (Gen)

(Grades 6–8)

219 A/B, Convention Center

Sponsor: Sangari Active Science

LeeAnn Sutherland, The University of Michigan, Ann Arbor

What comes to mind when you hear the word “model”? Solar system mobiles? Cells in pie plates? The NGSS require going beyond the models used in science for years! Come engage in modeling activities for middle-schoolers and unpack how to think about current models in use in ways consistent with the NGSS.

10:00–11:30 AM Exhibitor Workshop

Integrate iPad and BYOD with Vernier Technology (Gen)

Grades 3–College 209 A/B, Convention Center

Sponsor: Vernier Software & Technology

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

In this hands-on workshop, you will use Vernier's digital tools such as probeware to conduct an investigation with either Graphical Analysis for iPad or Vernier Data Share for tablets, Chromebooks, and BYOD environments. These tools can help you address the NGSS practices and performance expectations, as well as many states' standards.

11:00–11:30 AM Presentations

SESSION 1

Engaging Students in Chemistry Outside the Classroom: A Look at ChemClub (Chem)

(High School/Informal Education) Kings, Westin

Marta Gmurczyk (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

ChemClub provides high school students with a unique opportunity to experience chemistry beyond the classroom. Come learn about this free program, and how to start your own chemistry club with free resources from the American Chemical Society.

SESSION 2

Kenan Fellow STEM Careers in Education: Pharmaceutical Fun (Env)

(High School) Queens, Westin

Ryan C. Gardner (rgardner@lenoir.k12.nc.us), South Lenoir High School, Deep Run, N.C.

Learn how to incorporate Kenan Fellow-inspired lessons and labs about the pharmaceutical industry into your science curricula.

11:00 AM–12 Noon Presentations

SESSION 1

Bring the Magic of Space to Your Classroom!(Gen)

(Elementary–Middle Level) 204, Convention Center

Diane Matthews (dmatthews@iss-casis.org) and **Laura Colville** (lcolville@iss-casis.org), Center for the Advancement of Science in Space, Melbourne, Fla.

Discover how your students can conduct experiments on the International Space Station. Find out about ground-based and other STEM activities that engage students in real-world activities. Discuss how to best use and integrate this newest resource in classrooms.

SESSION 2



Integrating the Engineering Grand Challenges into the Science Classroom (Gen)

(High School) 205, Convention Center

Evelyn Baldwin (ebaldwin@wcpss.net) and **Leigh W. Ciancanelli** (lciancanelli@wcpss.net), North Carolina State University, Raleigh

Use technology and other instructional strategies to integrate the Engineering Grand Challenges into the science classroom, ensuring that students never notice the STEM transitions.

SESSION 3



Literacy and iPads—Where Technology Meets the Science Textbook (Bio)

(General) 206 A/B, Convention Center

Andrew J. Smith (smithaj@rss.k12.nc.us), East Rowan High School, Salisbury, N.C.

iPads foster literacy through engagement and reading comprehension strategies. This session will provide demonstrations of apps and student creations that increase literacy in science classrooms.

SESSION 4

Like All Scientists, I've Got Problems: An Introduction to Problem-Based Learning in the Elementary Science Classroom (Gen)

(Elementary) 215, Convention Center

Christopher S. Boe (christopher.boe@pfeiffer.edu), Pfeiffer University, Charlotte, N.C.

Problem-Based Learning (PBL) is a powerful tool for bridging curricula, celebrating 21st-century skills, merging literacy into science instruction, and managing the demands of the elementary classroom. Join us for an introduction to the PBL approach to classroom instruction.

SESSION 5**Developing Science Leadership for the NGSS and Beyond (Gen)***(General) Caldwell, Hilton Center City***Michelle M. Ellis** (*mmellis@gaston.k12.nc.us*), Grier Middle School, Gastonia, N.C.**Patricia Shane** (*pshane@unc.edu*), 2009–2010 NSTA President, and North Carolina Science Leadership Association, Chapel Hill**Rebecca Hite** (*rlhite@ncsu.edu*), North Carolina State University, Raleigh

Presider: Patricia Shane

Join us and find out about the NCSLA's Science Leadership Fellows Program, which is designed to provide emerging leaders with skills needed to ensure success in leadership roles.

SESSION 6**Strategies to Enhance Science Instruction Through Standards-based Assessments (Gen)***(General) Graves, Hilton Center City***Amy S. Beavers** (*abeavers@utk.edu*) and **Jennifer Richards** (*jennifer.richards@utk.edu*), University of Tennessee, Knoxville
Meaningful assessment that supports inquiry-based science instruction is challenging. This session presents creative ways to integrate standards-based assessments to enhance instructional quality and student learning.**SESSION 7****The Paperless Classroom: One School's Adventures in Going 0 to 60 in Technology (Gen)***(General) Walker A/B, Hilton Center City***Lauren M. Royal-Woods** (*lroyal@henderson.k12.nc.us*), Balfour Education Center, Hendersonville, N.C.

The trailblazers of a nontraditional high school would like to show you the way to go paperless via the latest technology!

SESSION 8**Students' Cloud Observations Online—From Observing to Understanding (Earth)***(Elementary–High School) Independence, Westin***Preston M. Lewis** (*preston.lewis@nasa.gov*), NASA Langley Research Center, Hampton, Va.

Engage students in making cloud and weather observations for NASA. While reporting, your students can also be gaining a better understanding through reading and writing!

SESSION 9**AAPT Session: Supernova Remnants, Cosmic Rays, and Cosmology (Phys)***(General) Providence Ballroom I, Westin***Stephen P. Reynolds** (*reynolds@ncsu.edu*), North Carolina State University, RaleighPresider: Kathleen Melious (*melious@gcsnc.com*), T.W. Andrews High School, High Point, N.C.

Supernovae, the explosive deaths of stars, produce heavy elements, blast them into the interstellar medium to form the substance of later generations of stars, and stir and heat the interstellar gases. Join me as we explore supernova remnants, cosmic rays, and cosmology.

SESSION 10**Best Practices for Robotics Clubs (Phys)***(High School/Informal) Sharon, Westin***Andrea Byrd** (*abyrd@usfirst.org*) and **Amber Williams** (*williams109@gmail.com*), NC FIRST Robotics, Greensboro, N.C.

Presider: Amber Williams

Robots are cool...and robotics activities engage high school students in a hands-on, real-world application of concepts and ideas learned in class. But building a robot and creating a robotics club can be daunting to adults with little or no engineering background. Not to worry! There are resources available for all experience levels. Find out best practices for working with youth in a technical arena and how building a robot creates student leaders and fosters better school performance. We can change the world, one robot at a time!

SESSION 11**Whet Your Appetite with Learning Menus (Gen)***(Middle Level–High School) Trade, Westin***Kyla Gentry** (*kgentry@searcyschools.org*) and **Cristy Farley**, Ahlf Junior High School, Searcy, Ark.

Differentiate your daily lessons using learning menus. In this session, you will learn how to incorporate learning centers in middle school and high school classrooms.

SESSION 12**AMSE Session: A Glimpse at Science Education in India (Phys)***(General) Tryon, Westin***Kitchka Petrova** (*dr.k.petrova@gmail.com*), Ponce de Leon Middle School, Coral Gables, Fla.

Are you interested in learning about science education in India? This session will provide information about the science curricula and standardized testing in India.

11:00 AM–12 Noon Workshops



NSTA Press® Session: The Authors' Picks! Teaching Science Through Trade Books (Gen)

(Elementary)

203B, Convention Center

Christine A. Royce (*caroyce@aol.com*), Shippensburg University, Shippensburg, Pa.

Emily Morgan (*emily@pictureperfectscience.com*), Picture-Perfect Science, LLC, Lebanon, Ohio

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

Join the authors of *Science & Children's* "Teaching Science Through Trade Books" column as they share their favorite picks for trade book-inspired lessons featured in their book.



I Have an iPad—Now What? (Chem)

(Middle Level–High School)

207A, Convention Center

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

Recently, many schools have become one-to-one iPad schools, but teachers have received little or no training in how to use the iPad effectively for science instruction. The goal of this workshop is to demonstrate how to use the iPad and all its potential effectively in the science classroom.

Island Ecology for Educators: Using Coastal Resources to Engage Students (Gen)

(Informal Education)

207 B/C, Convention Center

Dennis S. Kubasko (*kubaskod@uncw.edu*) and **Amy R. Taylor**, and University of North Carolina, Wilmington

This workshop summarizes web-based resources and lesson plans developed by engaging teachers with coastal ecosystems via field explorations of flora, fauna, and unique environmental issues.

Snot or Not? How Mucus Protects Your Body from Infection (Bio)

(Middle Level)

207D, Convention Center

Nicholas Hoffmann (*nicho@email.unc.edu*) and **Amber Vogel**, Morehead Planetarium and Science Center, Chapel Hill, N.C.

How important is mucus? Participate in a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plan about the sticky, slimy properties of the body's unsung hero. Some materials will be available.

National Earth Science Teachers Association Rock and Mineral Raffle (Earth)

(General)

Ballroom A, Convention Center

Roberta Johnson (*rmjohnsn@nestanet.org*), NESTA, Boulder, Colo.

Margaret A. Holzer (*mholzer@monmouth.com*), Rutgers University, New Brunswick, N.J.

Peter Dorofy (*pdq72@optimum.net*), Burlington County Institute of Technology, Medford, N.J.

NESTA offers more than 50 specimens to choose from for a chance to win display-quality specimen of rocks, minerals, fossils, and other Earth science-related materials.

Rev It Up with North Carolina Science Olympiad: Hands-On STEM Education (Gen)

(Elementary–High School)

Charlotte Hall, Hilton Center City

Samantha Dassler Barlow, **Kelly Fair**, and **Kim Gervase** (*kdgervase@gmail.com*), North Carolina State University, Raleigh

The Science House and Science Olympiad bring example events to illustrate our continuing goals to increase understanding of STEM disciplines and incorporate an emphasis on science literacy.

ASEE Session: Introducing Engineering to Elementary School Students (Gen)

(General)

South Carolina Hall, Hilton Center City

Elizabeth Parry (*elizabethparry204@gmail.com*), North Carolina State University, Raleigh

Engineering is natural in elementary school. Learn about tools such as the Engineering is Elementary® (EiE) program and other ways to introduce engineering in K–5.

Modeling Stellar Evolution on the H-R Diagram

(Earth)

(High School–College/Informal)

Grand Ballroom A, Westin

Donna L. Young (*donna@aavso.org*), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Plot pulsating variable stars on an H-R diagram to determine instability regions where stars are transitioning from main sequence stars to red giants and supergiants.

"Astro"nishing Astronomy: Revealing Black Holes and the Invisible Universe (Earth)

(Middle Level–High School)

Grand Ballroom B, Westin

Pamela Whiffen (*pwpwr@aol.com*), NASA Educator Ambassador, Phoenix, Ariz.

New cutting-edge technology used in space-based telescopes has begun to reveal the Invisible Universe and all its wonders. Pick up a CD-ROM with NASA cross-disciplinary activities.

NASA's Pi in the Sky: Using Mathematics to Investigate Astronomical Phenomena (Earth)*(Middle Level–High School)* Grand Ballroom C, Westin**Janet L. Moore** (janetmoore@gmail.com), NASA/Sonoma State University, Rohnert Park, Calif.

Use simple materials to investigate ratios, proportions, and angles. Then use those mathematics concepts to draw conclusions about eclipses and distant galaxies. Free NASA materials!

Developing Effective Discussion Boards for General Education Science (Bio)*(College)* Grand Ballroom D, Westin**Francesca Catalano** (fcatalano@apus.edu), American Public University System, Charles Town, W.Va.

Pick up tips on writing effective basic science forums that consider student population, technology, social media, and rubrics.

One Part at a Time: Using Morphemes to Understand Science Vocabulary (Bio)*(Middle Level–High School)* Harris, Westin**Nicole B. Stants** (nstants@punxsy.k12.pa.us), Punxsutawney Area Middle School, Punxsutawney, Pa.**Amanda K. Onion** (akonion809@gmail.com), Clarion University of Pennsylvania, Clarion

Join us for an introduction to morphemes (word parts such as prefixes, roots, and suffixes). We'll share several strategies for using morphemes to teach science vocabulary.

ACS Session Three: Entropy: Energy Transfer**(Chem)***(High School)* Providence Ballroom II, Westin**Jerry A. Bell** (j_bell@acs.org), American Chemical Society, Washington, D.C.

Net energy transfer is always one way—from warmer objects to cooler objects. Combining molecular views of entropy and energy help us understand why. The combination can also lead to an understanding of the conditions for equilibrium. Bring your USB flash drive and take away the presentation and activities to use in your class.

ACS Middle Level Session: Density—A Molecular View (Chem)*(Middle Level)* Providence Ballroom III, Westin**James H. Kessler**, American Chemical Society, Washington, D.C.

Explore the density of different materials through hands-on activities and animations from the free completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in middleschoolchemistry.com.

11:00 AM–12 Noon Exhibitor Workshops**Comparing Earth to Other Worlds (Earth)***(Grades 9–12)* 208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

What is it about conditions on Earth that makes it especially hospitable for life as we know it? In this activity, your students will read an excerpt from a science fiction story about Mars colonists and then use a card-sort procedure to analyze the resources necessary to sustain human population on the “Red Planet.” This activity is from the introductory unit of *EDC Earth Science*, a new NSF-supported high school Earth science program that uses an active (more than 60 labs and activities!) approach to the study of Earth science and Earth systems.

Bringing Technology into Your STEM Classroom**(Gen)***(Grades 6–College)* 213D, Convention Center

Sponsor: It's About Time

Kevin Schroeder, It's About Time, Mount Kisco, N.Y.

Struggling to incorporate meaningful technology into your science classroom? Experience an innovative, fully functioning Android tablet that incorporates probes, apps, activities, and the full Android experience. Explore how to blend meaningful technology into your classroom with *Project-Based Inquiry Science* (PBIS) to create your project-based STEM classroom.

11:30 AM–12 Noon Presentation**SESSION 1****Science and Literature: The Pitfalls and the Pendulum****(Gen)***(Elementary–High School)* Gwynn, Hilton Center City**Caryn Jackson** (cjackson@tollesteach.com), Tolles Career & Technical Center, Plain City, Ohio

Books can be used to introduce and expand scientific thinking. Advantages and potential hazards will be presented with suggestions for elementary, middle school, and high school grades.

12 Noon–1:15 PM Exhibitor Workshops

Strawberry DNA and Molecular Models (Bio)

(Grades 9–12) 208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Introduce students to the fascinating world of DNA through age-appropriate hands-on activities designed to make biology fun. The activities—from a kit series developed in cooperation with the DNA Learning Center, Cold Spring Harbor Laboratory—use DNA models and real DNA from strawberries to present genetic studies.

PASCO's SPARKscience for High School Students—Free Starter Kits for Attendees! (Gen)

(Grades 9–12) 210 A/B, Convention Center

Sponsor: PASCO scientific

Carla Johnson, PASCO Scientific, Roseville, Calif.

Learn how SPARKscience engages students in Scientific and Engineering Practices, affording a deeper understanding of scientific concepts. Participate in investigations to experience real-time data collection with probeware and SPARKvue® software. Free probeware starter kits, including five sensors and USB interface (a \$600 value), will be given to 20 lucky attendees!

HHMI's Free Classroom Resources for Teaching Evolution (Bio)

(Grades 9–12) 213A, Convention Center

Sponsor: Howard Hughes Medical Institute

Jennifer D. Bricken, Howard Hughes Medical Institute, Chevy Chase, Md.

Discover classroom-ready lessons, hands-on activities, animations, and video clips to help you teach key concepts in evolution, such as natural selection, phylogenetic trees, drug resistance, and biodiversity. These free, engaging multimedia resources bring science to life with inquiry-based investigations, including data collection, analysis, and computation.

Carnivores of Madagascar (Bio)

(Grades K–8) 217 B/C, Convention Center

Sponsor: National Geographic Learning

Luke Dollar (debbie.king@cengage.com), National Geographic Learning, Monterey, Calif.

Dr. Luke Dollar, a conservation scientist and National Geographic emerging explorer, will discuss his extensive work studying the fossa—a rare carnivorous predator species native to the island of Madagascar. Through his many visits to the island and his studies and accounts, he has generated widespread, worldwide interest in this rare animal.

12 Noon–1:30 PM Exhibitor Workshop

Integrate iPad and BYOD with Vernier Technology (Gen)

(Grades 3–College) 209 A/B, Convention Center

Sponsor: Vernier Software & Technology

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

In this hands-on workshop, you will use Vernier's digital tools such as probeware to conduct an investigation with either Graphical Analysis for iPad or Vernier Data Share for tablets, Chromebooks, and BYOD environments. These tools can help you address the NGSS practices and performance expectations, as well as many states' standards.

12:30–1:30 PM Exhibitor Workshops

Matter: Properties and Change (Phys)

(Grades 6–8) 208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

Learn more about grouping elements, chemical and physical properties of elements, families of elements, the periodic table, and conservation of mass. Join us for an activity sequence from *Issues and Physical Science* from LAB-AIDS. We will group elements based on chemical and physical properties and conduct two chemical reactions in closed containers in order to compare mass before and after a chemical reaction has taken place.

Active Physics—Ahead of Its Time in Capturing the Essence of the NGSS and STEM (Phys)

(Grades 9–College) 213D, Convention Center

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston

Learn from the author, Dr. Arthur Eisenkraft, how this proven program implements STEM and the essence of the Next Generation Science Standards. Understand the benefits of the Engineering Design Cycle and learn how physicists, teachers, and science educators designed this project-driven course, recognized for the positive impact it has on students of all levels.

1:00–1:30 PM Exhibitor Workshop**Shaping Earth****(Earth)***(Grades 5–12) Booth #523, Exhibit Hall, Convention Center*

Sponsor: Science First®/STARLAB®

Helmut Albrecht (halbrecht@starlab.com), Science First®/STARLAB®, Yulee, Fla.

This “in dome” workshop introduces the internal and external processes that modified the Earth’s surface. By using an in-dome version of *The Layered Earth*, this lesson creates an immersive teaching experience.

1:00–2:30 PM Exhibitor Workshop**Ecology to Enzymes to Industry (AP Big Idea 4)****(Bio)***(Grades 10–College)**213 B/C, Convention Center*

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

In this inquiry-based hands-on workshop, learn to use ecological knowledge of the kingdom fungi to find and characterize novel cellobiose enzymes for application in cellulosic biofuel production. The enzyme cellobiose is easy to extract from mushrooms and a colorimetric system for assaying activity can be used to determine how pH, temperature, and concentrations affect the rate of reaction.

1:00–3:00 PM AMSE Town Hall Meeting**Following the Lead of the Next Generation Science Standards: Science for All***Dunn, Hilton Center City*Facilitators: **Robert Ferguson**, AMSE President; and **Cherry C. Brewton**, AMSE Past President

With the increase of learner diversity in our classrooms, the Next Generation Science Standards make it clear that concerns about equity should be at the forefront of efforts to improve and support learning for all students. What are the concerns and what are the promises? Join our discussion and share your ideas! Visit www.amsetk16.org for more information.

1:30–5:30 PM Meeting**Training Session for Preservice Teachers on Engineering Practices***North Carolina Hall, Hilton Center City*

Join other preservice teachers in this unique opportunity to explore NASA resources and cutting-edge digital tools to engage students in engineering challenges.

Note: This training session is also scheduled Friday morning at 8:00 AM.

2:00–3:00 PM Featured Presentation**Cracking the Code of the “Native” Learning Experience****(Gen)***(General)**Ballroom C/D, Convention Center*

David Warlick, Educator, Writer, Programmer, Public Speaker, and Entrepreneur, The Landmark Project, Raleigh, N.C.

@dwarlick

President: Scott Grumelot, Strand Leader, Accelerating the Skills of Digital Learners, Charlotte Area Conference, and Cumberland County

Schools, Fayetteville, N.C.

We are teaching a new generation of students. They have witnessed the emergence of a new information environment and have participated in shaping its landscape by seamlessly using technologies that have come to define their culture. Their outside-the-classroom information experiences are deep, diverse, rich, and compelling—and understanding these experiences may be an important key to achieving more effective and relevant formal learning. What are the qualities of these experiences? What are their contexts? What might they look like if woven into the fabric of our schools, classrooms, and libraries?

David Warlick brims with enthusiasm and contagious passion for helping people discover a brand-new world of teaching and learning. David worked for nearly 10 years as a middle school social studies, math, and science teacher, during which he also wrote some of the earliest award-winning instructional software and introduced hundreds of teachers to the educational potentials of personal computers.

After working for 35 years as a classroom teacher, a district administrator, and a staff consultant with the North Carolina State Department of Public Instruction, David launched The Landmark Project, a professional development and innovations firm in Raleigh, North Carolina. The venture includes the Education Podcast Network; Class Blogmeister, a classroom-specific blog; and the Citation Machine, which offers simplified AP and MLA resource citations for students and professional researchers. David has also written four books about technology, contemporary literacy, and lifelong learning.

In 2011, he was named one of the 10 most influential people in EdTech by Tech & Learning Magazine.

2:00–3:00 PM Presentations

SESSION 1



NSTA Press® Session: Special Needs Students in Science (Gen)

(Elementary–High School) 203B, Convention Center

Ed Linz (coachlinz@cox.net), Author and Education Consultant, Springfield, Va.

Lori A. Howard, Marshall University, South Charleston, W.Va.

Let's discuss what the science teacher **MUST** do, and what the science teacher **SHOULD** do! We'll share a list of mostly **DO's** and a few **DON'T's**.

SESSION 2

Building Community with Environmental Science (Env)

(Informal Education) 204, Convention Center

Cara Mia Duncan (cduncan@cbgarden.org), Cleveland Botanical Garden, Cleveland, Ohio

Discover how Green Corps is using education on environmental topics to build/create community leaders and environmental stewards.

SESSION 3



Our Nuclear World: The Engineering Behind Nuclear Power Production (Phys)

(High School) 205, Convention Center

Lisa M. Marshall (lisa.marshall@ncsu.edu), North Carolina State University, Raleigh

The applications of nuclear science will be introduced through current and future U.S.-engineered reactor designs. High school curriculum resources will be shared.

SESSION 4



Literacy in the Biology Classroom (Bio)

(Middle Level–College) 206 A/B, Convention Center

Judith D. Jones (jjonesae@gmail.com), Retired Educator, Chapel Hill, N.C.

Come learn several methods for merging literacy and inquiry into biology in ways that engage and deepen learning. Many examples, resources, and assessment ideas will be provided.

SESSION 5

No Bones About It: Integrating Elementary Science with Common Core Literacy Standards (Bio)

(Elementary) 215, Convention Center

Rachel E. Wilson, **Lisa A. Gross** (grossla@appstate.edu), **Leslie U. Bradbury** (upsonlk@appstate.edu), and **Jeffrey M. Goodman** (goodmanjm@appstate.edu), Appalachian State University, Boone, N.C.

We will present a series of integrated lessons for elementary students focusing on various physical adaptations of animal skulls for particular diets and informational texts.

SESSION 6

Before and After Retirement: Practicalities and Possibilities (Gen)

(General) Ardrey, Hilton Center City

Teshia Birts (tbirts@nsta.org), Senior Manager, Chapter Relations, NSTA, Arlington, Va.

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

SESSION 7

Getting More Out of Your NCSTA Membership (Gen)

(General) Caldwell, Hilton Center City

Michelle T. Benigno (mtbteacher@yahoo.com), North Carolina Science Teachers Association, Fletcher

Come find out how to get more “bang for your buck” with your NCSTA membership. Get money, resources, and support to help you on your journey of professional growth.

SESSION 8

Dazzling Deceptions: Discrepant Events That Delight and Mystify! (Gen)

(General) Graves, Hilton Center City

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

Science experiences that seem contrary to “common sense” are great motivators.

SESSION 9

Introduction to Web 2.0 on the iPad (Gen)

(High School) Gwynn, Hilton Center City

William P. Burgess (wburgess@wcpss.net), Wake NC State STEM Early College High School, Raleigh, N.C.

Dorothy Holley, East Wake School of Integrated Technology, Wendell, N.C.

Join us for an introduction to Prezi and other user-friendly technology tools for the classroom. Bring your iPad.

SESSION 10

ASEE Session: Think Like an Engineer/Think Like a Scientist (Gen)

(Middle Level–College) South Carolina Hall, Hilton Center City

Meg Harkins and **Linda Hargrove** (lhargro6@uncc.edu), The University of North Carolina at Charlotte

Explore the differences between science and engineering professions and evaluate learning experiences from different perspectives. Walk away with full classroom-ready lesson plans.

SESSION 11

Tracking the Future of Electricity (Gen)

(General) Walker A/B, Hilton Center City

David McNelis (mcnelis@unc.edu), The University of North Carolina at Chapel Hill

An energy expert will discuss the alternative energy sources and emerging technologies that will be needed to meet global electricity demand in the 21st century.

SESSION 12

Anchor Away for STEM Education (Phys)

(Middle Level–High School) Independence, Westin

John E. Clark (johnedw@cfl.rr.com), Deltona High School, Deltona, Fla.

Let the Navy help you support Common Core literacy with an integrated science lesson. Hands-on STEM activities developed by science teachers for the Navy will be shared.

“Life begins at retirement.”

—Author Unknown

Join the NSTA Retired Advisory Board for an insightful information-sharing session. Fellow colleagues will share ideas about staying active both in and out of the profession.

Before and After Retirement—Practicalities and Possibilities

**Friday, November 8
2:00–3:00 PM**

Hilton Charlotte Center City
Ardrey

For more information on the Retired Members Advisory Board, contact Virginia Baltay, chair, at vbaltay@aol.com.

NSTA National Science Teachers Association

SESSION 13

Making Superfund Relevant to Your Students (Env)

(Middle Level–High School)

Kings, Westin

Sarah K. Yelton (sarah.yelton@unc.edu) and **Dana B. Haine** (dhaine@email.unc.edu), The University of North Carolina at Chapel Hill

Gain an understanding of EPA's Superfund program and learn inquiry-based strategies for introducing students to the causes, consequences, and cleanup of hazardous waste sites.

SESSION 14

NARST Session: Comparison of the Knowledge Structures and Problem-solving Ability of AP Physics Students in a Traditional Course and a Modeling Instruction Course: An Exploration (Phys)

(High School–College)

Queens, Westin

Kathy L. Malone, Einstein Fellow, National Science Foundation, Arlington, Va.

Dan Malone, Fox Chapel Area High School, Pittsburgh, Pa. This exploratory study tracks the knowledge structures and problem-solving abilities of AP Physics students taught using different pedagogies—traditional and modeling instruction.



SESSION 15

How Big Is a Billion Anyway? Teaching Scale in the Earth Science Classroom (Earth)

(Middle Level–High School)

Sharon, Westin

Rebekah M. Fuerst (rebekahm.fuerst@cms.k12.nc.us), Druid Hills Academy, Charlotte, N.C.

Samuel Fuerst (samuel.fuerst@dpsnc.net) and **Joshua Roberts** (joshua.roberts@dpsnc.net), Northern High School, Durham, N.C.

Scale can be difficult for all of us to understand. In this session, we will make sense of all the very small and very large numbers you come across in your teaching.

SESSION 16

Science Instruction for the 21st-Century Classroom (Gen)

(Middle Level–High School)

Trade, Westin

Stephanie S. Jacobs and **Dina Baxter** (dbaxter@lincolnk12.nc.us), Lincolnton Middle School, Lincolnton, N.C.

Discover formative assessment strategies to implement in your classroom and learn how to easily incorporate science literacy skills using a variety of resources and technological tools.

SESSION 17

Global Change in Local Places (Env)

(High School–College)

Tryon, Westin

Steven L. Babcock (sbabcock@lsu.edu), Louisiana State University Laboratory School, Baton Rouge

What was Earth's climate like in the past? How did dinosaurs survive in Antarctica? How can pollen help us answer these questions? Learn how your students can investigate climate using a free GIS tool called GeoMapApp. Emphasis will be placed on inquiry, research skills, and creation of geospatial imagery. Take home step-by-step student guides and teaching notes.

2:00–3:00 PM Workshops**Engineering: Integrate the 3Ds in the NGSS (Phys)**
(Elementary–Middle Level) 201 A/B, Convention Center

Karen L. Ostlund (klostlund@utexas.edu), NSTA Retiring President, and Retired Professor, The University of Texas at Austin

Experience a model lesson integrating the three dimensions (scientific and engineering practices, disciplinary ideas, and crosscutting concepts) in the Next Generation Science Standards.

STEM for Any Classroom: STEM Supports the Whole Curriculum (Gen)

(Elementary–Middle Level) 202 A/B, Convention Center

Manley W. Midgett (midgettmm@meredith.edu), Program Coordinator, Charlotte Area Conference, and North Carolina Dept. of Public Instruction, Raleigh

Use STEM activities to fully integrate the curriculum, challenge students, and meet science standards. Get an almost endless supply of ideas for hands-on activities.

Food for Thought II: Science—I’ve Got the “WRITE” Stuff (Gen)

(Preschool–Elementary) 203A, Convention Center

Kimberly T. Johnson (kimberly.johnson@ocsd5.net), Brookdale Elementary School, Orangeburg, S.C.

Looking to motivate your students? Come here! I’ve got the “WRITE” strategies to enhance your students’ writing skills as you integrate writing into your science curriculum.

**The Seismic Use of Smart Devices (Earth)**

(Middle Level) 207A, Convention Center

V. Barbara Pener (barbara.pener@kirkwoodschools.org), Nipher Middle School, Kirkwood, Mo.

Learn how to build fault block simulators for use with your smartphone or iPad. We will use the iSeismometer app to measure stored and released seismic energy. Complete lesson plans, lab sheets, and building instructions will be provided to each participant.

Trading Places: Science in Reading and Reading in Science (Gen)

(Elementary) 207 B/C, Convention Center

Christine A. Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

Join me as I model several activities that incorporate the use of trade books within science and/or reading lessons as well as provide a variety of resources for locating lessons.

Using Natural Hazards as a Hook in the Earth and Space Science Classroom (Earth)

(Elementary–High School) Ballroom A, Convention Center

Roberta Johnson (rmjohnsn@nestanet.org), NESTA, Boulder, Colo.

Margaret A. Holzer (mholzer@monmouth.com), Rutgers University, New Brunswick, N.J.

This NESTA workshop highlights effective approaches for leveraging dramatic natural events to engage your students and bring your classroom to life with high-impact hands-on activities!

“Stuff,” STEM, and Sustainability—Examining and Reengineering Systems, Resources, and Consumption (Gen)

(General) Charlotte Hall, Hilton Center City

Dave Wilton (dave@facingthefuture.org), Facing the Future, Seattle, Wash.

STEM offers tools to answer questions and create solutions. What are the questions? What needs solving? Explore the materials economy, systems, and sustainable design to create solutions in ways that benefit people, economies, and environments.

Using Squeak Etoys to Teach Technology Skills

(Gen)

(Middle Level–High School) Grand Ballroom A, Westin

Chris R. Gordon (gordoncr@uncw.edu) and **Shelby Morge** (morges@uncw.edu), University of North Carolina, Wilmington

Learn to use Squeak Etoys, a free open-source computer programming environment that allows users to model any phenomenon using drag and drop tiles.

Engage Engineering in a STEM-based Classroom

(Earth)

(Elementary–High School) Grand Ballroom C, Westin

Barry Fried (bfriedfab4@optonline.net), Retired Principal and STEM Advisor, East Meadow, N.Y.

Honora Dash (hdash@schools.nyc.gov), John Dewey High School, Brooklyn, N.Y.

Learn how STEM projects and partnerships create a multidisciplinary approach and real-world applications by providing authentic science experiences through engineering design projects, competitions, and live-data analysis to make science relevant by blending creativity, innovation, and inquiry to foster a deeper science understanding.

Spectroscopy: Stairway to the Stars (Earth)

(High School–College) *Grand Ballroom D, Westin*

Donna L. Young (donna@aavso.org), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

Identify emission lines and calculate temperatures in actual stellar spectra to construct the stellar classification system and correlate with stellar masses and probable evolutionary histories.

Same Genes, Different Fates (Bio)

(High School) *Harris, Westin*

Cathy P. Oakes (cpikeoakes@unc.edu) and **Amber Vogel**, Morehead Planetarium and Science Center, Chapel Hill, N.C.

Having trouble explaining and demonstrating gene expression? We'll share a modeling activity, concept mapping, lab options, and supplies to help you!

AAPT Session: Astronomy Make-and-Take (Phys)

(General) *Providence Ballroom I, Westin*

Mario Belloni (mabelloni@davidson.edu), Davidson College, Davidson, N.C.

Presider: **Gabriela A. Stefan** (gabrel_ro@yahoo.com), North Carolina School of Science and Mathematics, Durham

This make-and-take will focus on simple demonstrations that are useful for teaching astronomy at all levels.

ACS Session Four: Electromagnetic Radiation Energy (Chem)

(High School) *Providence Ballroom II, Westin*

Jerry A. Bell (j_bell@acs.org), American Chemical Society, Washington, D.C.

The energy of electromagnetic radiation (light) is evident to anyone standing in the sunlight on a bright summer day. Less obvious is the radiation emitted by the warmed planetary surface. The characteristics of these electromagnetic radiations and their consequences are important for maintaining life as we know it on Earth. Bring your USB flash drive and take away the presentation and activities to use in your class.

ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (Chem)

(Middle Level) *Providence Ballroom III, Westin*

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

Explore the periodic table and bonding through a card game, molecular animations, and video from the completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in middleschoolchemistry.com.

2:00–3:00 PM Exhibitor Workshops

Using the Engineering Design Process to Understand Heat (Chem)

(Grades 9–12) *208B, Convention Center*

Sponsor: LAB-AIDS, Inc.

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

A central theme of chemistry is heat transfer. We will explore thermal equilibrium and then design experiments to compare the thermal equilibrium point of mixtures of water. The activity will be followed up by using the engineering design process to construct and test a simple calorimeter that can be used to predict the equilibrium temperatures of water samples. This activity is from LAB-AIDS' *A Natural Approach to Chemistry* program.

Active Chemistry—Ahead of Its Time in Capturing the Essence of the NGSS and STEM (Chem)

(Grades 9–College) *213D, Convention Center*

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston

Before the NGSS or STEM, Dr. Arthur Eisenkraft recognized the need and developed this proven program, which can help you implement STEM and the essence of the Next Generation Science Standards. See the Engineering Design Cycle and learn how chemists, teachers, and science educators designed a true project-driven course for Next Generation students of all levels.

2:00–3:15 PM Exhibitor Workshops**The Next Generation Science Standards...and the Common Core? Reflection and Application of the Common Core ELA and Math Integration K–8 (Gen)***(Grades K–8)**208A, Convention Center*

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Reflect on the makeup of the Next Generation Science Standards: disciplinary core ideas, scientific and engineering practices, crosscutting concepts, and performance expectations. Apply this knowledge and understanding to integrate the Common Core English language arts and math connections. Leave with tools that can make resource selection simpler for your district.

Chemistry in the Community, 6th Edition—Reinventing Itself (Chem)*(Grades 8–College)**212 A/B, Convention Center*

Sponsor: American Chemical Society

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

Regis Goode (*rgoode@richland2.org*), Ridge View High School, Columbia, S.C.

Think you know ChemCom? Think again. Want your students thinking scientifically and learning how chemistry has an important role in their everyday lives? Learn about the exciting new features in the 6th edition of this engaging and groundbreaking chemistry text. We will perform text activities, share supplemental resources, and give prizes!

HHMI's *The Making of the Fittest: Got Lactase? The Co-evolution of Genes and Culture* (Bio)*(Grades 9–College)**213A, Convention Center*

Sponsor: Howard Hughes Medical Institute

Mary Colvard, Deposit, N.Y.

Join us for a screening of HHMI's short film, *Got Lactase? The Co-evolution of Genes and Culture!* Today, only about a third of human adults worldwide can digest lactose, the main sugar in milk. This film tells the fascinating story of how this trait evolved in the last 10,000 years of human history—a story that brings together archaeological and genetic evidence. Learn about and receive brand-new resources to help you bring this memorable example of recent human evolution into your classroom. Materials are appropriate for all levels of biology, including middle school, high school, and undergraduate.

The Next Generation of Notebooking (Gen)*(Grades 6–12)**217 B/C, Convention Center*

Sponsor: LearnEd Notebooks

Donn Kirkwood, Fairgrove Middle School, Fairmont, N.C.

Doug Miller (*dougml@learnednotebooks.com*), LearnEd Notebooks, Lincolnton, N.C.

Learn how to bridge the gap between the traditional classroom and technology-based instruction by using a unique notebooking approach. LearnEd Notebooks offers programs aligned with the Next Generation Science Standards for biology and middle school science. Versatile enough for all types of learners, our programs deliver engaging content in a streamlined format. Join us for free lesson plans and class set giveaways.

Foldables® + Science Standards + Envelopes = A Winning Combination (Gen)*(General)**217D, Convention Center*

Sponsor: Dinah-Might Adventures, LP

Nancy F. Wisker, Dinah Zike Academy, Comfort, Tex.

In this fast-paced, interactive session, you will cut, fold, and more as you transform basic classroom materials and manila envelopes into Foldables specifically designed to address science curriculum standards. See the possibilities unFOLD before you and leave with ideas ready to use on Monday that are evidence based, kinesthetic, and integrative.

Volcanoes—The Good, the Bad, and the Ugly (Earth)*(Grades 6–12)**218 A/B, Convention Center*

Sponsor: Simulation Curriculum Corp.

Seth Meyers (*mgabber@sympatico.ca*), Simulation Curriculum Corp., Minnetonka, Minn.

The destructive potential of volcanoes is well known. Using Simulation Curriculum's *The Layered Earth*, we will investigate these hazards and discover any benefits. The virtual model allows students to simulate volcanic eruptions, examine historic volcanic activities, and learn about the "Ugly" that may be hiding in our own backyard.



2:00–3:30 PM Exhibitor Workshop

Physics and Physical Science with Vernier (Phys)

(Grades 7–College) 209 A/B, Convention Center

Sponsor: Vernier Software & Technology

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

In this hands-on workshop, we will use various digital tools such as probeware to conduct experiments from our popular physics and physical science lab books. Use LabQuest Mini with a computer or LabQuest 2 as a stand-alone device, with a computer, or wirelessly to iPad and BYOD environments.

3:00–4:30 PM Exhibitor Workshop

Engineer the Tools for Inquiry of Candy Food Dyes (Gen)

(Grades 7–College) 213 B/C, Convention Center

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

What's in your candy? In this hands-on workshop, extract colorful food dyes from candy, and separate and identify them using a STEM-integrated do-it-yourself electrophoresis box. This inquiry-based activity is a great way to introduce pipetting, electrophoresis, and solution-making skills in addition to chemistry, physics, and engineering concepts.

3:00–5:00 PM Short Course



Using Literacy to “Unpack” Content and Build Prior Knowledge (SC-7)

(Middle Level–High School) Graham, Hilton Center City

Tickets Required; \$29

Karen Meadows (karen.meadows@cms.k12.nc.us), Collinswood Language Academy, Charlotte, N.C.

For description, see page 37.

3:30–4:30 PM Presentations

SESSION 1

The True Story of Inquiry-based Learning (Gen)

(Elementary–Middle Level) 205, Convention Center

Amy C. Underwood (amy.underwood@woodward.edu) and **Danise Fields** (danise.fields@woodward.edu), Woodward Academy, College Park, Ga.

Join experienced teachers as they answer the tough questions about the benefits and challenges of inquiry-based instruction. Templates, rubrics, and online resources will be provided.

SESSION 2



Let's Get Physical: Force and Motion at the Primary Level (Phys)

(Preschool–Elementary) 206 A/B, Convention Center

Juliana Texley, NSTA President-Elect, and Palm Beach State College, Boca Raton, Fla.

Ruth Ruud (ruth.ruud@yahoo.com), Venice, Fla.

Don't look now—but the Common Core asks that you teach physical science as early as kindergarten, and the NGSS have very specific goals for the early primary. No more procrastinating. The good news is that you already have your equipment. Come get easy activities, lit links, and basic teacher background so that you can start right away.

SESSION 3

Re-WRITING Science Incorporating Common Core (Gen)

(Middle Level) 215, Convention Center

Angela McDowell, Sedgefield Middle School, Charlotte, N.C.

Discover student-engaging strategies incorporating Common Core State Standards into middle school science lessons, through a range of writing journals, science fairs, freewrites, and personification stories.

SESSION 4**Flipping Your Science Class: Turning Science Class on Its Head (Gen)***(General)**Ardrey, Hilton Center City*

Matthew C. Hartman (mhartman@ecybermission.com), eCYBERMISSION Content Coordinator, NSTA, Arlington, Va.

The flipped classroom is something that has been talked about quite a bit in recent years. But what exactly does it mean to “flip” your classroom? Can students really get as much out of lessons taught in a flipped classroom as from the traditional approach? This session will introduce you to methods that can be used to flip the classroom and will include information about the eCYBERMISSION competition and how it can be integrated into a flipped science class.

SESSION 5 (two presentations)*(General)**Caldwell, Hilton Center City***SCST Session: Using Mainstream Science Fiction Films as an Instructional Strategy to Teach Nature of Science and Scientific Inquiry (Gen)**

Ian C. Binns (ian.binns@uncc.edu), The University of North Carolina at Charlotte

This session will focus on using science fiction films as instructional tools for teaching aspects of the nature of science and scientific inquiry.

SCST Session: Introducing, Nurturing, and Strengthening Sustainability Concepts with Preservice Teachers and the Greater University Community (Env)

Kate Popejoy (kate.popejoy@uncc.edu), The University of North Carolina at Charlotte

Join me for a discussion of how to integrate sustainability into the curriculum of science methods courses, and also how to integrate with the greater university sustainability community.

SESSION 6**Magical Illusions for Science—It’s Showtime! (Gen)***(General)**Graves, Hilton Center City*

Alan J. 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.

SESSION 7**Fun Formative Assessments and Common Core (Gen)***(General)**Gwynn, Hilton Center City*

Stephanie R. Grady (stephaniergrady@gmail.com), Lakewood High School, Salemburg, N.C.

Let me introduce you to formative assessments that are fun and that give you quick feedback with data you can use for reteaching and retooling to meet the Common Core State Standards objectives.

SESSION 8**Zack Packs: Increasing Science Literacy and Inquiry Skills in Special Education Students (Gen)***(General)**Walker A/B, Hilton Center City*

Joann R. Blumenfeld (jblumenfeld@wcpss.net), Dillard Drive Middle School, Raleigh, N.C.

Zack Packs is a project that helps special education students understand science concepts, improve science literacy skills, reinforce skills learned in class, become independent learners, increase inquiry and problem solving skills, improve the ability to follow directions and analyze information to understand Common Core science curriculum, and encourage them to become citizen scientists as well as consider jobs in science.

SESSION 9**Corrosion Is Everywhere—Use It to Make Chemistry Relevant and Fun (Chem)***(High School)**Kings, Westin*

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

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

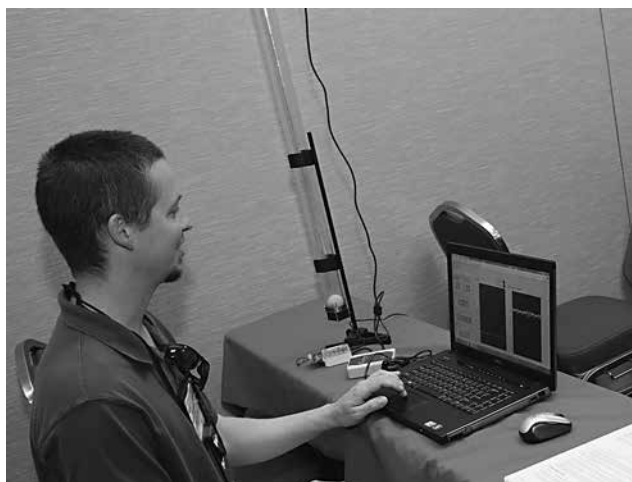
Use corrosion to teach practical applications of chemistry concepts. Make reactivity, oxidation/reduction, solution chemistry, and corrosion engineering exciting and relevant. Handouts!

SESSION 10**AAPT Session: Using Video and Animation in Physics Instruction (Phys)***(General)**Providence Ballroom I, Westin*

Loren M. Winters (winters@ncssm.edu), North Carolina School of Science and Mathematics, Durham

Presider: **Jeffrey R. Regester** (jregester@gmail.com), Greensboro Day School, Greensboro, N.C.

In addition to describing the use of video and animation in teaching high school physics, I’ll provide a historical perspective on using 19th-century optical toys.



SESSION 11

Using Modeling Activities in the High School Chemistry Class (Chem)

(High School/Supervision)

Queens, Westin

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

Visualization is difficult for many students. Join me for a discussion and demonstration of several modeling activities you can use in your chemistry class.

SESSION 12 (two presentations)

(Middle Level–High School)

Sharon, Westin

Model Ecosystems (Bio)

Michael Desautels, Georgetown Day School, Washington, D.C.

Technology integration with a working ecosystem—come learn how students collect data and write observations using a model ecosystem, blogs, and Google Docs.

Edible Models in Biology from Inclusion to AP (Bio)

Adrienne M. Lefler, Lake Norman High School, Mooresville, N.C.

Whet your students' appetites for learning. See and take home modeling activities that use food to help students understand key concepts in biology courses of all levels.

SESSION 13

Digital Resources for Teachers and Students (Gen)

(Middle Level–High School/Informal)

Trade, Westin

Beverly Frommel, South Pointe High School, Rock Hill, S.C.

Come learn about web- and iPad-based resources and simulations you can use today! Bring your technology and share your favorites, too!

3:30–4:30 PM Workshops

Science & Children—A Year of Inquiry (Gen)

(Preschool–Elementary)

201 A/B, Convention Center

Linda Froschauer (fro2@me.com), 2006–2007 NSTA President, and Field Editor, *Science & Children*, Westport, Conn. The Next Generation Science Standards support inquiry as a teaching strategy. Learn ways to infuse components of inquiry into your curriculum.

Engineering Understanding of a Health Crisis (Gen)

(Informal Education)

202 A/B, Convention Center

Diane H. Johnson (diane.johnson@uky.edu), **Susan Mayo** (susan.mayo1961@att.net), and **Robin L. Cooper** (rlcoop1@uky.edu), University of Kentucky, Lexington

Presider: Robin L. Cooper

Engineer a tabletop model for use at a “health fair” to help educate students and the public about stressors on the circulatory system.

Making the Interdisciplinary Connection Between Literacy and Science (Gen)

(Elementary)

203A, Convention Center

Malakia Wright (malakiaw@gmail.com), Clayton County Public Schools, Jonesboro, Ga.

Sancia Berkley (sancia.joseph@clayton.k12.ga.us), Rivers Edge Elementary School, Fayetteville, Ga.

Gain a common understanding of literacy development and its importance in students' ability to demonstrate proficiency using hands-on activities and technology.

NSTA Press® Session: Classroom Activities for *Stop Faking It: Force and Motion* (Phys)

(Elementary–High School)

203B, Convention Center

Bill Robertson (wrobert9@ix.netcom.com), Bill Robertson Science, Inc., Woodland Park, Colo.

In response to teacher demand, there is now a set of classroom activities on Force and Motion to accompany the *Stop Faking It! Force and Motion* book. We incorporate the learning cycle in an easy-to-use, teacher-friendly, research-based curriculum for upper elementary and conceptually based high school curricula that can help your students truly understand force and motion concepts. Join the author for activities from the book. *Lame jokes quite possible.*



Make a Bouncy Ball! Science and Math Connections to Manufacturing a Fun Product (Gen)

(General) 207 B/C, Convention Center

Carrie O. Kouadio (*carrie.kouadio@gmail.com*) and **Joe Muskin**, University of Illinois, Urbana

Tara Bell (*tbell@ista-il.org*), Booker T. Washington STEM Academy, Champaign, Ill.

Discover how to make a bouncy ball with your science or math class while addressing important NGSS and Common Core math standards.

Papermaking for Inquiry-based Learning (Env)

(Elementary–Middle Level) 207D, Convention Center

Brian R. Fannon (*brfannon@uncg.edu*), The University of North Carolina at Greensboro

Jessica Branch, Montlieu Academy of Technology, High Point, N.C.

This workshop will demonstrate papermaking techniques adapted to the classroom and provide options for integrating this project into multiple inquiry-based STEM learning areas.

High-Impact Classroom Earth Science in a STEM World (Earth)

(Elementary–High School) Ballroom A, Convention Center

Roberta Johnson (*rmjohnsn@nestanet.org*), NESTA, Boulder, Colo.

Margaret A. Holzer (*mholzer@monmouth.com*), Rutgers University, New Brunswick, N.J.

Peter Dorofy (*pdq72@optimum.net*), Burlington County Institute of Technology, Medford, N.J.

This NESTA workshop presents exemplary activities addressing fundamental concepts in Earth system science with an emphasis on the solid Earth, STEM practices, and the NGSS.

Rev It Up with a Showcase of Polymer Demonstrations! (Gen)

(Middle Level–College) Charlotte Hall, Hilton Center City

Gina M. Barrier (*gina_barrier@ncsu.edu*), The Science House, North Carolina State University, Lenoir

Join The Science House on a whirlwind tour of the fascinating world of materials science as it applies to NASCAR and you! Inquiry activities included.

ASEE Session: Engineering in Support of Middle Grades Science and Math (Gen)

(Middle Level/Supv.) South Carolina Hall, Hilton Center City

Susan A. Pruet (*spruet@maef.net*), **Melissa Dean** (*mdean@maef.net*), and **Judy F. Duke** (*jduke@maef.net*), Mobile Area Education Foundation, Mobile, Ala.

Through hands-on and interactive experiences, learn about a “Change the Equation” engineering-focused middle grades curriculum involving design challenges that relate to the Grand Challenges for Engineering.

Systems Engineering for Life Sciences (Bio)

(Elementary–High School) Grand Ballroom D, Westin

Janet A. Standeven (*pstandeven@adelphia.net*), Lambert High School, Suwanee, Ga.

Find out how to use paper modeling to lead your students to understand systems biology and engineering. Implement engineering into the life sciences.

Supporting Common Core Through Science Writing (Bio)

(High School) Harris, Westin

Tamara Lookabaugh, Moore High School, Moore, Okla.

Engage in science writing activities that support language arts and Common Core math by focusing on experiments and case studies involving the NGSS.

ACS Session Five: Rates: Concentration and Half-Life (Chem)

(High School) Providence Ballroom II, Westin

Jerry A. Bell (*j_bell@acs.org*), American Chemical Society, Washington, D.C.

The rates of chemical reactions cover an enormous range, from almost instantaneous explosions to geological changes that may take millions of years. Half-life is a familiar way to characterize many reactions, including the decay of radioactive nuclei often used as “clocks” to date past events. Bring your USB flash drive and take away the presentation and activities to use in your class.

ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences (Chem)

(Middle Level) Providence Ballroom III, Westin

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

Explore water’s characteristics and what makes water a polar molecule through hands-on activities and molecular animations from the completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in *middleschoolchemistry.com*.

3:30–4:30 PM Exhibitor Workshop

Integrate Math Modeling and Problem Solving Through Racing (Phys)

(Grades 6–12)

208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

Problem solving and math modeling are learned skills. Join us to explore and learn to explain them. In this workshop, you'll maximize the power of electric radio-controlled vehicles through data collection and graphing and then apply the same process to solve a number of issues professionals face. You'll maximize torque through gearing, apply Newton's laws of motion to get the best handling, and use battery chemistry to explain an effective driving strategy...and you'll take home lessons (learned and in print). This activity is from the new Race Engineering Certifications curriculum module, part of the Ten80 Student Racing Challenge.

4:00–5:15 PM Exhibitor Workshop

Carolina Investigations™ for AP Chemistry (Chem)

(Grades 9–12)

208A, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Bring inquiry to your classroom with new Carolina chemistry activities and see your classroom come alive. Carolina's new labs help students develop essential chemistry practices, understand core chemistry concepts, and learn chemistry through inquiry per the new AP Chemistry curriculum. Experience three different activities in this hands-on workshop. Handouts/free giveaways!

5:00–5:30 PM Presentations

SESSION 1

Galileo: Lessons in Literacy (Earth)

(Informal Education)

204, Convention Center

Ken Brandt, Robeson Planetarium, Lumberton, N.C.

"Going viral" was hard to do in Shakespeare's day. Yet, a contemporary of Shakespeare's—Galileo Galilei—managed to do just that, becoming world famous in his lifetime. Come see why science and literacy meet their finest exemplar in Galileo!

SESSION 2

SCST Session: Integrating Geoscience Education and Environmental Monitoring on Yap, Micronesia

(Env)

(High School–College)

Caldwell, Hilton Center City

Reed M. Perkins (perkinsr@queens.edu), Queens University of Charlotte, N.C.

Hear about an ongoing effort to both bolster undergraduate knowledge of geospatial technology and monitor environmental quality on the island of Yap, Micronesia.

SESSION 3

A Kenan Fellow Presents 21st-Century Health Care in the Science Classroom (Gen)

(High School)

Trade, Westin

Whitney L. Masterson (wmasterson@wcpss.net), Wakefield High School, Raleigh, N.C.

Find out how to prepare your students to be college and career ready by integrating real-world concepts through technology with health care resources from a 2013 Kenan Fellow.

5:00–6:00 PM Presentation**SESSION 1****Science Plus Literacy—Blended and Seamless (Gen)***(Middle Level)**205, Convention Center*

Lucy B. Laffitte (*llaffitte@unctv.org*), UNC-TV: North Carolina Science Now, Research Triangle Park

Inspire middle school literacy! Blended lessons to engage students in science topics while supporting ELA Common Core are FREE at www.pbslearningmedia.org. Raffle!

SESSION 2

We Are Scientists! Starting Off the School Year in a First-Grade Classroom Focused on Integrating Science and Common Core State Standards on Literacy (Gen)

*(Elementary)**215, Convention Center*

Patricia Bricker (*bricker@email.wcu.edu*), Western Carolina University, Cullowhee, N.C.

Learn specific ideas for a beginning-of-the-year science unit designed to excite students, lay the foundation for a productive year of investigations, and meaningfully incorporate literacy.

SESSION 3

AMSE Session: Creating Project-Based Learning (PBL) Experiences (Gen)

*(Middle Level—College)**Graves, Hilton Center City*

Robert L. Ferguson (*r.l.ferguson1@csuohio.edu*), AMSE President, and Cleveland State University, Cleveland, Ohio
Learn more about PBL as a special case of inquiry used to invigorate any curriculum. Discussion centers on examples from urban high schools.

SESSION 4

Understanding the Parent-Teacher-Child Triad in STEM Education (Gen)

*(General)**Gwynn, Hilton Center City*

Evelyn Baldwin (*ebaldwin@wcpss.net*) and **Heather Davis** (*hadavis2@ncsu.edu*), North Carolina State University, Raleigh

Building community in a STEM school involves laying a foundation for parent-teacher-student communication.

SESSION 5**Top 10 Conundrums of Teaching Science Online****(Bio)***(General)**Independence, Westin*

Apryl Nenortas (*apryl.nenortas@clovis.edu*), Clovis Community College, Clovis, N.Mex.

Explore the experiences of teaching high school and undergraduate science lab courses in an online environment. Comparisons will be shared between online and live classes and we'll discuss some of the problems of teaching science online—labs, cheating, student interaction, maintaining rigor and quality, and achieving student independence.

SESSION 6

Basic Polymer Science for the High School Classroom (Chem)

*(High School)**Kings, Westin*

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

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

Simple demonstrations, labs, and activities bring polymers into your curriculum and make it relevant. Concepts include formation, classification, structure, and properties. Handouts!

SESSION 7

Using Socratic Discourse to Foster an Environment of Verbal Literacy in Science Classrooms: Strategies and Structures (Gen)

*(Supervision/Administration)**Queens, Westin*

Rebecca L. Austin, Forsyth High School, Cumming, Ga.

Model a Socratic discourse that would be appropriate for science learners of any age (with modification). Take home a CD of materials.

SESSION 8

The Biology, Physiology, and Social Implications of the Methamphetamine Epidemic (Bio)

*(High School—College)**Sharon, Westin*

Thomas W. Crawford (*tcrawford@tjca.org*) and **C. Philip Byers** (*cphilipbyers@gmail.com*), Thomas Jefferson Classical Academy, Mooresboro, N.C.

The physiology of meth addiction, its effect on local communities, and possible epigenetic manifestations will be addressed. Participants will construct a low-cost histone-DNA model.

SESSION 9

Strategies for Purposeful Problem Solving (Phys)

(Middle Level—College)

Tryon, Westin

Jeff Milbourne (milbourne@ncssm.edu) and **Zodiac T. Webster** (websterz@ncssm.edu), North Carolina School of Science and Mathematics, Durham

Explore the importance of open-ended, real-world problem solving, problem-solving research, and techniques for helping students improve their problem-solving skills.



5:00–6:00 PM Workshops

Engagement Without Learning Is Just Fun (Gen)

(Elementary—Middle Level)

201 A/B, Convention Center

Dacia Jones, Catawba County Schools, Claremont, N.C.

Learn how to engage your students with authentic activities that cause learning to happen! Discover real-world activities for the classroom.

“Sound” Literacy Strategies (Phys)

(Elementary)

203A, Convention Center

Amethyst Klein (amethyst.klein@cms.k12.nc.us), Winterfield Elementary School, Charlotte, N.C.

Darlene Petranick (d.petranick@cms.k12.nc.us), Lebanon Road Elementary School, Charlotte, N.C.

Why recreate the wheel? Learn five new strategies that you can use repeatedly to introduce, engage, explore, assess, and extend science in your classroom.



MacGuyver Windmills: Wind Power and Energy Transfers (Phys)

(Elementary—Middle Level/Informal)

207 B/C, Convention Center

Joseph T. Rand, KidWind Project, St. Paul, Minn.

Engage elementary and middle school students in the important engineering concepts behind wind power, including blade design, energy transfers, simple machines, ratios, and more.

Chia Seeds Promote Cross-Cultural Inquiry in the Elementary Classroom (Gen)

(General)

Charlotte Hall, Hilton Center City

Caitlin Fine (caitlin.fine@apsva.us) and **Andrea Cordero** (andrea.cordero@apsva.us), Francis Scott Key Elementary School, Arlington, Va.

As the subject of science inquiry activities, chia seeds are easy to work with...and they have multiple interdisciplinary connections that motivate learning.



NSTA Press® Session: Argumentation in the Science Classroom (Bio)

(General)

203B, Convention Center

Sharon Schleig (sschleig@purdue.edu), Purdue University Calumet, Hammond, Ind.

Victor Sampson (victor.sampson@gmail.com), Florida State University, Tallahassee

Emphasis will be placed on the models that effectively embed argumentation in science instruction. Join us for a review of activities from the newest NSTA book in argumentation for science teachers and the research that supports it.



EarthScope: A Hubble Space Telescope for Earth's Interior That's in Your Neighborhood! (Earth)

(Middle Level—High School)

207A, Convention Center

Patrick McQuillan (mcquillan@iris.edu), IRIS, Washington, D.C.

Learn how your students can use data from a state-of-the-art continental-scale seismograph array to visualize seismic waves and explore Earth structure and earthquake hazards.

ASEE Session: Engineering the Future with TeachEngineering.org (Gen)

(General)

South Carolina Hall, Hilton Center City

Elizabeth Parry (elizabethparry204@gmail.com), North Carolina State University, Raleigh

Become acquainted with *TeachEngineering.org*, a free online collection of standards-based engineering lessons and hands-on activities that help integrate innovative engineering trends into K–12 classes.

Estuaries! (Env)

(General)

Grand Ballroom C, Westin

Lori Davis (lori.c.davis@ncdenr.gov), North Carolina Coastal Reserve, Beaufort

Want to learn more about estuaries and take home some activities to use in your classroom? If so, come hear about the North Carolina Coastal Reserve and National Estuarine Research Reserve. Activities will be presented and you will have a chance to participate.

NASA’s Dangerous Mathematics: Black Holes and Dividing by Zero (Earth)

(High School) *Grand Ballroom D, Westin*

Janet L. Moore (janetmoore@gmail.com), NASA/Sonoma State University, Rohnert Park, Calif.

Attempt to make a black hole in your classroom while investigating basic mathematics operations through a series of hands-on activities. Free NASA materials!

Experiencing Science in the Classroom Using Guided Inquiry (Bio)

(High School) *Harris, Westin*

Mary E. Bradbury-Bailey, Clarke County School District, Athens, Ga.

ALL students deserve to “experience” science in its fullness. This workshop focuses on using guided inquiry as a tool to enhance science literacy.

AAPT Session: Physics from the Junk Drawer (Phys)

(General) *Providence Ballroom I, Westin*

Scott Ragan, North Carolina State University, Raleigh

This workshop emphasizes simple activities, inquiry, and familiar materials. It is for anyone who enjoys fun physical science demonstrations and activities covering multiple physics topics.

ACS Session Six: Acid/Base Reactions: Carbon Dioxide (Chem)

(High School) *Providence Ballroom II, Westin*

Jerry A. Bell (j_bell@acs.org), American Chemical Society, Washington, D.C.

Aqueous solutions of carbon dioxide, including your blood and the oceans, are essential to life on Earth. Upsetting the acid/base balance of these important solutions can be a matter of life and death. Bring your USB flash drive and take away the presentation and activities to use in your class.

ACS Middle Level Session: Chemical Change—Breaking and Making Bonds (Chem)

(Middle Level) *Providence Ballroom III, Westin*

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

Explore the production of a gas, a precipitate, and changes in temperature through hands-on activities and molecular animations from the completely developed 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans in middleschoolchemistry.com.

5:00–7:00 PM Reception

Reception at McColl Center for Visual Art

First Floor, McColl Center for Visual Art

McColl Center for Visual Art invites you to a special gallery reception. Visit with kinetic artist Joseph Herscher and view his exhibition “Technology Sphere of Impact” in the Center’s first floor galleries. Inspired by Pulitzer prize–winning cartoonist Rube Goldberg’s absurd and humorous inventions, Herscher employs principles of physics and engineering as well as wit and humor to create highly complicated devices that perform simple energy-saving tasks.

Be sure to meet the Center’s seven other resident artists whose works are featured on the second and third floors. All ages are welcome.

Free admission with cash bar and dollar beers.

Note: You can also visit on Thursday or attend a special performance of Herscher’s machine on Saturday between 1:00 and 5:00 PM. McColl Center for Visual Art is located at 721 N. Tryon Street, a short walk or trolley ride from the Convention Center. Center hours are 3:00–9:00 PM on Thursday and Friday, and 11:00 AM–6:00 PM on Saturday. Parking and admission are free.

5:00–9:00 PM Reception

Free Open House at Discovery Place

First Floor, Discovery Place

NSTA Charlotte conference attendees are invited to this free Open House at Discovery Place. The entire museum will be open, including showings of *Hubble*, our IMAX film for the 2013–2014 school year.

At Discovery Place, science is brought to life through interactive exhibits and explosive experiments. Discovery Place is located at 301 N. Tryon Street, a short walk or trolley ride from the Convention Center.



—Photo of NASCAR Hall of Fame courtesy of CRVA/ Visit Charlotte

7:00–8:00 AM Breakfast

South Carolina Science Council (SC)² Breakfast

North Carolina Hall, Hilton Center City

Please join the South Carolina Science Council (SC)² for breakfast sponsored by Carolina Biological Supply. Fun! Door Prizes! Visit southcarolinascience.org for more information.

8:00–8:30 AM Presentation

SESSION 1

Spicing Up After-School Science with SALSA (Bio) (General) *212 A/B, Convention Center*

Jory P. Weintraub (jory@nescent.org) and **Sarah Cohn**, National Evolutionary Synthesis Center, Durham, N.C.

Rafael Rubio de Casas, University of Granada, Spain

Presider: Jory P. Weintraub

SALSA (Seeing and Learning Science After-school) is an activity-based program that teaches evolution to K–6 students in an after-school setting, in both English and Spanish.

8:00–9:00 AM Presentations

SESSION 1

Genetic Engineering on Steroids: BioBuilding a Cell to Do What You Want (Bio)

(Informal Education) 204, Convention Center

Andrea D. Cobb (adcobb@fcps.edu), Thomas Jefferson High School for Science and Technology, Alexandria, Va.

Synthetic Biology is part science, part engineering, and part imagination and design. BioBuilder's curriculum relies on molecular biology and authentic research to spark engagement and learning.

SESSION 2



Vertically Aligning the Science Curriculum (Env) (High School) *205, Convention Center*

Mark A. Townley (mtownley@wcpss.net), Holly Springs High School, Holly Springs, N.C.

Kimberly Mawhiney (kmawhiney@currituck.k12.nc.us), Currituck County High School, Barco, N.C.

We'll show you several different lesson plans that give students an opportunity to build on their knowledge as they matriculate through the different core science classes to AP Environmental.

SESSION 3



Science in the One-to-One Classroom (Gen) (Middle Level–High School) *206 A/B, Convention Center*

Lindsay Knippenberg (lindsayknippenberg@mgd.k12.nc.us) and **Samone Graham** (samonegraham@mgd.k12.nc.us), Mooresville High School, Mooresville, N.C.

What does a successful one-to-one science classroom look like? Gain management tips, activities, and lesson ideas for incorporating laptops in your science class.

SESSION 4

Science the UDL Way! (Gen) (Elementary) *211 A/B, Convention Center*

Doris K. Tyler (dtyler@ncsu.edu), North Carolina Central University, Durham

Deandra A. Scott (deandra.scott@chccs.k12.nc.us), Rashkis Elementary School, Chapel Hill, N.C.

Maria Helgeson, Estes Hills Elementary School, Chapel Hill, N.C.

Presider: Judith Decherd Jones (jjonesae@gmail.com), Retired Educator, Chapel Hill, N.C.

Universal design for learning helps us to meet the needs of diverse learners in the elementary classroom. Specific lesson plans will be provided.

SESSION 5

NOAA in Your Backyard: Professional Development Opportunities and Local Educator Resources (Gen) (General) *Gwynn, Hilton Center City*

Britta Culbertson (brittaculbertson@gmail.com), Einstein Fellow, NOAA Office of Education, Washington, D.C.

NOAA has hundreds of facilities and professional communicators across the nation. Get connected to guest speakers, field trips, and local and national professional development opportunities.

SESSION 6

Using Teacher Logs to Reflect on Practice and Document Instructional Practices (Gen) (General) *Walker A/B, Hilton Center City*

Karen J. Charles (kcharles@rti.org) and **Olivia Rice** (onix@rti.org), RTI International, Research Triangle Park, N.C.

Teacher logs are an easy, efficient method for capturing informative snapshots of classroom teaching and learning and helping teachers and administrators reflect on instructional practices.

SESSION 7

Including Students with Disabilities—Strategies That Work (Gen)

(Middle Level—High School) *Independence, Westin*

Lori A. Howard, Marshall University, South Charleston, W.Va.

Abigail Norfleet James (ajames@anj-online.com), University of Virginia, Falls Church

Ed Linz (coachlinz@cox.net), Author and Education Consultant, Springfield, Va.

Join us as we demonstrate how to use mnemonics, adapt lab experiments, and offer practical solutions to instructional challenges when including students with disabilities in science classes.

SESSION 8

Using the Online “Hubble Exoplanet Classroom” in Grades 8–12 Classrooms! (Earth)

(Middle Level—High School) *Kings, Westin*

Starr Jordan (starr@explorecml.org), Children’s Museum of the Lowcountry, Charleston, S.C.

Kathleen Low, College of Charleston, S.C.

Hubble Exoplanet Classroom is a free, interactive website using exoplanet studies to enhance physical science, physics, and astronomy curricula with student-driven lessons.

SESSION 9

Square Pegs (Gen)

(Middle Level—High School) *Providence Ballroom III, Westin*

Juliana Texley (jtexley@att.net), NSTA President-Elect, and Palm Beach State College, Boca Raton, Fla.

They are in every school community—learners with such divergent learning or behavioral styles that they simply can’t

fit in. They may appear sporadically in your class or go to an alternative center, an evening program, or an off-site institutional setting. Science for All must include the “square pegs,” too.

SESSION 10

Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (Chem)

(High School) *Sharon, Westin*

Kenetia Thompson (k_thompson2@acs.org), American Chemical Society, Washington, D.C.

Learn top strategies for writing a fundable grant that improves your students’ chemistry experience.

SESSION 11

Shifting Student Thinking to Incorporate Evidence-based Claims (Gen)

(Middle Level—High School) *Trade, Westin*

Rebekah Carter, Pendleton High School, Anderson, S.C.

Robbie L. Higdon (rhigdon@clemsun.edu), Clemson University, Greenville, S.C.

Elizabeth M. Moon (emoon@clemsun.edu), Dreher High School, Columbia, S.C.

Stephanie Green, Belton Honea Path High School, Honea Path, S.C.

Explore shifts within the science classroom with the coming implementation of Common Core State Standards and its impact on student thinking and use of evidence-based claims.

8:00–9:00 AM Workshops

Creativity Is Back: Targeting Science Motivation, Learning, and Engagement with Unique Unit-based Student Portfolios (Gen)

(Elementary—Middle Level) *202 A/B, Convention Center*

Jessica R. Chittum (chittumj@vt.edu), Virginia Tech, Blacksburg

Engage in creating ALPS (Active Learning Portfolios for Science), a unique take on student-created, personalized portfolios targeting learning, motivation, engagement, and holistic assessment.

Soar with Inquiry: The Science of Flight for Your Elementary Science Classroom (Phys)

(Elementary) *203A, Convention Center*

Steven Bernhisel (steveb@linfield.edu), Linfield College, McMinnville, Ore.

Let’s explore flight with engaging, inexpensive, and safe activities that foster science inquiry and exploration.

 NSTA Press® Session: Uncovering Students' and Teachers' Ideas in Science (Gen)

(General) 203B, Convention Center

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, Jefferson, Maine

Learn about and experience interactive strategies for uncovering learners' ideas for the purpose of informing instruction and promoting learning.

 Science Vocab Out of the Box: Unique Ways to Help Students Master Vocab (Gen)

(Elementary–Middle Level) 207A, Convention Center

Jessica K. Miller (jessica.k.miller.edu@gmail.com), Sugar Creek Charter School, Charlotte, N.C.

Are your students overwhelmed by “scientific jargon”? Move away from drills and get that vocab into your students' hands with these puzzles, interactive GOs, and techniques!

ELISA: An Immunology Lab for Middle Grades Students (Bio)

(Middle Level) 207 B/C, Convention Center

Nicholas Hoffmann (nicho@email.unc.edu), Morehead Planetarium and Science Center, Chapel Hill, N.C.

Come learn how to introduce and teach an ELISA procedure in your middle school classroom. Some materials will be available.

Energy Education + Common Core = Improved Literacy (Gen)

(Elementary) 207D, Convention Center

Amy Constant (aconstant@need.org), The NEED Project, Manassas, Va.

Use materials from NEED to improve literacy and to teach your students about energy sources. Common Core State Standards relating to literature, drama, and informational text will be matched to free resources in energy education.

Inquiry in Action: Investigating Matter Through Inquiry (Chem)

(Elementary–Middle Level) 216 A/B, Convention Center

Patricia M. Galvan (p_galvan@acs.org), American Chemical Society, Washington, D.C.

Conduct simple tests on four identical-looking household liquids to tell them apart. Molecular model animations show why each liquid behaves as it does. Everything is at www.inquiryinaction.org.

Promoting Students as Researchers in Science and Engineering (Gen)

(Elementary–High School) Charlotte Hall, Hilton Center City

Judy B. Day (judy_day@ncsu.edu), North Carolina State University, Raleigh

Help students learn how scientists approach problems and seek answers. Discover how to guide students in planning and conducting independent research.

Do NOT Sit Down and Be Quiet! (Gen)

(General) South Carolina Hall, Hilton Center City

Carol L. Moore (carol_moore@catawbасchools.net), Catawba County Schools, Newton, N.C.

Rather than training students to sit down and be quiet, participants will learn instructional strategies to manage student collaboration and movement.

Ice Core Records: Earth Systems, Volcanoes, Solar Proton Events, and Supernovas (Earth)

(High School–College) Grand Ballroom B, Westin

Donna L. Young (donna@aavso.org), Chandra E/PO Office, SAO/NASA, Bullhead City, Ariz.

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

Genomics and Personalized Medicine: Teaching Tomorrow's Science (Bio)

(High School–College) Providence Ballroom I, Westin

Tim Herman (herman@msoe.edu) and **Shannon Colton** (colton@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Learn how genome sequencing is done using engaging hands-on teaching tools and explore examples of how genome sequencing has helped to diagnose and treat patients.

Hands-On Activities for Teaching the Basic Physical Quantities of Mechanics (Phys)

(Middle Level–High School) Providence Ballroom II, Westin

Tim Ritter (tim.ritter@uncp.edu), **Peter Wish**, and **Brian Postek** (brian.postek@uncp.edu), The University of North Carolina at Pembroke

Rachel A. McBroom (rachel.mcbroom@dpi.nc.gov), North Carolina Dept. of Public Instruction, Red Springs

Gain hands-on experience in conducting proven, low-cost classroom activities that effectively teach the quantities of velocity, acceleration, force, work, and kinetic energy. Handouts!

8:00–9:00 AM Exhibitor Workshop

Shuffle It Up! Understanding Photosynthesis and Respiration (Bio)

(Grades 9–12) 208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

Students have major misconceptions about photosynthesis and cellular respiration. Explore these topics at the micro (cellular) and macro (ecosystem) levels using a computer simulation and a hands-on activity.

8:00–9:30 AM Exhibitor Workshop

Worm and Squirm Your Way into Behavior Labs (Bio)

(Grades 10–College) 213 B/C, Convention Center

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

How do genes influence behavior? Use the model organism *C. elegans* (a nematode) to answer this question in an engaging activity that compares normal and mutant worm behavior. We will explore worm taste preferences in a simple and fast chemotaxis assay, and examine the connection of our worm mutant to human diseases. Come see this great alternative AP fruit fly behavior lab!

9:00 AM–12 Noon Exhibits

Exhibit Hall A, Convention Center

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

9:30–10:00 AM Presentation

SESSION 1

Digital Chemistry Resources That Teachers and Students Can Rely On (Chem)

(High School) Kings, Westin

Marta Gmurczyk (m_gmurczyk@acs.org) and **Patrice Pages** (p_pages@acs.org), American Chemical Society, Washington, D.C.

Learn about the American Chemical Society's innovative collection of reliable and free digital resources for high school teachers. Find out about the many uses of the Chemical Education Digital Library (ChemEd DL), including Models 360, ChemTeacher, and the award-winning Periodic Table Live! Also, watch *ChemMatters* video podcasts and discover the ChemClub collection of activities.

9:30–10:30 AM Presentations

SESSION 1

Engineering in an Elementary School (Gen)

(Preschool–Elementary) 204, Convention Center

Lizette Day (lizette.day@orange.k12.nc.us), Central Elementary School, Hillsborough, N.C.

Elizabeth Parry (elizabethparry204@gmail.com), North Carolina State University, Raleigh

Learn an effective and replicable model for transforming a school into a STEM school. Join us as we share specific foundational skills, tools, and “how-to” tips.

SESSION 2



Science Literacy at the Secondary Level (Gen)

(Middle Level–High School) 205, Convention Center

Rachelle M. Beauchesne (rachellebe@aol.com), READS Academy, Middleboro, Mass.

Explore a variety of strategies that can be implemented at the secondary level to engage students in reading nonfiction science.

SESSION 3



Don't Flip Out About Flipping Your Classroom (Gen)

(Middle Level–High School) 206 A/B, Convention Center

Nick F. LaFave (nick.lafave@clover.k12.sc.us), Clover High School, Clover, S.C.

Discover strategies to engage your students outside of class and free up more instructional time. From screencasting to online assessment...it's easier than you think!

SESSION 4

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

(Elementary) 211 A/B, Convention Center

Donna L. Knoell (dknoell@sbcglobal.net), Educational Consultant, Shawnee Mission, Kans.

Join me for an overview of the components of differentiation in the K–6 science classroom. I'll suggest ways to differentiate effectively to maximize student participation and learning. Handouts!

SESSION 5

What's the Impact?

(Gen)

(General)

212 A/B, Convention Center

Susan A. Pruet (spruet@maef.net), Mobile Area Education Foundation, Mobile, Ala.

Join us as we share findings from the National Science Foundation–funded Engaging Youth Through Engineering (EYE) module study. These findings show positive impacts of a newly developed middle grades STEM curriculum on students, teachers, and a large school district.

SESSION 6

From Galileo to Moon Dust—The Consilience of Science and Religion

(Gen)

(General)

Ardrey, Hilton Center City

Clyde A. Selner (caselner@aol.com), Kensington, Conn.

A presentation of a hypothesis that reconciles scientific and religious thought and may bring greater understanding and meaning to each. Lively discussion can be expected.

SESSION 7

Exploring the Future of Nuclear Power

(Gen)

(General)

Gwynn, Hilton Center City

David McNelis (mcnelis@unc.edu), The University of North Carolina at Chapel Hill

A nuclear energy expert will discuss the fundamentals of nuclear power generation, nuclear power plant safety, and emerging nuclear technologies.

SESSION 8

Great Science Lesson = Presidential Award + \$10,000

(Gen)

(General)

Walker A/B, Hilton Center City

Marilyn Suiter, National Science Foundation, Arlington, Va.

Presidential Awardees (PAEMST) share how they each took a quality science lesson and turned it into a meeting with the President, \$10,000, and leadership opportunities.

SESSION 9

iSTEM: iPad Movie Trailers Foster Digital Age Learning in the Science Classroom

(Bio)

(General)

Independence, Westin

Andrew J. Smith (smithaj@rss.k12.nc.us), East Rowan High School, Salisbury, N.C.

Discover how student-created iPad movie trailers maximize science content knowledge, inspire creativity and collaboration, and conserve instructional time through reduced technical issues.

SESSION 10

Technology-assisted Mastery Learning in Biology

(Bio)

(High School)

Sharon, Westin

Anne M. Byford (abyford@gastonday.org), Gaston Day School, Gastonia, N.C.

With Mastery Learning, students show that they have mastered the first topic before moving on. This results in students moving through the material at variable speeds.

SESSION 11

Utilizing the Community as a Context for Learning: Introducing Students to Environmental Justice

(Env)

(Middle Level–High School)

Trade, Westin

Sarah K. Yelton (sarah.yelton@unc.edu) and **Dana B. Haine** (dhaine@unc.edu), The University of North Carolina at Chapel Hill

Introduce students to the concept of environmental justice by considering a case study involving a hazardous waste landfill that launched the national environmental justice movement.

SESSION 12

Engineering in the Ocean

(Phys)

(Elementary–High School)

Tryon, Westin

Shannon Ricles, NOAA's Monitor National Marine Sanctuary, Newport News, Va.

Join us for an overview of how to introduce engineering to students through learning to design underwater remotely operated vehicles, while diving into North Carolina maritime cultural resources.

9:30–10:30 AM Workshops

iRead, iWrite, iDoScience: Science in a Box or Bag (Gen)

(Elementary–Middle Level) 202 A/B, Convention Center

Leslie A. Suters (lsuters@tntech.edu), **Sarah A. Keller** (skeller@tntech.edu), and **Queen O. Ogbomo** (qogbomo@tntech.edu), Tennessee Tech University, Cookeville

Walk away with plans for ready-to-use science kits that emphasize the use of Common Core literacy skills and technology.

A Polymer Primer for Elementary (Chem)

(Elementary) 203A, Convention Center

Caryn Jackson (cjackson@tollestechnology.com), Tolles Career & Technical Center, Plain City, Ohio

Gak, Oobleck, slime! Polymer activities can be fun and educational. Come learn several recipes to try with your students and discover the science behind these recipes.



NSTA Press® Session: Stop Faking It! Finally Understand LIGHT AND SOUND So You Can Teach It (Phys)

(Elementary–Middle Level) 203B, Convention Center

Bill Robertson (wr robert9@ix.netcom.com), Bill Robertson Science, Inc., Woodland Park, Colo.

Join the author of the *Stop Faking It* books for activities from the *Light* and *Sound* books. We'll cover color addition and subtraction and interference of light and sound waves...and you'll learn how to write secret messages. Whoopee!



The Magic of Engineering (Chem)

(Elementary–Middle Level/Informal) 207A, Convention Center

Michael Koski (koskim@fitchburg.k12.ma.us), Fitchburg (Mass.) Public Schools

Find out how to really engage your students by using everyday materials and low-prep physical science engineering projects to differentiate instruction and let them show you what they know.

NASA Engineering Activities Under \$1! (Phys)

(Middle Level) 207 B/C, Convention Center

Samantha M. Rogers (samantha.m.rogers@nasa.gov), NASA Kennedy Space Center, Kennedy Space Center, Fla.

Help kids understand the engineering design process in your classroom using items you already have or can find at a dollar store. I'll introduce you to six activities you can use in your classroom, including one hands-on activity to build a landing system that will protect two "astronauts."

The Wonder of Colors (Gen)

(Preschool–Elementary) 207D, Convention Center

Eva M. Ogens (eogens@ramapo.edu), Ramapo College of New Jersey, Mahwah

Learn how to integrate children's books with science activities by making watercolors and creating chromatography flowers. *Note:* Hands-on activities limited to the first 25 attendees.

Making Sense of Remote Sensing (Earth)

(Elementary–Middle Level) 216 A/B, Convention Center

Cheri L. Hamilton (cherihamilton@ku.edu), The University of Kansas, Lawrence

Teri V. Fulton, Kansas City (Kans.) USD 500

The Statue of Liberty is buried under ice! Teach your grades 4–9 students the basics of remote sensing through hands-on activities on the polar regions.

Exploring NASA Engineering Challenges—Something for Everyone! (Gen)

(Elementary–High School) Charlotte Hall, Hilton Center City

Rebecca L. Jaramillo (rebecca.jaramillo@nianet.org), Center for Integrative STEM Education, National Institute of Aerospace, Hampton, Va.

Investigate NASA's newest engineering challenges for students of all ages. Use engineering design to reinforce strong science content. Inspire your students as only NASA can!

Using the Dimensions of the NRC Framework to Improve Teacher Practice in North Carolina (Gen)

(General) South Carolina Hall, Hilton Center City

Beverly G. Vance (beverly.vance@dpi.nc.gov), **Jami Inman**

(jami.inman@dpi.nc.gov), **Ragan S. Spain** (ragan.spain@dpi.nc.gov),

Benita B. Tipton (benita.tipton@dpi.nc.gov),

Donna S. Kenestrick (donna.kenestrick@dpi.nc.gov), and

Debra T. Hall (debra.hall@dpi.nc.gov), North Carolina Dept. of Public Instruction, Raleigh

Come see how North Carolina teachers are being supported to use and integrate the dimensions of the NRC Framework into the delivery of science standards—present and future.

NASA's Supernova Mathematics (Earth)

(Middle Level–High School) Grand Ballroom A, Westin

Janet L. Moore (janetmoore@gmail.com), NASA/Sonoma State University, Rohnert Park, Calif.

Make interdisciplinary connections as your students use proportional reasoning and mathematical modeling to solve a supernova mystery. Free NASA materials!

Rev It Up! for Student Engagement Using Authentic Data (Gen)

(Middle Level–High School/Informal) Grand Ballroom B, Westin
Colleen Karl (colleen_karl@ncsu.edu), North Carolina State University and J.A. Holmes High School, Edenton
 Bring your students up to speed through authentic real-world science investigations. The Science House shares strategies for collecting, analyzing, and communicating information using technology.

WeDo Robotics in Elementary (Phys)

(Elementary/College/Supv.) Providence Ballroom I, Westin
Shirley A. Disseler (sdisseler@highpoint.edu), **Kelsey Clougherty** (clough09@highpoint.edu), and **Katie Hadley** (hadlec09@highpoint.edu), High Point University, High Point, N.C.
 Participants will use LEGO WeDo™ robotics for the elementary classroom to see how STEM can come alive for students.

Forests, Carbon, and Climate Change (Env)

(Middle Level–High School) Providence Ballroom II, Westin
Al Stenstrup (astenstrup@forestfoundation.org), Project Learning Tree, Washington, D.C.

Maria Ghiso (mghiso@ra.org), Rainforest Alliance, New York, N.Y.

Rainforest Alliance and Project Learning Tree have created hands-on lessons to help students understand the carbon cycle and the role forests play in climate change.

Science Literacy Should be an “Open Book” (Earth)

(Elementary–High School) Providence Ballroom III, Westin
Barry Fried (bfriedfab4@optonline.net), Retired Principal and STEM Advisor, East Meadow, N.Y.

Honora Dash (hdash@schools.nyc.gov), John Dewey High School, Brooklyn, N.Y.

Learn how to create an enriched, real, and rigorous all-inclusive classroom environment using Earth and space science as a unifying theme to promote problem solving and communication by building literacy tools and research skills, and have authentic science learning experiences.

9:30–10:30 AM Exhibitor Workshop**Breeding Critters (Bio)**

(Grades 6–8) 208B, Convention Center
 Sponsor: LAB-AIDS, Inc.

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

Here is your opportunity to make the study of genetics more meaningful for students. Join LAB-AIDS for an activity sequence from Issues and Life Science, a SEPUP middle school program that lays a framework for dominant/recessive as well as other patterns of inheritance. Pedigrees are introduced as another way to study the behavior of certain genes in humans. In the succeeding activities, you will use what you know to advise a person about whether to be tested for Marfan's syndrome.

10:00–11:30 AM Exhibitor Workshop**Discovering DNA (A Middle School Lab Activity)**

(Bio)
 (Grades 6–8) 213 B/C, Convention Center

Sponsor: Bio-Rad Laboratories

Sherri Andrews (sherri_andrews@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Introduce your students to the exciting world of DNA science with their own DNA! In this hands-on activity, students use real-world laboratory techniques to extract DNA from their own cheek cells and watch it magically come to life as floating white strands. The DNA is then collected and transferred to a very cool crystal clear plastic helix-shaped necklace that can be kept as a lasting science memory for years to come.

10:00 AM–12 Noon Meeting**Association for Multicultural Science Education (AMSE) Board Meeting**

(By Invitation Only) Biltmore Boardroom, Hilton Center City

11:00–11:30 AM Presentation**SESSION 1****A Model for K–8 Science Fairs—Participation and Success for All Students (Gen)**

(General) 212 A/B, Convention Center

Carrie O. Kouadio (carrie.kouadio@gmail.com), University of Illinois, Urbana

Come learn how one school has created a successful Science and Engineering Fair, in which ALL students participate and succeed.

11:00 AM–12 Noon Presentations

SESSION 1

SAGE III on ISS: Engineering from a NASA Mission to the Classroom (Earth)

(Informal Education) 204, Convention Center

Kristyn Damadeo (kristyn.j.ecochard@nasa.gov), SSAI/NASA Langley Research Center, Hampton, Va.

Preston M. Lewis (preston.lewis@nasa.gov), NASA Langley Research Center, Hampton, Va.

Engage students in the scientific process by demonstrating engineering as well as science and math concepts through hands-on activities and classroom videos.

SESSION 2



Bring the Science of Cars into the Classroom (Phys)

(Middle Level–High School) 205, Convention Center

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

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

Students love cars but dislike science? Discover lessons using the car to teach major science concepts. Yes, even if you are mechanically challenged!

SESSION 3 (two presentations)

(General) 211 A/B, Convention Center

Robotic Rewards: Recruiting Middle School Students for an Award-winning Robotics Team (Gen)

Tevfik Eski, Kenilworth Science and Technology School, Baton Rouge, La.

Hear winning strategies on creating an award-winning Title I school robotics team and leveraging success into an opportunity for community engagement and positive public relations.

STEM and Student Engagement: The Power of Ownership (Gen)

Tevfik Eski, Kenilworth Science and Technology School, Baton Rouge, La.

Hear about the techniques one Title I middle school used to increase student participation in STEM projects and stimulate student and community interest in STEM studies.

SESSION 4

Racing Toward Science and Literacy Integration: A University/Urban School Partnership (Gen)

(Preschool–Elementary) 215, Convention Center

Cherry O. Steffen (csteffen@kennesaw.edu) and **Stacy Delacruz** (sdelacru@kennesaw.edu), State University, Kennesaw, Ga.

Learn how a university department of elementary education partners with an urban elementary school to integrate science and literacy and to encourage participation by parents and community members.

SESSION 5

The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (Gen)

(General) Ardrey, Hilton Center City

Flavio Mendez (fmendez@nsta.org), Senior Director, NSTA Learning Center, NSTA, Arlington, Va.

Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 10,000 resources (25% of which are free) and quality PD opportunities to assist educators with core subject content, the NSTA Learning Center has the answers! Get free resources and ICE CREAM!

SESSION 6

From the Arctic to Antarctic—“Cool” Experiences Bring Polar Science to the Classroom (Gen)

(Elementary–High School) Gwynn, Hilton Center City

Lindsay Knippenberg (lindsayknippenberg@mqsd.k12.nc.us), Mooresville High School, Mooresville, N.C.

Susan Steiner, Macon Early College High School, Franklin, N.C.

Two local teachers traveled to both poles to inspire their students with “real” science. Learn about the program, how to apply, and gain great classroom resources.

SESSION 7

Early Bird Lessons (Gen)

(General) Walker A/B, Hilton Center City

Kim Soper, University of Nebraska Medical Center, Omaha
Discover early childhood lessons using birds to teach numeracy, science data collection, bird identification and calls, as well as other skills that correlate to the Head Start Frameworks. I’ll share poems, literature connections, and songs designed to teach. Come join the fun and find new ways to use birds.

SESSION 8

Use Google Earth and Cyber Databases to Conduct Inquiry (Bio)

(General)

Independence, Westin

Shiang-Kwei Wang (skwang@nyit.edu), **Hui-Yin Hsu** (hhsu02@nyit.edu), **Edward Powers** (epepradio0@gmail.com), and **John Gienau** (jgienau@nyit.edu), New York Institute of Technology, Old Westbury

We'll demonstrate an inquiry activity, conducted using Google Earth and Cyber databases, to support students investigating the mystery of evolution theory.

SESSION 9

My Biome Vacation! (Env)

(High School)

Kings, Westin

Wynne H. Youngblood (youngbloodwh@rss.k12.nc.us), East Rowan High School, Salisbury, N.C.

Take your class on a virtual vacation! Students use technology to research and develop documentation of their travels around the globe. Lesson plan provided.

SESSION 10

Best Practices in Biology (Bio)

(High School)

Sharon, Westin

Pamela M. Sutton (psutton@henderson.k12.nc.us) and **Ashley S. Toler** (atoler@henderson.k12.nc.us) and North Henderson High School, Hendersonville, N.C.

Presider: Pamela M. Sutton

Attention will be paid to literacy, technology, assessments, and hands-on strategies that result in good End of Course

scores from exceptional children (EC) and English language learner (ELL) classes to honors-level biology.

SESSION 11

Measuring Student Proficiency (Gen)

(Middle Level–High School)

Trade, Westin

Aimee Wagner (aimee.wagner@gmail.com), West Charlotte High School, Charlotte, N.C.

Cole J. Entress (cole.entress@gmail.com), Relay Graduate School of Education, New York, N.Y.

Using formative data effectively can be challenging. Discover ways to seamlessly integrate science practices into your curriculum and track student mastery throughout a course.

SESSION 12

Increasing the Rigor in the Science Education Classroom by Using Literacy Strategies (Chem)

(General)

Tryon, Westin

Lucia K. Jacobs, W.J. Keenan High School, Columbia, S.C. Discover how to increase the rigor in science lessons by using literacy strategies that facilitate an increase in student comprehension of science concepts. Practical examples will be shown and practiced in the session. Use these examples in your classroom when you return to school—they can be easily integrated into your existing lesson plans.

11:00 AM–12 Noon Workshops

Primary Engineering in the K–5 Classroom (Gen)

(Preschool–Middle Level/Informal) 202 A/B, Convention Center

Caroline J. Courter (carolinecourter@yahoo.com), University of North Carolina Wilmington and Harvard University, Cambridge, Mass.

Kasia Derbiszewska (kmd682@mail.harvard.edu), Harvard University, Cambridge, Mass.

Come experience engineering tasks to take back to your classroom. Examples, ideas, pictures, and lesson plans!

Plant Literacy Requires “Practices” with Seeds

(Bio)

(Elementary)

203A, Convention Center

Lloyd H. Barrow (barrowl@missouri.edu), University of Missouri, Columbia

Emphasis will be placed on how elementary teachers can utilize “practices” in their growing plants unit. We will address frequent student (and teacher) misconceptions.



NSTA Press® Session: Outdoor Science and Bringing It In (Gen)

(Elementary–Middle Level) 203B, Convention Center

Steve Rich (bflywriter@comcast.net), NSTA Director, Professional Development, and University of West Georgia, Carrollton

Whether taking it outside or bringing outdoor science in, explore school yard resources for teaching crosscutting concepts and how sticks and stems bring in STEM. Free seeds!



Nanotechnology in Elementary and Middle School, Oh My! (Gen)

(Elementary–Middle Level) 207 B/C, Convention Center

Jean Anderson (jean.anderson@ceismc.gatech.edu) and **Gustavia Evans** (gustavia.evans@ceismc.gatech.edu), Georgia Tech, Atlanta

Discover how literature provides opportunities to explore nanotechnology, investigations, and integration of Common Core State Standards for Mathematics and Next Generation Science Standards in grades 3–8.



Skynet Junior Scholars (Earth)

(Middle Level/Informal Education) 207A, Convention Center

Vivian L. Hoette (vhoette@yerkes.uchicago.edu), Yerkes Observatory, Williams Bay, Wis.

4-H and other out-of-school-time middle school–aged students use the Skynet Telescope Network in the context of exploration modules to explore our universe. Educators who lead such groups may participate in this workshop and follow up with an online course.

Taking Science Outside to Drive Literacy Instruction (Gen)

(Elementary) 207D, Convention Center

Melony H. Allen (mhallen@uncg.edu) and **Aerin Benavides** (awbenavi@uncg.edu) and The University of North Carolina at Greensboro

The University of North Carolina at Greensboro's 2012–2014 Science Team, a cohort of 24 preservice teachers, shares lessons taught and used outside science education to drive literacy instruction.

Have Fun with Motion Using iPads and Probes (Phys)

(Elementary–Middle Level) 216 A/B, Convention Center

Linda Yoder, Lincoln County Schools, Lincolnton, N.C. Utilize iPad applications and probes to track motion and demonstrate understanding of science concepts.

Interactive Content Area Reading Strategies (iCARS) (Gen)

(General) Charlotte Hall, Hilton Center City

Carolyn J. Sanders (cjsanders@gaston.k12.nc.us) and **Margarita Skivofilakas-Capps** (mscapps@gaston.k12.nc.us), Grier Middle School, Gastonia, N.C.

Discover content area reading strategy centers for science, including main idea, cause/effect, context clues, and sequencing, for all grades.

Kenan Fellows: Preparing Students for the Real World Takes Teachers Who Learn in the Real World (Gen)

(General) South Carolina Hall, Hilton Center City

Lisa Hibler (lisa_hibler@ncsu.edu) and **Craig Tucker** (craig_tucker@ncsu.edu) and North Carolina State University, Raleigh

Learn about the program through the eyes of Kenan Fellows Tracy Pendry and Sonja McKay as you participate in relevant classroom activities that engage students in local workforce STEM applications. Lesson plans will be available to all participants.

NASA's Mathematical Evidence for Dark Matter (Earth)

(High School) Grand Ballroom A, Westin

Janet L. Moore (janetmoore@gmail.com), NASA/Sonoma State University, Rohnert Park, Calif.

Explore dark matter through mathematical reasoning! Investigate evidence that it exists and learn what we know (and don't know) about it. Free NASA materials!

Modeling in Biology: Making Proteins Real (Bio)

(High School–College) Grand Ballroom B, Westin

Tim Herman (herman@msoe.edu) and **Shannon Colton** (colton@msoe.edu), Milwaukee School of Engineering, Milwaukee, Wis.

Learn about a memorable hands-on activity that makes proteins come alive for students. This activity integrates the basic principles of chemistry with protein folding principles.

Merging Literacy into Science Instruction Through Problem-Based Learning in STEM Activities (Gen)

(Middle Level—College/Supv.) Providence Ballroom I, Westin
Rebecca J. Slayden-McMahan (mcmahanb@apsu.edu)
 and **Benita Bruster** (brusterb@apsu.edu), Austin Peay State University, Clarksville, Tenn.

Walk away with activities incorporating science/literacy and get coached in the design of problem-based learning from planning to assessment while participating in a problem-based activity.

POGIL for Chemistry and Biology in High School (Chem)

(Middle Level—High School) Providence Ballroom II, Westin
Patricia B. Ligon (pligon@nc.rr.com), Broughton High School, Raleigh, N.C.

Gail H. Webster (gwebster@guilford.edu), Guilford College, Greensboro, N.C.

Presider: Patricia B. Ligon

Experience a student-centered, cooperative inquiry approach that can be used in biology or chemistry classrooms—Process Oriented Guided Inquiry Learning (POGIL). Visit new.pogil.org for more information.

Evaluating Woody Biomass Feedstocks for Biopower (Env)

(General) Providence Ballroom III, Westin
Dana B. Haine (dhaine@unc.edu), The University of North Carolina at Chapel Hill

Critically evaluate the various types of woody biomass feedstocks that can be used to replace coal with an emphasis on resources available in the Southeastern U.S.

11:00 AM–12 Noon Exhibitor Workshop

Fast and Furious—Measuring Speed (Phys)

(Grades 6–8) 208B, Convention Center

Sponsor: LAB-AIDS, Inc.

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

In this activity from the SEPUP middle level series *Issues and Physical Science*, which explores Newton's laws in a context of motor vehicle safety, participants are challenged to design an investigation to measure the speed of a moving cart as a function of its release point from a curved ramp. Participants will carry out the experiment, discuss the role of speed in automobile collisions, and conclude by examining distance vs. motion graphs.



Exhibitors

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

Biology/Life Science	B
Chemistry/Physical Science	C
Earth/Space Science	EA
Environmental Science	EN
Integrated/General Science	G
Physics/Physical Science	PH
Professional Development	PD
Technology Education	T

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Website: www.fisheredu.com

Fisher Science Education prepares the students of today to be the innovators of tomorrow. By providing customer-centric services and support, a comprehensive portfolio, and innovative resources, we are the leader in providing STEM resources for the classroom. Check out all of our teacher resources, including our quarterly magazine, *Headlines Discoveries*, as well as our complete product line for anything related to science.

Flinn Scientific, Inc. #601
PO Box 219 B, C, EA, EN, G,
Batavia, IL 60510 PH, PD, T
Phone: 800-452-1261 6–12
E-mail: flinn@flinnsci.com
Website: www.flinnsci.com

Flinn Scientific is the leader in science and laboratory chemical safety. Publisher of the world-renowned *Flinn Science Catalog Reference Manual*, Flinn develops and offers a full line of chemistry, biology, physics, life science, Earth science, physical science, and safety products for middle and high school.

Four Seasons Tours #304
1553 Boren Dr. G
Ocoee, FL 34761 6–12
Phone: 800-421-4159
E-mail: randy@fourseasons-tours.com
Website: www.fourseasons-tours.com

Four Season Tours is a student group tour operator established in 1984 in Central Florida. We specialize in coordinating and packaging educational trips for all types of school and youth groups to Orlando and other destinations.

Frey Scientific/School #313
Specialty Science G
80 Northwest Blvd. K–12
Nashua, NH 03063
Phone: 800-225-3739
E-mail: customercare.frey@schoolsspecialty.com
Website: www.freyscientific.schoolsspecialty.com

Frey Scientific offers a complete line of supplies, equipment, technology, and lab design services for grades K–12. Among its secondary level supplemental science curriculum offerings, Inquiry Investigations® and iNeo/SCI® are proven to support student achievement through hands-on and virtual lab experiences.

Exhibitors

Grand Classroom #602
1455 E. Rio Rd. B, EA, EN
Charlottesville, VA 22901 5–12
Phone: 434-466-5821
E-mail: johnraymond@grandclassroom.com
Website: www.grandclassroom.com

Grand Classroom provides educational student travel to the Grand Canyon; Washington, D.C.; and many national parks. These worry-free tours emphasize safety and fun. Grand Classroom provides superior customer service and numerous benefits for educators, including free travel.

Howard Hughes Medical Institute (HHMI) #413
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Chevy Chase, MD 20815

HHMI's *BioInteractive.org* website brings cutting-edge science into the classroom. Teach ahead of the textbook with FREE award-winning animations, short films, video clips, virtual labs, interactive features, classroom-ready resources, and activities.

It's About Time #516
333 N. Bedford Rd. B, C, EA, EN,
Mount Kisco, NY 10549 G, PH, PD, T
Phone: 914-273-2233 6–12, College
E-mail: mbaumgartner@iat.com
Website: www.iat.com

It's About Time is a leading educational publisher of middle and high school inquiry-based science and math programs supported by the National Science Foundation. Our challenge-driven programs increase student achievement because they motivate and engage and develop critical thinking. Students gain the skills to work collaboratively and the ability to apply what they have learned.

Kenan Fellows Program #202
1070 Partner's Way Hunt Library B, C, EA,
Suite 5100 G, PH, PD, T
Raleigh, NC 27606 1–12
Phone: 919-515-5118
E-mail: kenanfellows@ncsu.edu
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The Kenan Fellows Program empowers educators, students, and businesses through strategic partnerships. We offer K–12 teachers

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LAB-AIDS®, Inc. #412
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Ronkonkoma, NY 11779 6–12
Phone: 800-381-1286
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Website: www.lab-aids.com

At LAB-AIDS, we are focused on being "A Catalyst for Learning." For the past 50 years, we have helped science teachers offer a more meaningful hands-on experience in the classroom by providing them with the curriculum, materials, and equipment needed to teach more effectively and have their students truly learn by doing.

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Phone: 704-998-7151
E-mail: info@learnednotebooks.com
Website: www.learnednotebooks.com

LearnEd Notebooks specializes in curriculum resources for high school biology and middle school science with the use of interactive notebooks. Our programs are directly aligned with state and national standards and include student notebooks, teacher materials, and online instructional presentations. New programs aligned with the Next Generation Science Standards coming in 2014!

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Milwaukee, WI 53202-3109
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Teachers in Geosciences EA
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Mississippi State, MS 39762
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Website: distance.msstate.edu/geosciences

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National Energy Education Development Project (NEED) #208
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8408 Kao Circle
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NewPath's Curriculum Mastery Games, Flip Charts, IWB Software, and Visual Learning Guides provide comprehensive coverage of the NGSS and current state standards for early childhood–grade 12 science. We also offer a unique online learning program at www.newpathlearning.com with ready-to-use lessons and tools/templates to develop and deliver custom lessons.

NGSS@NSTA #419
G, PD
1840 Wilson Blvd.
Arlington, VA 22201
E-mail: ngss@nsta.org
Website: ngss.nsta.org

How can NSTA help you prepare for the Next Generation Science Standards? Stop by our booth to hear the latest news about state adoption and check out a sampling of NSTA resources dedicated to helping teachers understand and implement the new standards.

NOAA Office of Education #320
B, EA, EN, G
1401 Constitution Ave. NW
#6863
Washington, DC 20230
Phone: 301-713-1208
E-mail: education@noaa.gov
Website: www.education.noaa.gov

NOAA is a federal science agency providing free information to educators about weather, climate, oceans, coasts, satellite data, solar weather, and fisheries. Everyday, NOAA's science touches the lives of all Americans. In partnership with NSTA, NOAA has developed a suite of products for the science classroom.

North Carolina Baptist Assembly at Fort Caswell #223
B, EA, EN, G, PD
100 Caswell Beach Rd.
Oak Island, NC 28465
Phone: 910-278-9501
E-mail: caswell@fortcaswell.com
Website: www.fortcaswell.com

Fort Caswell offers interdisciplinary ecosystem investigations for K–12 classrooms and adults at their 248 acre camp and conference center on Oak Island. Programs encourage personal well-being and environmental stewardship through hands-on, outdoor adventures such as marine ecology, water quality, maritime history, and team building.

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B, C, G, PH, PD
326 Poe Hall, CB #7801
2310 Stinson Dr.
Raleigh, NC 27695-7801
Phone: 919-515-6903
E-mails: mlbellam@ncsu.edu; tina_ashiru@ncsu.edu
Website: www.ncsu.edu

Stop by and learn about the College of Education's undergraduate and graduate degrees in science education.

NSTA John Glenn Center for Science Education #417
1840 Wilson Blvd.
Arlington, VA 22201
Phone: 703-312-9375
E-mail: cse@nsta.org
Website: www.nsta.org/cse

The John Glenn Center for Science Education—NSTA's \$43 million national campaign to make excellence in science teaching and learning a reality for all U.S. students—will fund a series of forward-thinking programs and a state-of-the-art facility designed to promote leadership, learning, and advocacy in science education.

Exhibitors

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Phone: 703-312-9375 PreK–12, College
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Phone: 703-312-9375
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Website: www.nsta.org/conferences

The NSTA Professional Development (PD) Department supports science educators through a variety of professional opportunities tailored to their specific needs. The Learning Center is NSTA's professional learning portal designed to address your classroom needs and busy schedule. Visit our booth to learn more about the professional learning tools that are available to personalize, manage, and document your learning growth.

NSTA STEM Forum & Expo #605
1840 Wilson Blvd.
Arlington, VA 22201
Website: www.nsta.org/2014stem

Stop by and learn about the exciting program for the NSTA 2014 STEM Forum & Expo—May 14–17, 2014.

Nutrients for Life Foundation #324
425 Third St. SW, Suite 950 B, EA, EN, G
Washington, DC 20024 1–12
Phone: 202-731-4365
E-mail: jburatowski@nutrientsforlife.org
Website: www.nutrientsforlife.org

Nutrients for Life Foundation is a nonprofit education association that provides information and resources to educators and the public about the vital role fertilizers play in feeding our world. The Foundation offers free soil science education materials for elementary, middle school, and high school educators.

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E-mail: sales@pasco.com
Website: www.pasco.com

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NSTA Avenue

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Website: www.ecybermission.com

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Website: www.nsta.org/cse

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 - **SciGuides.** Use these online resources, aligned with the national standards, to locate lessons organized by grade level and specific content themes to add to your classroom instruction.
- The **New Science Teacher Academy** supports second-through fifth-year science teachers during the often challenging initial years by enhancing confidence and teacher content knowledge.

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- **NSTA Press®** publishes 25–30 new books and e-books each year. Browse at the Science Store and connect with authors to have your new book signed. Submit your new book idea to bit.ly/18UHDgG.
- **NGSS @ NSTA.** How can NSTA help you prepare for the Next Generation Science Standards? Stop by our booth to hear the latest news about state adoption and check out a sampling of NSTA resources dedicated to helping teachers understand and implement the new standards.

Add Your Voice

- **Science Matters,** our major public awareness campaign about science education and science literacy, is designed to rekindle a national sense of urgency and action among schools and families. Register to receive our monthly e-newsletter.
- **The John Glenn Center for Science Education.** NSTA has embarked on a \$43 million national campaign to make excellence in science teaching and learning a reality for all. The funding will support a series of forward-thinking programs and a state-of-the-art facility designed to promote leadership, learning, and advocacy in science education.

Distinguish Yourself

- Learn about NSTA's 16 awards programs for science teachers, K–College, such as the **Shell Science Lab Challenge**, which provides science laboratory equipment and professional development support to winning teachers from middle schools and high schools with limited resources. Learn how to win a \$20,000 lab makeover support package.

Student Competitions:

- **Toshiba/NSTA ExploraVision®** is a team-based K–12 student competition that awards up to \$240,000 in savings bonds; trips to Washington, D.C.; Toshiba Tablets for teachers; and other great prizes every year.
- **THE DUPONT CHALLENGE®** Science Essay Competition for grades 7–12 students awards cash prizes and an all-expenses-paid trip to Disney World® and the Kennedy Space Center.
- **eCYBERMISSION** is an online STEM-related (Science, Technology, Engineering, and Mathematics) competition for students in grades 6–9. Teams compete for state, regional, and national awards, including up to \$8,000 in U.S. Savings Bonds (maturity value).

Exhibitors

PEPCO Inc. #217
1615 Robertson Rd. B, C, EA,
Moberly, MO 65270-0457 EN, G, PH, T
Phone: 800-568-1067 PreK–12, College
E-mail: dave@pepcoinc.com
Website: www.pepcoinc.com

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Pittsburg, KS 66762 K–12
Phone: 620-231-0000
E-mail: bockovera@pitsco.com
Website: www.pitsco.com

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Project Learning Tree #505
1111 19th St. NW, Suite 780 EN, PD
Washington, DC 20036 PreK–12
Phone: 202-463-2475
E-mail: information@plt.org
Website: www.plt.org

Project Learning Tree is a nationally award winning environmental education program designed for preK–12 formal and nonformal educators. The supplementary materials provide hands-on/minds-on multidisciplinary activities.

SAE International #323
400 Commonwealth Dr. G
Warrendale, PA 15096 K–8
Phone: 724-772-8526
E-mail: lindac@sae.org
Website: www.awim.org

SAE International's A World In Motion program is a series of design challenges that incorporates STEM (science, technology, engineering, and math). Our hands-on activities explore core scientific concepts.

Sally Ride Science #225
9191 Towne Centre Dr., Suite L101 B, C, EA,
San Diego, CA 92122 EN, G, PH, PD, T
Phone: 858-638-1432 4–8
E-mail: jvasquez@sallyridesience.com
Website: www.sallyridesience.com

Sally Ride Science™ is an innovative science education company. Dr. Sally Ride, America's first woman in space, founded the company to educate, engage, and inspire all students. The company brings science to life through pioneering professional development, instructional solutions, and real-science investigations for students in grades 4–8.

Sangari Active Science #529
50 Washington St. G, PD, T
Norwalk, CT 06854 K–8
Phone: 917-517-0944
E-mail: astrizich@sangariglobaled.com
Website: www.sangariglobaled.com

Sangari Active Science offers a preeminent, investigation-centered K–8 curriculum that has been designed to embody the research-based principles that undergird the NGSS. IQWST, our grades 6–8 program that is now available as an interactive tablet edition, focuses on modeling, explanation, and argumentation—those NGSS practices that are most challenging for middle-schoolers. Both our K–5 and grades 6–8 programs integrate reading, writing, speaking, and listening standards from the Common Core State Standards, supporting students as they learn core science ideas and gain lifelong skills.

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Websites: www.sciencefirst.com; www.starlab.com

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The Science House #212
North Carolina State University campus G, PD
Box 8211 K–12
Raleigh, NC 27695
Phone: 919-515-6118
Website: www.thesciencehouse.org

The Science House (TSH) is the statewide K–12 STEM outreach program from North Carolina State University. TSH's mission is to motivate and prepare students through innovative programs to study and work in STEM fields, as well as to educate and empower teachers to effectively integrate innovative STEM content, research, and technologies into their practices.

Shell Science Lab Challenge #425
1840 Wilson Blvd. B, C
Arlington, VA 22201 6–8
Phone: 305-748-1608
E-mail: mwarsame@nsta.org
Website: www.nsta.org/shellsciencelab

Are you succeeding in science lab instruction with minimal equipment? The Shell Science Lab Challenge gives you an opportunity to share your exemplary approach for a chance to win a school science lab makeover support package valued at \$20,000! More than \$93,000 in lab makeover prizes to be awarded this year to 18 schools!

Siemens We Can Change the World Challenge #616
EN, G
1 Discovery Place
Silver Spring, MD 20910
E-mail: wecanchange@discovery.com
Website: www.wecanchange.com

Are you looking for a cool challenge-based learning project for your students? The *Siemens We Can Change the World Challenge* is the premier national environmental sustainability challenge for grades K–12. Students learn about science and conservation while creating solutions that impact their planet. At stake is more than \$300,000 in prizes. Visit wecanchange.com for more information.

Simulation Curriculum Corp. #511
11900 Wayzata Blvd., Suite 126
Minnetonka, MN 55305
Phone: 877-290-8256
E-mail: mgoodman@simcur.com
Website: www.simulationcurriculum.com

Simulation Curriculum is a leading developer of interactive Earth, space, geography, and climate curricula for K–12 and college.

SME's Minerals Education Coalition #327
12999 E. Adam Aircraft Circle
Englewood, CO 80112
Phone: 303-948-4247
E-mail: grimes@smenet.org
Website: www.mineralseducationcoalition.org

The Minerals Education Coalition reflects the Society for Mining, Metallurgy, and Exploration's commitment to provide teachers with accurate and timely K–12 curriculum and activities. SME volunteers will distribute mineral samples and posters and be available to discuss the importance of mining and minerals to the public's lives and lifestyles.

Southern Teachers Agency #218
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Charlottesville, VA 22903
Phone: 434-295-9122
E-mail: recruiter@southernteachers.com
Website: www.southernteachers.com

Southern Teachers Agency offers a FREE service in assisting candidates in their search for teaching, coaching, and administrative positions in schools. More than 400 private and independent schools from around the South list their vacancies with STA, relying on STA to help them find the right candidate. If you are searching for a great science teaching position, stop by our exhibit to learn how STA can help!

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E-mail: ginny@sparkpointinnovations.com
Website: www.sparkpointinnovations.com

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Exhibitors

STR School & Science Technology Resources #606
B, C, EA, EN,
6630 Highway 9, Suite 201 G, PD, T
Felton, CA 95018 PreK–12, College
Phone: 877-395-1001
E-mail: sales@strscopes.com
Website: www.schooltr.com

STR is the exclusive provider of quality handheld video camera microscopes, including Scope-On-A-Rope and Dlite Microscope, plus education kits with the widest range of magnification lenses, accessories, and curricula for science. Our level of service is unparalleled; having specialized in this technology since the beginning 15 years ago.

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Schertz, TX 78154 6–12, College
Phone: 617-750-1480
E-mail: cynthia@swiftoptical.com

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Charlotte, NC 28205
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E-mail: info@ten80foundation.org
Website: www.ten80foundation.org

Find out how your students can practice music, practice sports, and practice STEM with our

K–12 curriculum. We offer after-school clubs, camps, and professional development with a focus on developing creative and critical thinking skills. Stop by our booth to learn more about our K–12 STEMvestigations, STEM Prep Curriculum, Math2Go, Mindbugs, Scaleville, and Ten80 Student Racing Challenge: NASCAR STEM Initiative.

Texas Instruments #408
PO Box 650311 MS 3821 B, C, G,
Dallas, TX 75265 PH, PD, T
Phone: 800-TICARES 6–12, College
E-mail: ti-cares@ti.com
Website: education.ti.com

Supporting each educator’s vision of student success in math and science, TI’s versatile education technology, curricular support materials, and professional development can help enhance teaching and learning.

Toshiba/NSTA ExploraVision #423
1840 Wilson Blvd. G, T
Arlington, VA 22201 K–12
Phone: 800-Explor9
E-mail: exploravision@nsta.org
Website: www.exploravision.org

The ExploraVision K–12 competition challenges students in the U.S. and Canada to research a technology of interest and explore what that technology could be like 20 years from now. Up to \$240,000 in savings bonds (at maturity) are awarded annually to student winners for the most innovative ideas that combine imagination with the tools of science.

Triangle Coalition for STEM Education #204
1840 Wilson Blvd, #201 PD
Arlington, VA 22201 K–12
Phone: 703-516-5963
E-mail: apena@trianglecoalition.org
Website: www.trianglecoalition.org

The Albert Einstein Distinguished Educator Fellowship Program provides a unique professional development opportunity for K–12 STEM educators to serve in the national educational arena. Fellows spend 11 months working in a federal agency or in a U.S. Congressional office, bringing knowledge and classroom experience to education program and/or policy efforts.

U.S. EPA SunWise Program #604
E-mail: sunwise@epa.gov EA, EN
Website: www.epa.gov/sunwise K–8

SunWise is an environmental and health education program that teaches children and their caregivers how to protect themselves from over-exposure to the Sun through the use of classroom, school, and community components.

The University of North Carolina at Asheville Dept. of Chemistry #621
1 University Heights C
Asheville, NC 28804 11–12, College
Phone: 828-232-5169
E-mail: swasiles@unca.edu
Website: chemistry.unca.edu

Through a grant from the National Science Foundation, the Department of Chemistry at the University of North Carolina at Asheville offers scholarships for academically talented students with financial need to pursue a bachelor’s degree in chemistry. High school science teachers, please stop by and get information for your students.

Vernier Software & Technology #300
13979 S.W. Millikan Way B, C, EA, EN,
Beaverton, OR 97005 G, PH, T
Phone: 888-837-6437 3–12, College
E-mail: info@vernier.com
Website: www.vernier.com

Vernier Software & Technology is a leading innovator of scientific data-collection technology. Focused on STEM, Vernier is dedicated to developing creative ways to teach and learn using hands-on science. Vernier creates easy-to-use and affordable science interfaces, sensors, and graphing/analysis software. Vernier’s technology-based solutions enhance STEM education, increase learning, and build students’ critical-thinking skills.

W.H. Freeman #333
Bedford, Freeman & Worth (BFW) B, C, EA,
300 American Metro Blvd. EN, G, PH, T
Hamilton, NJ 08619 9–12, College
Phone: 866-843-3715
E-mail: cweiss@bfpwpub.com
Website: www.bfpwpub.com/highschool

W.H. Freeman of Bedford, Freeman, & Worth (BFW) Publishers is the prestigious publisher of several groundbreaking resources including many NGSS-aligned materials.

Wake Forest Problem Based Learning #335
 Wake Forest School of Medicine B, EA, EN
 Medical Center Blvd. G, PD, T
 Winston Salem, NC 27157 K-8
 Phone: 336-716-3594
 E-mails: jjoyner@wakehealth.edu; shill@wakehealth.edu
 Website: www.wakeproblembasedlearning.com

Wake Forest Problem Based Learning is a student-centered methodology that focuses on solving real-world problems. Problem-Based Learning (PBL) was first implemented by medical schools in the United States and is now being adopted in innovative K-12 schools across the nation as a vehicle to help implement the Common Core State Standards.

WebAssign #411
 1791 Varsity Dr., Suite 200 C, PH
 Raleigh, NC 27606 9-12, College
 Phone: 919-829-8181
 E-mail: aknight@webassign.net
 Website: www.webassign.net

The independent online homework and assessment solution, WebAssign continues to innovate. WebAssign makes online homework easy by providing precoded questions from more than 750

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Western Governors University #303
 4001 South 700 East, Suite 700 B, C,
 Salt Lake City, UT 84107 EA, PH
 Phone: 866-225-5948 K-12
 E-mail: wgu@wgu.edu
 Website: www.wgu.edu

The Teachers College at Western Governors University offers regionally, nationally, and NCATE-accredited online competency-based master's degree programs in science education with specializations in chemistry, physics, biology, and geosciences. As a student, you'll enjoy modest tuition rates, unbelievable flexibility, and unmatched student support. Scholarships and financial aid are available.

WhiteBox Learning #432
 14600 Woodbluff Trace EA, EN, G, PD, PH, T
 Louisville, KY 40245 5-12, College

The "E" in STEM: WhiteBox Learning is a standards-based, web-based "3-D STEM ENGINEERING" learning system that allows stu-

dents to ENGINEER and simulate their designs virtually, before building . . . Students compete virtually, from any browser, 24/7, all around the world. . . how cool is that?! Gliders 2.0, Prosthetics 2.0, Dragster 2.0, Structures 2.0, GreenCar 2.0, Rockets 2.0, Mousetrap 2.0, MarsRover 2.0.

Zula International #210
 9100 Wilshire Blvd. B, C, EA, EN, G,
 Suite 880 W. PH, PD, T
 Beverly Hills, CA 90212 PreK-3
 Phone: 310-432-0511
 E-mail: tom@zula.com
 Website: www.zula.com

Zula is a leading provider of science inquiry and math educational products and professional development designed to promote critical thinking skills for preK-grade 3 children. Zula's comprehensive program provides a critical foundation in understanding core science and math concepts and promotes the development of critical thinking skills.



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Achieve3000® (Booth #325)

Friday, November 8	10:00–11:15 AM	211 A/B, Conv. Center	Experience the Power of a Digital Middle School Program (p. 89)
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American Chemical Society (Booth #510)

Friday, November 8	2:00–3:15 PM	212 A/B, Conv. Center	<i>Chemistry in the Community</i> , 6th Edition—Reinventing Itself (p. 101)
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Amplify Education, Inc. (Booth #201)

Thursday, November 7	8:00–9:15 AM	217 B/C, Conv. Center	33 Strategies for Integrating Disciplinary Literacy (p. 50)
Thursday, November 7	10:00–11:15 AM	217 B/C, Conv. Center	Get Results with Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 52)
Thursday, November 7	12:30–1:45 PM	217 B/C, Conv. Center	33 Strategies for Integrating Disciplinary Literacy (p. 59)
Thursday, November 7	2:15–3:30 PM	217 B/C, Conv. Center	The Best of Both Worlds: How to Engage Students in NGSS Practices Through Science and Literacy (p. 67)

ANATOMY IN CLAY® Learning System (Booth #613)

Friday, November 8	8:00–9:15 AM	218 A/B, Conv. Center	Engage Students in Anatomy—Help Discover Their Passion for Health-related Careers (p. 81)
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Bio-Rad Laboratories (Booth #618)

Friday, November 8	8:30–11:00 AM	213 B/C, Conv. Center	Generate a DNA Barcode and Identify Species (p. 83)
Friday, November 8	1:00–2:30 PM	213 B/C, Conv. Center	Ecology to Enzymes to Industry (AP Big Idea 4) (p. 95)
Friday, November 8	3:00–4:30 PM	213 B/C, Conv. Center	Engineer the Tools for Inquiry of Candy Food Dyes (p. 102)
Saturday, November 9	8:00–9:30 AM	213 B/C, Conv. Center	Worm and Squirm Your Way into Behavior Labs (p. 114)
Saturday, November 9	10:00–11:30 AM	213 B/C, Conv. Center	Discovering DNA (A Middle School Lab Activity) (p. 117)

Carolina Biological Supply (Booth #401)

Thursday, November 7	8:00–9:15 AM	208A, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 49)
Thursday, November 7	10:00–11:15 AM	208A, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 51)
Thursday, November 7	12:30–1:45 PM	208A, Conv. Center	The Next Generation Science Standards Are Here...Now What? Focus and Exploration of Implementation with Integrity K–8 (p. 58)
Thursday, November 7	2:15–3:30 PM	208A, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM Challenge™ (p. 66)
Thursday, November 7	4:00–5:15 PM	208A, Conv. Center	Hands-On Science with Classroom Critters (p. 71)
Friday, November 8	8:00–9:15 AM	208A, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 80)
Friday, November 8	10:00–11:15 AM	208A, Conv. Center	Is Biology a Foreign Language? (p. 88)
Friday, November 8	12 Noon–1:15 PM	208A, Conv. Center	Strawberry DNA and Molecular Models (p. 94)
Friday, November 8	2:00–3:15 PM	208A, Conv. Center	The Next Generation Science Standards...and the Common Core? Reflection and Application of the Common Core ELA and Math Integration K–8 (p. 101)
Friday, November 8	4:00–5:15 PM	208A, Conv. Center	Carolina Investigations™ for AP Chemistry (p. 106)

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CPO Science/School Specialty Science (Booth #311)

Thursday, November 7	8:00–9:15 AM	217A, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 50)
Thursday, November 7	10:00–11:15 AM	217A, Conv. Center	Genetics: Crazy Traits (p. 52)
Thursday, November 7	12:30–1:45 PM	217A, Conv. Center	Motion Comes Alive with CPO's Velocity Sensor (p. 59)
Thursday, November 7	2:15–3:30 PM	217A, Conv. Center	Wind Turbine and the STEM Approach to Science Concepts (p. 67)
Thursday, November 7	4:00–5:15 PM	217A, Conv. Center	Sound and Waves (p. 72)

Delta Education/School Specialty Science (Booth #309)

Thursday, November 7	8:00–9:15 AM	213D, Conv. Center	STEM Projects, Science Fair, and Student Performances (p. 50)
Thursday, November 7	10:00–11:15 AM	213D, Conv. Center	Science, the Literacy Connection, and the Common Core English Language Arts (p. 52)
Thursday, November 7	12:30–1:45 PM	213D, Conv. Center	DSM and STEM: Challenges for the Elementary Student (p. 59)
Thursday, November 7	2:15–3:30 PM	213D, Conv. Center	Teaching Argumentation for Our Next Generation (p. 67)

Delta Education/School Specialty Science–FOSS (Booth #309)

Thursday, November 7	8:00–9:15 AM	213 B/C, Conv. Center	“FOSStering” the Common Core: Science-centered Language Development (p. 49)
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Thursday, November 7	4:00–5:15 PM	213 B/C, Conv. Center	Evidence for Plate Movement (p. 71)

Dinah-Might Adventures, LP (Booth #310)

Friday, November 8	2:00–3:15 PM	217D, Conv. Center	Foldables® + Science Standards + Envelopes = A Winning Combination (p. 101)
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eCYBERMISSION (Booth #427)

Thursday, November 7	2:15–3:30 PM	211 A/B, Conv. Center	Improv in the Science Classroom: Helping Students Open Their Minds (p. 66)
Friday, November 8	8:00–9:15 AM	211 A/B, Conv. Center	“Hard” Doesn’t Mean “Bad”—Helping Students Understand That Facing Challenges Is a Good Thing (p. 81)

Educational Innovations, Inc. (Booth #317)

Friday, November 8	10:00–11:15 AM	217 B/C, Conv. Center	Elementary Teacher Survival Kit (p. 89))
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Edvotek Inc. (Booth #600)

Thursday, November 7	8:30–9:45 AM	210 A/B, Conv. Center	Using Enzyme-linked Immunosorbent Assay (ELISA) to Detect West Nile Virus Outbreak (p. 50)
Thursday, November 7	10:15–11:30 AM	210 A/B, Conv. Center	Solving the Case of the Missing Archive Using DNA Fingerprinting (p. 52)
Thursday, November 7	12:30–1:45 PM	210 A/B, Conv. Center	Detection of Mad Cow Disease Using a Two-Step PCR Process (p. 58)
Thursday, November 7	2:15–3:30 PM	210 A/B, Conv. Center	Wait! Were the Chips I Ate Genetically Modified? (p. 66)
Thursday, November 7	4:00–5:15 PM	210 A/B, Conv. Center	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 71)

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Flinn Scientific, Inc. (Booth #601)

Thursday, November 7	10:00–11:15 AM	217D, Conv. Center	New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 52)
Thursday, November 7	2:15–3:30 PM	217D, Conv. Center	New Advanced Inquiry Labs for AP Biology from Flinn Scientific (p. 67)
Friday, November 8	10:00–11:15 AM	217D, Conv. Center	Flinn Scientific Presents Best Practices for Teaching Chemistry: Experiments and Demonstrations (p. 89)

Frey Scientific/School Specialty Science (Booth #313)

Thursday, November 7	4:00–5:15 PM	213D, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 72)
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Howard Hughes Medical Institute (Booth #413)

Friday, November 8	10:00–11:15 AM	213A, Conv. Center	HHMI's <i>The Day the Mesozoic Died</i> Classroom Resources (p. 89)
Friday, November 8	12 Noon–1:15 PM	213A, Conv. Center	HHMI's Free Classroom Resources for Teaching Evolution (p. 94)
Friday, November 8	2:00–3:15 PM	213A, Conv. Center	HHMI's <i>The Making of the Fittest: Got Lactase? The Co-evolution of Genes and Culture</i> (p. 101)

It's About Time (Booth #516)

Friday, November 8	8:00–9:00 AM	213D, Conv. Center	Merging the Three Dimensions of the Next Generation Science Standards (p. 80)
Friday, November 8	9:30–10:30 AM	213D, Conv. Center	Engineering in the Next Generation Science Standards (p. 88)
Friday, November 8	11:00 AM–12 Noon	213D, Conv. Center	Bringing Technology into Your STEM Classroom (p. 93)
Friday, November 8	12:30–1:30 PM	213D, Conv. Center	Active Physics—Ahead of Its Time in Capturing the Essence of the NGSS and STEM (p. 94)
Friday, November 8	2:00–3:00 PM	213D, Conv. Center	Active Chemistry—Ahead of Its Time in Capturing the Essence of the NGSS and STEM (p. 100)

LAB-AIDS, Inc. (Booth #412)

Thursday, November 7	8:00–9:15 AM	208B, Conv. Center	Mastering the Chemical Formula: An Effective Way to Teach Subscripts and Coefficients (p. 49)
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Thursday, November 7	11:00 AM–12 Noon	208B, Conv. Center	Constructive Destruction (p. 53)
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Friday, November 8	9:30–10:30 AM	208B, Conv. Center	Biomes and Invasive Species (p. 88)
Friday, November 8	11:00 AM–12 Noon	208B, Conv. Center	Comparing Earth to Other Worlds (p. 93)
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Saturday, November 9	9:30–10:30 AM	208B, Conv. Center	Breeding Critters (p. 117)
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LearnEd Notebooks (Booth #224)

Friday, November 8	2:00–3:15 PM	217 B/C, Conv. Center	The Next Generation of Notebooking (p. 101)
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LEGO Education (Booth #517)

Friday, November 8	10:00–11:15 AM	212 A/B, Conv. Center	There's a New Robot in Class! LEGO® MINDSTORMS® Education EV3 in Your Classroom (p. 89)
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National Geographic Learning (Booth #221)

Friday, November 8	12 Noon–1:15 PM	217 B/C, Conv. Center	Carnivores of Madagascar (p. 94)
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NewPath Learning (Booth #513)

Thursday, November 7	10:00–11:15 AM	213A, Conv. Center	Integrating Online Learning into the Science Classroom (p. 51)
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PASCO scientific (Booth #501)

Friday, November 8	8:00–9:15 AM	210 A/B, Conv. Center	PASCO's SPARKscience for High School Students—Free Starter Kits for Attendees! (p. 81)
Friday, November 8	10:00–11:15 AM	210 A/B, Conv. Center	PASCO's SPARKscience for K–8 Students—Free Starter Kits for Attendees! (p. 88)
Friday, November 8	12 Noon–1:15 PM	210 A/B, Conv. Center	PASCO's SPARKscience for High School Students—Free Starter Kits for Attendees! (p. 94)

SAE International's A World In Motion® (Booth #323)

Friday, November 8	8:00–9:15 AM	216 A/B, Conv. Center	Science and Literature for the Young Learner (p. 81)
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Sangari Active Science (Booth #529)

Thursday, November 7	12:30–1:45 PM	219 A/B, Conv. Center	Applying Common Core State Standards for English Language Arts Through Active Science Instruction in the K–8 Classroom (p. 59)
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Friday, November 8	10:00–11:15 AM	219 A/B, Conv. Center	The NGSS and Scientific Practices—More Than Photoshopping Models' Flaws (p. 89)

Science First®/STARLAB® (Booth #523)

Thursday, November 7	12:30–1:00 PM	Booth #523, Exhibit Hall	A Change of Seasons (p. 53)
Friday, November 8	1:00–1:30 PM	Booth #523, Exhibit Hall	Shaping Earth (p. 95)

Siemens We Can Change the World Challenge (Booth #616)

Thursday, November 7	2:15–3:30 PM	213A, Conv. Center	Meet the Polar Bears and Help Change the World (p. 67)
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Simulation Curriculum Corp. (Booth #511)

Thursday, November 7	10:00–11:15 AM	218 A/B, Conv. Center	Comets—Beauties or Beasts? (p. 52)
Thursday, November 7	2:15–3:30 PM	218 A/B, Conv. Center	Stars—From Cradle to Grave (p. 67)
Friday, November 8	10:00–11:15 AM	218 A/B, Conv. Center	Plate Tectonics: Continents on the Move (p. 89)
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Swift Optical Instruments, Inc. (Booth #507)

Thursday, November 7	2:15–3:30 PM	212 A/B, Conv. Center	Create a Digital Wi-Fi Classroom! (p. 66)
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Ten80 Education (Booth #533)

Friday, November 8	8:00–9:15 AM	212 A/B, Conv. Center	GeoSTEAM in the K–2 Classroom (p. 81)
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Vernier Software & Technology (Booth #300)

Friday, November 8	8:00–9:30 AM	209 A/B, Conv. Center	Chemistry and Biology with Vernier (p. 82)
Friday, November 8	10:00–11:30 AM	209 A/B, Conv. Center	Integrate iPad® and BYOD with Vernier Technology (p. 90)
Friday, November 8	12 Noon–1:30 PM	209 A/B, Conv. Center	Integrate iPad and BYOD with Vernier Technology (p. 94)
Friday, November 8	2:00–3:30 PM	209 A/B, Conv. Center	Physics and Physical Science with Vernier (p. 102)

Schedule at a Glance

G = General
P = Preschool
C = College

M = Middle School
H = High School
R = Research

S = Supervision/Administration
I = Informal Education

T = Teacher Preparation
E = Elementary

Biology/Life Science

Thursday

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8:00–9:00 AM	H	Queens, Westin	Using Synthetic Data to Enhance Inquiry (p. 46)
8:00–9:00 AM	H–C	Grand Ballroom A, Westin	Who Did It? Inquiry-based Forensic Serology and DNA Analysis in the Classroom (p. 48)
8:00–9:15 AM	6–12	208A, Conv. Center	Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 49)
8:30–9:45 AM	9–C	210 A/B, Conv. Center	Using Enzyme-linked Immunosorbent Assay (ELISA) to Detect West Nile Virus Outbreak (p. 50)
9:30–10:30 AM	9–12	208B, Conv. Center	Investigating Stem Cell Differentiation (p. 51)
10:00–11:15 AM	K–12	208A, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 51)
10:00–11:15 AM	6–12	217A, Conv. Center	Genetics: Crazy Traits (p. 52)
10:15–11:30 AM	9–C	210 A/B, Conv. Center	Solving the Case of the Missing Archive Using DNA Fingerprinting (p. 52)
12:30–1:30 PM	E	215, Conv. Center	The Amazing Writing Race—Just Zoo It! (p. 55)
12:30–1:30 PM	H–C	Grand Ballroom A, Westin	Drugs, Drug Targets, and You—A Molecular Perspective (p. 57)
12:30–1:30 PM	M–C/S	Providence Blrm. II, Westin	Ignite Student Interest in Anatomy with Hands-On Teaching Techniques (p. 58)
12:30–1:30 PM	M–H	206 A/B, Conv. Center	Teach Microbiology, Reinforce Process Skills, and Incorporate Technology into Your Curriculum with Medical Mysteries Web Adventures (p. 55)
12:30–1:30 PM	H	Queens, Westin	iGEM: Synthetic Biology in High School (p. 56)
12:30–1:45 PM	10–C	210 A/B, Conv. Center	Detection of Mad Cow Disease Using a Two-Step PCR Process (p. 58)
2:00–3:00 PM	H	Providence Blrm. III, Westin	Epigenetics: Integrating This Emerging Field into Your Biology Curriculum (p. 64)
2:00–3:00 PM	H–C	Grand Ballroom A, Westin	Teaching Evolution by Exploring the Tree of Life (p. 63)
2:00–3:00 PM	E–M	207D, Conv. Center	DNA Is Elementary! (p. 63)
2:00–3:00 PM	E–H	Independence, Westin	Engage Your Students with NOAA's Coral Reef and Ocean Acidification Resources (p. 62)
2:15–3:30 PM	10–C	210 A/B, Conv. Center	Wait! Were the Chips I Ate Genetically Modified? (p. 66)
2:15–3:30 PM	9–12	217D, Conv. Center	New Advanced Inquiry Labs for AP Biology from Flinn Scientific (p. 67)
3:30–4:30 PM	M–C	Grand Ballroom A, Westin	Polygenerific: Using Neuroscience Research to Enhance Genetics and Biotechnology Lessons (p. 70)
3:30–4:30 PM	H	Queens, Westin	Reinforce Scientific and Engineering Practices Through Clinical Research with Virtual Clinical Trials (p. 69)
3:30–4:30 PM	M–H/S	Trade, Westin	E-books: Addressing Student and District Needs—It's Easier Than You Think (p. 69)
4:00–5:15 PM	10–C	210 A/B, Conv. Center	The Drunken Worms: Exploring Gene Function with <i>C. elegans</i> (p. 71)
4:00–5:15 PM	K–12	208A, Conv. Center	Hands-On Science with Classroom Critters (p. 71)
5:00–6:00 PM	M	207 B/C, Conv. Center	OUTBREAK! (p. 74)
5:00–6:00 PM	H–C	Harris, Westin	Beyond X and Y: Recent Discoveries About the Mechanisms Governing Sex Determination and Differentiation (p. 73)
5:00–6:00 PM	M–H	Queens, Westin	CSI Web Adventures (p. 74)

Friday

8:00–9:00 AM	M–H	Harris, Westin	Modeling—Water, Water Everywhere (p. 80)
8:00–9:00 AM	E	203A, Conv. Center	1, 2, 3, Look at Me—Genetics Differences and Similarities in Organisms (p. 78)
8:00–9:00 AM	I	215, Conv. Center	Evolution Teaching Resources and Activities from NESCent (p. 77)
8:00–9:00 AM	M–C	Grand Ballroom D, Westin	Neuroscience for Your Biology Classroom (p. 80)

Schedule at a Glance Biology/Life Science

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8:00–9:15 AM	6–12	208A, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 80)
8:30–11:00 AM	10–C	213 B/C, Conv. Center	Generate a DNA Barcode and Identify Species (p. 83)
9:30–10:30 AM	9–12	208B, Conv. Center	Biomes and Invasive Species (p. 88)
9:30–10:30 AM	I	204, Conv. Center	Examining Bioaccumulation and Biomagnification: Implications for Ecosystems and Human Health (p. 84)
9:30–10:30 AM	H–C	Grand Ballroom D, Westin	The Cellular Landscapes of David Goodsell: Biology at the Mesoscale (p. 88)
9:30–10:30 AM	G	201 A/B, Conv. Center	Growing Up WILD! (p. 86)
9:30–10:30 AM	M–H	Sharon, Westin	The Effects of Student-directed Service Learning on HIV Attitudes (p. 86)
9:30–10:30 AM	M–H	Sharon, Westin	Integrating Bioethical Case Studies into the Science Curriculum (p. 86)
10:00–11:15 AM	K–12	208A, Conv. Center	Is Biology a Foreign Language? (p. 88)
11:00 AM–12 Noon	M	207D, Conv. Center	Snot or Not? How Mucus Protects Your Body from Infection (p. 92)
11:00 AM–12 Noon	G	206 A/B, Conv. Center	Literacy and iPads—Where Technology Meets the Science Textbook (p. 90)
11:00 AM–12 Noon	C	Grand Ballroom D, Westin	Developing Effective Discussion Boards for General Education Science (p. 93)
11:00 AM–12 Noon	M–H	Harris, Westin	One Part at a Time: Using Morphemes to Understand Science Vocabulary (p. 93)
12 Noon–1:15 PM	K–8	217 B/C, Conv. Center	Carnivores of Madagascar (p. 94)
12 Noon–1:15 PM	9–12	208A, Conv. Center	Strawberry DNA and Molecular Models (p. 94)
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1:00–2:30 PM	10–C	213 B/C, Conv. Center	Ecology to Enzymes to Industry (AP Big Idea 4) (p. 95)
2:00–3:00 PM	M–C	206 A/B, Conv. Center	Literacy in the Biology Classroom (p. 96)
2:00–3:00 PM	E	215, Conv. Center	No Bones About It: Integrating Elementary Science with Common Core Literacy Standards (p. 96)
2:00–3:00 PM	H	Harris, Westin	Same Genes, Different Fates (p. 100)
2:00–3:15 PM	9–C	213A, Conv. Center	HHMI's <i>The Making of the Fittest: Got Lactase? The Co-evolution of Genes and Culture</i> (p. 101)
3:30–4:30 PM	E–H	Grand Ballroom D, Westin	Systems Engineering for Life Sciences (p. 105)
3:30–4:30 PM	H	Harris, Westin	Supporting Common Core Through Science Writing (p. 105)
3:30–4:30 PM	H	Sharon, Westin	Edible Models in Biology from Inclusion to AP (p. 104)
3:30–4:30 PM	M–H	Sharon, Westin	Model Ecosystems (p. 104)
5:00–6:00 PM	H–C	Sharon, Westin	The Biology, Physiology, and Social Implications of the Methamphetamine Epidemic (p. 107)
5:00–6:00 PM	H	Harris, Westin	Experiencing Science in the Classroom Using Guided Inquiry (p. 109)
5:00–6:00 PM	G	Independence, Westin	Top 10 Conundrums of Teaching Science Online (p. 107)
5:00–6:00 PM	G	203B, Conv. Center	NSTA Press® Session: Argumentation in the Science Classroom (p. 108)

Saturday

8:00–8:30 AM	G	212 A/B, Conv. Center	Spicing Up After-School Science with SALSA (p. 111)
8:00–9:00 AM	9–12	208B, Conv. Center	Shuffle It Up! Understanding Photosynthesis and Respiration (p. 114)
8:00–9:00 AM	M	207 B/C, Conv. Center	ELISA: An Immunology Lab for Middle Grades Students (p. 113)
8:00–9:00 AM	I	204, Conv. Center	Genetic Engineering on Steroids: BioBuilding a Cell to Do What You Want (p. 111)
8:00–9:00 AM	H–C	Providence Blrm. I, Westin	Genomics and Personalized Medicine: Teaching Tomorrow's Science (p. 113)
8:00–9:30 AM	10–C	213 B/C, Conv. Center	Worm and Squirm Your Way into Behavior Labs (p. 114)
9:30–10:30 AM	6–8	208B, Conv. Center	Breeding Critters (p. 117)
9:30–10:30 AM	G	Independence, Westin	iSTEM: iPad Movie Trailers Foster Digital Age Learning in the Science Classroom (p. 115)
9:30–10:30 AM	H	Sharon, Westin	Technology-assisted Mastery Learning in Biology (p. 115)
10:00–11:30 AM	6–8	213 B/C, Conv. Center	Discovering DNA (A Middle School Lab Activity) (p. 117)
11:00 AM–12 Noon	H–C	Grand Ballroom B, Westin	Modeling in Biology: Making Proteins Real (p. 120)
11:00 AM–12 Noon	H	Sharon, Westin	Best Practices in Biology (p. 119)
11:00 AM–12 Noon	G	Independence, Westin	Use Google Earth and Cyber Databases to Conduct Inquiry (p. 119)
11:00 AM–12 Noon	E	203A, Conv. Center	Plant Literacy Requires "Practices" with Seeds (p. 119)

Chemistry/Physical Science

Thursday

8:00–9:00 AM	H	Kings, Westin	BioPlastic—Going from Synthetic to Natural Polymers (p. 46)
8:00–9:15 AM	6–9	217A, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 50)
8:00–9:15 AM	9–12	208B, Conv. Center	Mastering the Chemical Formula: An Effective Way to Teach Subscripts and Coefficients (p. 49)
10:00–11:15 AM	9–12	217D, Conv. Center	New Advanced Inquiry Labs for AP Chemistry from Flinn Scientific (p. 52)
2:00–3:00 PM	H	Kings, Westin	Stoichiometry with Rufus (p. 62)
2:00–3:00 PM	H–C	Providence Blrm. II, Westin	NARST Session: Increasing Student Performance in Large Lecture STEM Courses: A Team Approach to Successful Learning (p. 64)
2:00–5:00 PM	C	Dunn, Hilton	NSTA/CAEP Development of Program Report Workshop (p. 66)
3:30–4:30 PM	M–H	Kings, Westin	Win a Shell Science Lab Makeover for Your School (p. 69)
3:30–4:30 PM	M–H	Providence Blrm. III, Westin	What Is Your Cosmic Connection to the Elements? (p. 71)
3:30–4:30 PM	E–M	204, Conv. Center	The Science of Cooking Local Foods: Integrating Farm-to-School Activities and Physical Science (p. 68)
5:00–6:00 PM	H	205, Conv. Center	Introducing the <i>ChemMatters</i> Compilation Project (p. 72)
5:00–6:00 PM	H–C	Grand Ballroom A, Westin	Preparing Students for Guided Inquiry in AP Chemistry (p. 75)
5:00–6:00 PM	H	Grand Ballroom D, Westin	Preparing to Teach Chemistry with the NGSS: Real Lessons from Real Teachers (p. 75)
5:00–6:00 PM	G	Independence, Westin	Sliding Classrooms (p. 73)

Friday

8:00–9:00 AM	M–H	Kings, Westin	Demos for the Holidays! Excite Students with Chemical Demonstrations (p. 78)
8:00–9:00 AM	M	Providence Blrm. III, Westin	ACS Middle Level Session: Matter: Solids, Liquids, and Gases (p. 80)
8:00–9:00 AM	H	Providence Blrm. II, Westin	ACS Session One: Chemical Bonding—Why Water Is Different (p. 80)
8:00–9:00 AM	I	207 B/C, Conv. Center	Make a Mirror, Make a Kaleidoscope—Fun with Chemistry and Engineering (p. 79)
8:00–9:15 AM	9–12	208B, Conv. Center	Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (p. 80)
8:00–9:30 AM	7–C	209 A/B, Conv. Center	Chemistry and Biology with Vernier (p. 82)
9:30–10:30 AM	H	Providence Blrm. II, Westin	ACS Session Two: Entropy: Mixing and Unmixing (p. 88)
9:30–10:30 AM	M	Providence Blrm. III, Westin	ACS Middle Level Session: Changes of State: Evaporation and Condensation (p. 88)
9:30–10:30 AM	M–H	Kings, Westin	Polymer Food Chemistry: Have Fun with Polymer Chemistry by Making Mountain DewVair (p. 85)
10:00–11:15 AM	9–12	217D, Conv. Center	Flinn Scientific Presents Best Practices for Teaching Chemistry: Experiments and Demonstrations (p. 89)
11:00–11:30 AM	H/I	Kings, Westin	Engaging Students in Chemistry Outside the Classroom: A Look at ChemClub (p. 90)
11:00 AM–12 Noon	H	Providence Blrm. II, Westin	ACS Session Three: Entropy: Energy Transfer (p. 93)
11:00 AM–12 Noon	M	Providence Blrm. III, Westin	ACS Middle Level Session: Density—A Molecular View (p. 93)
11:00 AM–12 Noon	M–H	207A, Conv. Center	I Have an iPad—Now What? (p. 92)
2:00–3:00 PM	9–12	208B, Conv. Center	Using the Engineering Design Process to Understand Heat (p. 100)
2:00–3:00 PM	9–C	213D, Conv. Center	Active Chemistry—Ahead of Its Time in Capturing the Essence of the NGSS and STEM (p. 100)
2:00–3:00 PM	M	Providence Blrm. III, Westin	ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (p. 100)
2:00–3:00 PM	H	Providence Blrm. II, Westin	ACS Session Four: Electromagnetic Radiation Energy (p. 100)
2:00–3:15 PM	8–C	212 A/B, Conv. Center	<i>Chemistry in the Community</i> , 6th Edition—Reinventing Itself (p. 101)
3:30–4:30 PM	H	Providence Blrm. II, Westin	ACS Session Five: Rates: Concentration and Half-Life (p. 105)
3:30–4:30 PM	M	Providence Blrm. III, Westin	ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences (p. 105)
3:30–4:30 PM	H	Kings, Westin	Corrosion Is Everywhere—Use It to Make Chemistry Relevant and Fun (p. 103)

Schedule at a Glance Chemistry/Physical Science

3:30–4:30 PM	H/S	Queens, Westin	Using Modeling Activities in the High School Chemistry Class (p. 104)
4:00–5:15 PM	9–12	208A, Conv. Center	Carolina Investigations™ for AP Chemistry (p. 106)
5:00–6:00 PM	M	Providence Blrm. III, Westin	ACS Middle Level Session: Chemical Change—Breaking and Making Bonds (p. 109)
5:00–6:00 PM	H	Providence Blrm. II, Westin	ACS Session Six: Acid/Base Reactions: Carbon Dioxide (p. 109)
5:00–6:00 PM	H	Kings, Westin	Basic Polymer Science for the High School Classroom (p. 107)

Saturday

8:00–9:00 AM	H	Sharon, Westin	Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (p. 112)
8:00–9:00 AM	E–M	216 A/B, Conv. Center	Inquiry in Action: Investigating Matter Through Inquiry (p. 113)
9:30–10:00 AM	H	Kings, Westin	Digital Chemistry Resources That Teachers and Students Can Rely On (p. 114)
9:30–10:30 AM	E	203A, Conv. Center	A Polymer Primer for Elementary (p. 116)
9:30–10:30 AM	E–M/I	207A, Conv. Center	The Magic of Engineering (p. 116)
11:00 AM–12 Noon	M–H	Providence Blrm. II, Westin	POGIL for Chemistry and Biology in High School (p. 121)

Earth/Space Science

Thursday

8:00–9:00 AM	M–H	Grand Ballroom D, Westin	More Than Mud—The “Hole” Story Behind Seafloor Sediments (p. 48)
8:00–9:00 AM	E	203A, Conv. Center	Engineering K–5 (p. 47)
8:00–9:00 AM	M–H	Sharon, Westin	Explore Earthquakes! (p. 46)
8:00–9:00 AM	H–C/I	Harris, Westin	Crosscutting Concepts: Ice Core Records—From Volcanoes to Supernovas (p. 46)
10:00–11:15 AM	6–12	218 A/B, Conv. Center	Comets—Beauties or Beasts? (p. 52)
11:00 AM–12 Noon	6–8	208B, Conv. Center	Constructive Destruction (p. 53)
12:30–1:00 PM	5–8	Booth #523, Exhibit Hall	A Change of Seasons (p. 53)
12:30–1:30 PM	I	204, Conv. Center	An Inquiry Approach to Teaching Sedimentary and Metamorphic Rocks (p. 54)
12:30–1:30 PM	M–H/I	Sharon, Westin	Science Olympiad Coaches Clinic: Astronomy and Reach-for-the-Stars Events (p. 56)
12:30–1:30 PM	E–H	Independence, Westin	MY NASA DATA Across the Curriculum for the Digital Classroom (p. 56)
12:30–1:30 PM	E–M	Ballroom B, Conv. Center	CESI Session: Get on Board with CESI and NASA’s International Space Station (p. 57)
12:30–1:45 PM	9–12	208B, Conv. Center	Using Climate Proxies to Learn About Earth’s Climate History (p. 58)
2:00–3:00 PM	M–C/S	Grand Ballroom C, Westin	Disciplinary Literacy, the NGSS, and Common Core in Secondary Science Classrooms (p. 63)
2:00–3:00 PM	M–C	Tryon, Westin	Attack Science Journal Articles Head On with Your Students—Demystifying the Graphics and Charts (p. 64)
2:00–3:00 PM	M–H/I	Grand Ballroom D, Westin	STEM Astronomy—From Photons to Images (p. 63)
2:00–3:00 PM	M–H	Sharon, Westin	The Solar System and Its Formation: Kinesthetic Instructional Strategies (p. 62)
2:15–3:30 PM	6–12	218 A/B, Conv. Center	Stars—From Cradle to Grave (p. 67)
2:15–3:30 PM	5–8	213 B/C, Conv. Center	Asteroid! Will Earth Be Hit Again? (p. 67)
3:30–4:30 PM	M–H/I	Grand Ballroom D, Westin	Our Cosmic Connection: Stellar Evolution and Planet Earth (p. 70)
3:30–4:30 PM	M–H	203B, Conv. Center	NSTA Press® Session: <i>Earth Science Puzzles, Making Meaning From Data</i> (p. 70)
3:30–4:30 PM	P–E	202 A/B, Conv. Center	Using Children’s Literature to Celebrate Seasons, Solstices, and Equinoxes in Diverse Cultures (p. 68)
4:00–5:15 PM	5–8	213 B/C, Conv. Center	Evidence for Plate Movement (p. 71)
4:00–5:15 PM	4–12	213D, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 72)
5:00–6:00 PM	E–H	Providence Blrm. II, Westin	JetStream: An Online School for Weather (p. 75)
5:00–6:00 PM	M–H	Providence Blrm. III, Westin	The Hidden Lives of Galaxies (p. 75)
5:00–6:00 PM	M–H/S	Trade, Westin	Engaging the 21st-Century Learner Through Collaboration, Inquiry, and Technology (p. 74)

Friday

8:00–9:00 AM	M–H	Sharon, Westin	An Inquiry Approach to Teaching the Rock Cycle and Igneous Rocks (p. 78)
8:00–9:00 AM	G	Independence, Westin	Earthquake! Catch the Wave (p. 78)
8:00–9:00 AM	E–H	Ballroom A, Conv. Center	Effective Strategies for Sharing Climate Change Science and Energy Consumption Implications in the Classroom (p. 79)
9:30–10:00 AM	G	206 A/B, Conv. Center	Integrating Web GIS in the Earth Science Curriculum to Investigate Tectonics (p. 83)
9:30–10:30 AM	M–H/I	Grand Ballroom B, Westin	Making Astronomy Fun and Interdisciplinary (p. 87)
9:30–10:30 AM	G	Tryon, Westin	Geocaching 101 (p. 86)
9:30–10:30 AM	E–H	Ballroom A, Conv. Center	Effective Approaches for Addressing the Next Generation Science Standards in the Earth and Space Science Classroom (p. 87)
10:00–11:15 AM	6–12	218 A/B, Conv. Center	Plate Tectonics: Continents on the Move (p. 89)
10:00–11:15 AM	7–12	213A, Conv. Center	HHMI's <i>The Day the Mesozoic Died</i> Classroom Resources (p. 89)
11:00 AM–12 Noon	9–12	208B, Conv. Center	Comparing Earth to Other Worlds (p. 93)
11:00 AM–12 Noon	M–H	Grand Ballroom C, Westin	NASA's Pi in the Sky: Using Mathematics to Investigate Astronomical Phenomena (p. 93)
11:00 AM–12 Noon	M–H	Grand Ballroom B, Westin	"Astro"nishing Astronomy: Revealing Black Holes and the Invisible Universe (p. 92)
11:00 AM–12 Noon	H–C/I	Grand Ballroom A, Westin	Modeling Stellar Evolution on the H-R Diagram (p. 92)
11:00 AM–12 Noon	G	Ballroom A, Conv. Center	National Earth Science Teachers Association Rock and Mineral Raffle (p. 92)
11:00 AM–12 Noon	E–H	Independence, Westin	Students' Cloud Observations Online—From Observing to Understanding (p. 91)
1:00–1:30 PM	5–12	Booth #523, Exhibit Hall	Shaping Earth (p. 95)
2:00–3:00 PM	E–H	Grand Ballroom C, Westin	Engage Engineering in a STEM-based Classroom (p. 99)
2:00–3:00 PM	H–C	Grand Ballroom D, Westin	Spectroscopy: Stairway to the Stars (p. 100)
2:00–3:00 PM	M	207A, Conv. Center	The Seismic Use of Smart Devices (p. 99)
2:00–3:00 PM	M–H	Sharon, Westin	How Big Is a Billion Anyway? Teaching Scale in the Earth Science Classroom (p. 98)
2:00–3:00 PM	E–H	Ballroom A, Conv. Center	Using Natural Hazards as a Hook in the Earth and Space Science Classroom (p. 99)
2:00–3:15 PM	6–12	218 A/B, Conv. Center	Volcanoes—The Good, the Bad, and the Ugly (p. 101)
3:30–4:30 PM	E–H	Ballroom A, Conv. Center	High-Impact Classroom Earth Science in a STEM World (p. 105)
5:00–5:30 PM	I	204, Conv. Center	Galileo: Lessons in Literacy (p. 106)
5:00–6:00 PM	M–H	207A, Conv. Center	EarthScope: A Hubble Space Telescope for Earth's Interior That's in Your Neighborhood! (p. 108)
5:00–6:00 PM	H	Grand Ballroom D, Westin	NASA's Dangerous Mathematics: Black Holes and Dividing by Zero (p. 109)

Saturday

8:00–9:00 AM	H–C	Grand Ballroom B, Westin	Ice Core Records: Earth Systems, Volcanoes, Solar Proton Events, and Supernovas (p. 113)
8:00–9:00 AM	M–H	Kings, Westin	Using the Online "Hubble Exoplanet Classroom" in Grades 8–12 Classrooms! (p. 112)
9:30–10:30 AM	M–H	Grand Ballroom A, Westin	NASA's Supernova Mathematics (p. 116)
9:30–10:30 AM	E–H	Providence Blrm. III, Westin	Science Literacy Should be an "Open Book" (p. 117)
9:30–10:30 AM	E–M	216 A/B, Conv. Center	Making Sense of Remote Sensing (p. 116)
11:00 AM–12 Noon	H	Grand Ballroom A, Westin	NASA's Mathematical Evidence for Dark Matter (p. 120)
11:00 AM–12 Noon	M/I	207A, Conv. Center	Skynet Junior Scholars (p. 120)
11:00 AM–12 Noon	I	204, Conv. Center	SAGE III on ISS: Engineering from a NASA Mission to the Classroom (p. 118)

Schedule at a Glance Environmental Science

Environmental Science

Thursday

8:00–9:00 AM	H	Providence Blrm. III, Westin	Literacy in the Lab (p. 49)
8:00–9:00 AM	G	Tryon, Westin	Transforming Minds in a Transitioning Community (p. 49)
12:30–1:30 PM	M–H	Providence Blrm. III, Westin	Wiggling into Biochar (p. 58)
12:30–1:30 PM	M	207D, Conv. Center	Student Ambassadors for the Environment Using Technology to Educate Their Peers (p. 57)
2:00–3:00 PM	H–C	Harris, Westin	“Mining” for Sea Scallops (p. 62)
2:00–3:00 PM	I	207A, Conv. Center	Use Service Learning/STEM Projects to Turn Your School into a GreenSchool! (p. 63)
2:15–3:30 PM	K–12	213A, Conv. Center	Meet the Polar Bears and Help Change the World (p. 67)
3:30–4:30 PM	M–H	Providence Blrm. II, Westin	Facing the Future: Understanding Sustainability and Global Connections (p. 71)
3:30–4:30 PM	I	201 A/B, Conv. Center	Enhancing Forest Field Study with PLT (p. 70)
5:00–6:00 PM	P–M	201 A/B, Conv. Center	How Does Your Garden Grow? (p. 72)

Friday

8:00–9:00 AM	G	Tryon, Westin	Climate Change (p. 78)
8:00–9:00 AM	M–H	Grand Blrm. B, Westin	Science Education for Global Citizenship: People, Food, Energy, and Sustainability (p. 79)
9:30–10:30 AM	E	203A, Conv. Center	Engineering—It’s Elementary, My Dear (p. 86)
11:00–11:30 AM	H	Queens, Westin	Kenan Fellow STEM Careers in Education: Pharmaceutical Fun (p. 90)
2:00–3:00 PM	M–H	Kings, Westin	Making Superfund Relevant to Your Students (p. 98)
2:00–3:00 PM	H–C	Tryon, Westin	Global Change in Local Places (p. 98)
2:00–3:00 PM	I	204, Conv. Center	Building Community with Environmental Science (p. 96)
3:30–4:30 PM	E–M	207D, Conv. Center	Papermaking for Inquiry-based Learning (p. 105)
3:30–4:30 PM	G	Caldwell, Hilton	SCST Session: Introducing, Nurturing, and Strengthening Sustainability Concepts with Preservice Teachers and the Greater University Community (p. 103)
5:00–6:00 PM	G	Grand Ballroom C, Westin	Estuaries! (p. 108)
5:30–6:00 PM	H–C	Caldwell, Hilton	SCST Session: Integrating Geoscience Education and Environmental Monitoring on Yap, Micronesia (p. 106)

Saturday

8:00–9:00 AM	H	205, Conv. Center	Vertically Aligning the Science Curriculum (p. 111)
9:30–10:30 AM	M–H	Providence Blrm. II, Westin	Forests, Carbon, and Climate Change (p. 117)
9:30–10:30 AM	M–H	Trade, Westin	Utilizing the Community as a Context for Learning: Introducing Students to Environmental Justice (p. 115)
11:00 AM–12 Noon	H	Kings, Westin	My Biome Vacation! (p. 119)
11:00 AM–12 Noon	G	Providence Blrm. III, Westin	Evaluating Woody Biomass Feedstocks for Biopower (p. 121)

General Science

Thursday

8:00–8:30 AM	E	206 A/B, Conv. Center	Argumentation and Inquiry with Electronic Science Notebooks (p. 45)
8:00–9:00 AM	E	207 B/C, Conv. Center	Bringing Literacy and STEM Together: B.L.A.S.T. (p. 48)
8:00–9:00 AM	E–M	207A, Conv. Center	Science Notebooking: Integrating Literacy and Science Instruction in the Elementary Classroom (p. 48)
8:00–9:00 AM	G	205, Conv. Center	The North Carolina Engineering STEM Connections (p. 45)
8:00–9:00 AM	M	207D, Conv. Center	Teaching Engineering Is a Snap with Science Olympiad (p. 48)
8:00–9:00 AM	M–H	Grand Ballroom B, Westin	STEM Projects for the Middle School Classroom (p. 46)

Schedule at a Glance General Science

8:00–9:00 AM	H	Providence Blrm. I, Westin	How to Turn Your Lessons into Inquiry (p. 48)
8:00–9:00 AM	S	Providence Blrm. II, Westin	Engineering a Kenan Classroom (p. 49)
8:00–9:00 AM	G	South Carolina Hall, Hilton	STEM @ Your Library (p. 48)
8:00–9:00 AM	E–H	Ardrey, Hilton	Making Science Process Skills Stick with Students! (p. 45)
8:00–9:00 AM	M–C	Charlotte Hall, Hilton	Problem Solving with Science and Math (p. 48)
8:00–9:00 AM	E–H	Walker A/B, Hilton	Science Connections Using Fiction Books (p. 46)
8:00–9:00 AM	M–H	203B, Conv. Center	NSTA Press® Session: Geometry of Life: The Engineered World (p. 47)
8:00–9:00 AM	G	Ballroom B, Conv. Center	First-Timer Conference Attendees Orientation—Is This Your First NSTA Conference? (p. 45)
8:00–9:00 AM	G	Gwynn, Hilton	Use a Social Networking Tool to Facilitate Scientific Skills and New Literacies (p. 45)
8:00–9:15 AM	K–6	217 B/C, Conv. Center	33 Strategies for Integrating Disciplinary Literacy (p. 50)
8:00–9:15 AM	K–8	213D, Conv. Center	STEM Projects, Science Fair, and Student Performances (p. 50)
8:00–9:15 AM	K–6	213 B/C, Conv. Center	“FOSStering” the Common Core: Science-centered Language Development (p. 49)
9:15–10:30 AM	G	Ballroom C/D, Conv. Center	Building Our World Through STEM Education (p. 51)
10:00–11:15 AM	K–8	213D, Conv. Center	Science, the Literacy Connection, and the Common Core English Language Arts (p. 52)
10:00–11:15 AM	K–6	213 B/C, Conv. Center	Scientific Practices: What Does Argumentation Look Like in an Elementary Classroom? (p. 51)
10:00–11:15 AM	1–10	213A, Conv. Center	Integrating Online Learning into the Science Classroom (p. 51)
10:00–11:15 AM	2–6	217 B/C, Conv. Center	Get Results with Science and Literacy Integration: Seeds of Science/Roots of Reading® (p. 52)
11:10 AM–12:10 PM	G	Entrance to Exhibit Hall	Meet the Presidents and Board/Council (p. 53)
12:30–1:30 PM	G	Ballroom C/D, Conv. Center	Implementing the NGSS: Shifts in Classroom Practice (p. 54)
12:30–1:00 PM	M–H	Grand Ballroom B, Westin	Using Daybooks In the Science Classroom (p. 53)
12:30–1:30 PM	M–H	Grand Ballroom C, Westin	A Sensor in Your Belly Button? Explore Cool New Sensors and Ethical Issues (p. 57)
12:30–1:30 PM	G	206 A/B, Conv. Center	Flipping the Classroom with a Kenan Fellow (p. 55)
12:30–1:30 PM	P–E	207 B/C, Conv. Center	Portable Affordable Simple STEM (P.A.S.S.) (p. 57)
12:30–1:30 PM	E–M	207A, Conv. Center	My 5Es—Engaging, Entertaining, Elementary, Engineering, Easy! (p. 57)
12:30–1:30 PM	E–M	205, Conv. Center	Solar Energy—Let the SUNSHINE In! (p. 54)
12:30–1:30 PM	G	Gwynn, Hilton	Got HERPS? There’s an App for That! (p. 56)
12:30–1:30 PM	G	Ballroom A, Conv. Center	A Student-centered Science Experience (p. 57)
12:30–1:30 PM	H	203B, Conv. Center	NSTA Press® Session: Including Students with Disabilities in Advanced Science Classes (p. 54)
12:30–1:30 PM	P–E	202 A/B, Conv. Center	NSTA Press® Session: Uncovering Elementary Students’ Ideas in Science (p. 57)
12:30–1:30 PM	M–C	Walker A/B, Hilton	An Authentic Literacy-driven Classroom! (p. 56)
12:30–1:30 PM	E–H	Charlotte Hall, Hilton	Science Notebooking: Integrating Literacy and Science Instruction in the Secondary Classroom (p. 57)
12:30–1:30 PM	G	Ardrey, Hilton	Partners in Progress: Best Practices for Building Partnerships with STEM-based Groups (p. 55)
12:30–1:30 PM	G	Graves, Hilton	Teaching Problem-solving Strategies in the Elementary Classroom: Helping Students See the Interconnectedness of Science, Technology, Engineering, and Mathematics (p. 56)
12:30–1:30 PM	M–H	Trade, Westin	Seamlessly Integrating Common Core and the Next Generation Science Standards Within Your Classroom (p. 56)
12:30–1:45 PM	3–6	213 B/C, Conv. Center	Online Assessment That Informs Instruction (p. 59)
12:30–1:45 PM	K–8	213D, Conv. Center	DSM and STEM: Challenges for the Elementary Student (p. 59)
12:30–1:45 PM	K–8	208A, Conv. Center	The Next Generation Science Standards Are Here...Now What? Focus and Exploration of Implementation with Integrity K–8 (p. 58)
12:30–1:45 PM	K–6	217 B/C, Conv. Center	33 Strategies for Integrating Disciplinary Literacy (p. 59)
12:30–1:45 PM	K–8	219 A/B, Conv. Center	Applying Common Core State Standards for English Language Arts Through Active Science Instruction in the K–8 Classroom (p. 59)
2:00–2:30 PM	H	Grand Ballroom B, Westin	Using Virtual Field Trips to Bring Research into the Classroom (p. 60)

Schedule at a Glance General Science

2:00–3:00 PM	H	Providence Blrm. I, Westin	Science, Engineering, and the Common Core (p. 63)
2:00–3:00 PM	E/C	205, Conv. Center	How Do You Spell Science? (p. 61)
2:00–3:00 PM	E–M	204, Conv. Center	Community Problem Solving with Elementary Students (p. 61)
2:00–3:00 PM	G	Ballroom A, Conv. Center	A Student-centered Science Experience (p. 63)
2:00–3:00 PM	E	206 A/B, Conv. Center	Using Technology as a Tool for Differentiated Instruction in the Science Classroom (p. 61)
2:00–3:00 PM	M–C	Graves, Hilton	Using Blended Learning Methods to Accelerate Students' Digital Skills (p. 61)
2:00–3:00 PM	E–H	Graves, Hilton	Wikispaces: Free Evaluation Projects (p. 61)
2:00–3:00 PM	E–H	Ardey, Hilton	Patterson Science Center—Who Are We and What Is Our Mission for Caldwell County Schools? (p. 61)
2:00–3:00 PM	G	Charlotte Hall, Hilton	A Picture Is Worth a Thousand Words: Teaching Scientific Visual Literacy (p. 63)
2:00–3:00 PM	G	Walker A/B, Hilton	Pedagogical Practices in Literacy to Enhance Inquiry-based Instruction (p. 62)
2:00–3:00 PM	P–M	201 A/B, Conv. Center	How to Choose and Use the Best in Children's Literature (p. 62)
2:00–3:00 PM	P–E	202 A/B, Conv. Center	Discrepant Events: More Bang for Fewer Bucks (p. 61)
2:00–3:00 PM	E	203B, Conv. Center	NSTA Press® Session: Inquiring Scientists, Inquiring Readers (p. 62)
2:00–3:00 PM	M	203A, Conv. Center	Scale the Universe (p. 62)
2:00–3:00 PM	E–M	Ballroom B, Conv. Center	CESI Session: Council for Elementary Science International Share-a-Thon (p. 63)
2:00–3:00 PM	G	Gwynn, Hilton	Media Literacy and Science—The Eyes Have It (p. 61)
2:00–3:30 PM	G	Ballroom C/D, Conv. Center	How to Get Your Students to Think, Problem Solve, and Achieve Using STEM (p. 65)
2:15–3:30 PM	K–8	213D, Conv. Center	Teaching Argumentation for Our Next Generation (p. 67)
2:15–3:30 PM	6–C	212 A/B, Conv. Center	Create a Digital Wi-Fi Classroom! (p. 66)
2:15–3:30 PM	6–9	211 A/B, Conv. Center	Improv in the Science Classroom: Helping Students Open Their Minds (p. 66)
2:15–3:30 PM	2–6	217 B/C, Conv. Center	The Best of Both Worlds: How to Engage Students in NGSS Practices Through Science and Literacy (p. 67)
3:30–4:30 PM	G	215, Conv. Center	Engaging K–6 Science Students with Scientific Inquiry, Supported by Science Literacy Skills and Extraordinary Print Resources (p. 68)
3:30–4:30 PM	M–H	Providence Blrm. I, Westin	The ABCDs of Modeling: How to Add the Next Generation Science Standards Practice of Modeling to Your Classroom (p. 70)
3:30–4:30 PM	H	Grand Ballroom B, Westin	Literacy and Science Skills United in a Transdisciplinary Unit (p. 69)
3:30–4:30 PM	M–H	206 A/B, Conv. Center	Edmodo in the Classroom (p. 68)
3:30–4:30 PM	M/I	207A, Conv. Center	Fly To Learn, Powered by X-Plane—Building Engineers One Student at a Time! (p. 70)
3:30–4:30 PM	G	Ballroom A, Conv. Center	A Student-centered Science Experience (p. 70)
3:30–4:30 PM	M/S	205, Conv. Center	Disciplinary Literacy in Middle School Science: Reading, Writing, and Talking as Active Learning Processes (p. 68)
3:30–4:30 PM	G	Walker A/B, Hilton	Linking Science Writing and Research Through the DuPont Challenge (p. 69)
3:30–4:30 PM	G	Graves, Hilton	Motivating Students to Engage in Science and Engineering Activities (p. 69)
3:30–4:30 PM	E–H	South Carolina Hall, Hilton	Literacy to Learn Science (p. 70)
3:30–4:30 PM	G	Ardey, Hilton	The NSTA Learning Center: A Tool to Develop Preservice Teachers (p. 69)
5:00–6:00 PM	G	South Carolina Hall, Hilton	Fueling the Future: Energy Interconnections and Sustainable Choices (p. 75)
5:00–6:00 PM	G	Graves, Hilton	Exploring the World and Bringing It Back to the Classroom (p. 73)
5:00–6:00 PM	G	Ardey, Hilton	I Want to Be a Science Teacher—Now What? (p. 73)
5:00–6:00 PM	M–C	Walker A/B, Hilton	Science 2.0: Integrating Technology into the Science Classroom (p. 73)
5:00–6:00 PM	E–H	Gwynn, Hilton	Mud, Cows, Bats, and Insects—Getting the Dirt on STEM Careers (p. 73)
5:00–6:00 PM	G	Gwynn, Hilton	Helping You Put the “E” in STEM Through the National Engineers Week Future City Program (p. 73)
5:00–6:00 PM	G	Charlotte Hall, Hilton	Igniting Interest and Engaging Learning with 3-D Graphic Organizers (p. 75)
5:00–6:00 PM	M–H	Sharon, Westin	Study Strategies for Science Students (p. 74)
5:00–6:00 PM	H/S	Kings, Westin	High School Science Disciplinary Literacy: Reading, Writing, and Talking as Active Learning Processes (p. 74)
5:00–6:00 PM	G	Ballroom A, Conv. Center	A Student-centered Science Experience (p. 74)
5:00–6:00 PM	E	203B, Conv. Center	NSTA Press® Session: Next Time You See a Sunset, a Seashell, a Firefly... (p. 74)
5:00–6:00 PM	E–M/C	203A, Conv. Center	UTeach Engineering Activities: Step 1 and Step 2 Upper Elementary and Middle School Engineering Lessons (p. 74)
5:00–6:00 PM	I	204, Conv. Center	Engaging Girls in Renewable Energy STEM (p. 72)

5:00–6:00 PM	E–H	206 A/B, Conv. Center	Time Is Money: Save Both Using Online Lab Simulations (p. 72)
5:00–6:00 PM	M–H	Grand Ballroom B, Westin	Using Writing to Learn Science (p. 73)
5:00–6:00 PM	H	Tryon, Westin	Engineering: The Integrated STEM Activity (p. 75)
5:00–6:00 PM	E	215, Conv. Center	Integrating Hands-On STEM Activities with Math and Reading Common Core State Standards (p. 73)

Friday

8:00–9:00 AM	M	204, Conv. Center	The “Extreme STEM Tour” (p. 77)
8:00–9:00 AM	H/S	205, Conv. Center	Challenge Your High School Students: <i>Engineer Your World</i> (p. 77)
8:00–9:00 AM	6–8	213D, Conv. Center	Merging the Three Dimensions of the Next Generation Science Standards (p. 80)
8:00–9:00 AM	E	203B, Conv. Center	NSTA Press® Session: <i>Picture-Perfect Science Lessons</i> : Using Picture Books to Guide Inquiry (p. 78)
8:00–9:00 AM	E–M	201 A/B, Conv. Center	A “Short Story” of Science: Integrating Children’s Literacy into the Science Classroom! (p. 77)
8:00–9:00 AM	M–H	Queens, Westin	NMLSTA Session: Science and Special Education—How to Make It Work (p. 78)
8:00–9:00 AM	M–H	Trade, Westin	Bringing Scientific Argumentation into the Science Classroom (p. 78)
8:00–9:00 AM	G	Mecklenburg Hall, Hilton	Planning and Designing Safe, Sustainable, and Flexible Facilities for STEM-based Science (Science Facilities 101) (p. 79)
8:00–9:00 AM	G	Walker A/B, Hilton	Want to Be an Einstein Fellow? (p. 77)
8:00–9:00 AM	E–H	Graves, Hilton	Creating and Maintaining a Culture of Science Fair in Your School (p. 77)
8:00–9:00 AM	G	South Carolina Hall, Hilton	ASEE Session: ASEE K–12 Engineering Resources, Including Engineering Go For It! (p. 79)
8:00–9:00 AM	G	Ardrey, Hilton	Creative Problem Solving with Toshiba/NSTA ExploraVision (p. 77)
8:00–9:00 AM	G	Caldwell, Hilton	NSELA Session: Tools for Science Leaders, Part I (p. 77)
8:00–9:15 AM	6–9	211 A/B, Conv. Center	“Hard” Doesn’t Mean “Bad”—Helping Students Understand That Facing Challenges Is a Good Thing (p. 81)
8:00–9:15 AM	K–3	212 A/B, Conv. Center	GeoSTEAM in the K–2 Classroom (p. 81)
8:00–9:15 AM	6–8	219 A/B, Conv. Center	IQWST Tablet Edition: Blending the Effectiveness of Learning-by-Doing with the Power of Connected Mobile Technology (p. 81)
8:00–9:15 AM	9–12	210 A/B, Conv. Center	PASCO’s SPARKscience for High School Students—Free Starter Kits for Attendees! (p. 81)
8:00–10:00 AM	G	Ballroom B, Conv. Center	ESP: Unique Features of Programs That Meet “More Emphasis” Features in NSES (p. 82)
9:30–10:30 AM	G	Ballroom C/D, Conv. Center	Speaking, Listening, and Learning in Science—Supporting Conceptual Change Through Science Talk (p. 84)
9:30–10:30 AM	G	Queens, Westin	NMLSTA Session: Win Big! Write a Grant and Your Students Win, Too! (p. 85)
9:30–10:30 AM	M–H	Trade, Westin	Let’s Argue About It! (p. 86)
9:30–10:30 AM	G	Caldwell, Hilton	NSELA Session: Tools for Science Leaders, Part II (p. 85)
9:30–10:30 AM	H	South Carolina Hall, Hilton	ASEE Session: Power Generation for the Developing World (p. 87)
9:30–10:30 AM	G	Graves, Hilton	Roadmap: Science and Literacy Collaboration (p. 85)
9:30–10:30 AM	G	Ardrey, Hilton	Authors Needed! (p. 85)
9:30–10:30 AM	E–H	Walker A/B, Hilton	Rev It Up with North Carolina Science Olympiad (p. 85)
9:30–10:30 AM	G	Mecklenburg Hall, Hilton	The Architects Have Started Without Me: What Do I Do Now? (Science Facilities 102) (p. 87)
9:30–10:30 AM	E–H	Charlotte Hall, Hilton	Nature’s Engineers: Connecting STEM Education with Environmental Literacy Through Engineering (p. 87)
9:30–10:30 AM	G	Gwynn, Hilton	Getting Your Students on the Right Track for STEM Careers (p. 85)
9:30–10:30 AM	G	203B, Conv. Center	NSTA Press® Session: <i>Exemplary Science: Best Practices in Professional Development</i> (p. 84)
9:30–10:30 AM	E	215, Conv. Center	Using Award-winning Science Trade Books to Integrate ELA and Science (p. 84)
9:30–10:30 AM	H–C/S	Grand Ballroom C, Westin	Rev It Up with Modeling Biology, Chemistry, and Physics (p. 87)
9:30–10:30 AM	M–H	Grand Ballroom A, Westin	The Dating Game, STEM Career Edition (p. 87)
9:30–10:30 AM	9–12	213D, Conv. Center	Engineering in the Next Generation Science Standards (p. 88)
9:30–10:30 AM	E–M	205, Conv. Center	The Capture: Integrating Science and Language Arts Through Literature (p. 84)

Schedule at a Glance General Science

9:30–10:30 AM	G	207A, Conv. Center	Science and Literacy: A Natural Fit (p. 86)
10:00–11:15 AM	6–8	211 A/B, Conv. Center	Experience the Power of a Digital Middle School Program (p. 89)
10:00–11:15 AM	6–8	219 A/B, Conv. Center	The NGSS and Scientific Practices—More Than Photoshopping Models’ Flaws (p. 89)
10:00–11:15 AM	K–6	217 B/C, Conv. Center	Elementary Teacher Survival Kit (p. 89)
10:00–11:15 AM	6–8	210 A/B, Conv. Center	PASCO’s SPARKscience for K–8 Students—Free Starter Kits for Attendees! (p. 88)
10:00–11:30 AM	3–C	209 A/B, Conv. Center	Integrate iPad® and BYOD with Vernier Technology (p. 90)
11:00 AM–12 Noon	E	215, Conv. Center	Like All Scientists, I’ve Got Problems: An Introduction to Problem-Based Learning in the Elementary Science Classroom (p. 90)
11:00 AM–12 Noon	6–C	213D, Conv. Center	Bringing Technology into Your STEM Classroom (p. 93)
11:00 AM–12 Noon	I	207 B/C, Conv. Center	Island Ecology for Educators: Using Coastal Resources to Engage Students (p. 92)
11:00 AM–12 Noon	H	205, Conv. Center	Integrating the Engineering Grand Challenges into the Science Classroom (p. 90)
11:00 AM–12 Noon	E–M	204, Conv. Center	Bring the Magic of Space to Your Classroom! (p. 90)
11:00 AM–12 Noon	E	203B, Conv. Center	NSTA Press® Session: The Authors’ Picks! Teaching Science Through Trade Books (p. 92)
11:00 AM–12 Noon	E–H	Charlotte Hall, Hilton	Rev It Up with North Carolina Science Olympiad: Hands-On STEM Education (p. 92)
11:00 AM–12 Noon	G	Walker A/B, Hilton	The Paperless Classroom: One School’s Adventures in Going 0 to 60 in Technology (p. 91)
11:00 AM–12 Noon	G	Graves, Hilton	Strategies to Enhance Science Instruction Through Standards-based Assessments (p. 91)
11:00 AM–12 Noon	G	South Carolina Hall, Hilton	ASEE Session: Introducing Engineering to Elementary School Students (p. 92)
11:00 AM–12 Noon	G	Caldwell, Hilton	Developing Science Leadership for the NGSS and Beyond (p. 91)
11:00 AM–12 Noon	M–H	Trade, Westin	Whet Your Appetite with Learning Menus (p. 91)
11:30 AM–12 Noon	E–H	Gwynn, Hilton	Science and Literature: The Pitfalls and the Pendulum (p. 93)
12 Noon–1:15 PM	9–12	210 A/B, Conv. Center	PASCO’s SPARKscience for High School Students—Free Starter Kits for Attendees! (p. 94)
12 Noon–1:30 PM	3–C	209 A/B, Conv. Center	Integrate iPad and BYOD with Vernier Technology (p. 94)
2:00–3:00 PM	G	Ballroom C/D, Conv. Center	Cracking the Code of the “Native” Learning Experience (p. 95)
2:00–3:00 PM	M–H	Grand Ballroom A, Westin	Using Squeak Etoys to Teach Technology Skills (p. 99)
2:00–3:00 PM	M–H	Trade, Westin	Science Instruction for the 21st-Century Classroom (p. 98)
2:00–3:00 PM	E–H	203B, Conv. Center	NSTA Press® Session: Special Needs Students in Science (p. 96)
2:00–3:00 PM	E	207 B/C, Conv. Center	Trading Places: Science in Reading and Reading in Science (p. 99)
2:00–3:00 PM	H	Gwynn, Hilton	Introduction to Web 2.0 on the iPad (p. 97)
2:00–3:00 PM	P–E	203A, Conv. Center	Food for Thought II: Science—I’ve Got the “WRITE” Stuff (p. 99)
2:00–3:00 PM	E–M	202 A/B, Conv. Center	STEM for Any Classroom: STEM Supports the Whole Curriculum (p. 99)
2:00–3:00 PM	G	Caldwell, Hilton	Getting More Out of Your NCSTA Membership (p. 96)
2:00–3:00 PM	G	Graves, Hilton	Dazzling Deceptions: Discrepant Events That Delight and Mystify! (p. 96)
2:00–3:00 PM	G	Ardrey, Hilton	Before and After Retirement: Practicalities and Possibilities (p. 96)
2:00–3:00 PM	G	Walker A/B, Hilton	Tracking the Future of Electricity (p. 97)
2:00–3:00 PM	M–C	South Carolina Hall, Hilton	ASEE Session: Think Like an Engineer/Think Like a Scientist (p. 97)
2:00–3:00 PM	G	Charlotte Hall, Hilton	“Stuff,” STEM, and Sustainability—Examining and Reengineering Systems, Resources, and Consumption (p. 99)
2:00–3:15 PM	K–8	208A, Conv. Center	The Next Generation Science Standards...and the Common Core? Reflection and Application of the Common Core ELA and Math Integration K–8 (p. 101)
2:00–3:15 PM	G	217D, Conv. Center	Foldables® + Science Standards + Envelopes = A Winning Combination (p. 101)
2:00–3:15 PM	6–12	217 B/C, Conv. Center	The Next Generation of Notebooking (p. 101)
3:00–4:30 PM	7–C	213 B/C, Conv. Center	Engineer the Tools for Inquiry of Candy Food Dyes (p. 102)
3:30–4:30 PM	M–H/I	Trade, Westin	Digital Resources for Teachers and Students (p. 104)
3:30–4:30 PM	M–C	Charlotte Hall, Hilton	Rev It Up with a Showcase of Polymer Demonstrations! (p. 105)
3:30–4:30 PM	M/S	South Carolina Hall, Hilton	ASEE Session: Engineering in Support of Middle Grades Science and Math (p. 105)
3:30–4:30 PM	G	Walker A/B, Hilton	Zack Packs: Increasing Science Literacy and Inquiry Skills in Special Education Students (p. 103)
3:30–4:30 PM	G	Gwynn, Hilton	Fun Formative Assessments and Common Core (p. 103)

Schedule at a Glance General Science

3:30–4:30 PM	G	Ardrey, Hilton	Flipping Your Science Class: Turning Science Class on Its Head (p. 103)
3:30–4:30 PM	G	Graves, Hilton	Magical Illusions for Science—It's Showtime! (p. 103)
3:30–4:30 PM	G	Caldwell, Hilton	SCST Session: Using Mainstream Science Fiction Films as an Instructional Strategy to Teach Nature of Science and Scientific Inquiry (p. 103)
3:30–4:30 PM	I	202 A/B, Conv. Center	Engineering Understanding of a Health Crisis (p. 104)
3:30–4:30 PM	E	203A, Conv. Center	Making the Interdisciplinary Connection Between Literacy and Science (p. 104)
3:30–4:30 PM	P–E	201 A/B, Conv. Center	<i>Science & Children</i> —A Year of Inquiry (p. 104)
3:30–4:30 PM	E–M	205, Conv. Center	The True Story of Inquiry-based Learning (p. 102)
3:30–4:30 PM	G	207 B/C, Conv. Center	Make a Bouncy Ball! Science and Math Connections to Manufacturing a Fun Product (p. 105)
3:30–4:30 PM	M	215, Conv. Center	Re-WRITING Science Incorporating Common Core (p. 102)
5:00–5:30 PM	H	Trade, Westin	A Kenan Fellow Presents 21st-Century Health Care in the Science Classroom (p. 106)
5:00–6:00 PM	M–C	Graves, Hilton	AMSE Session: Creating Project Based Learning (PBL) Experiences (p. 107)
5:00–6:00 PM	S	Queens, Westin	Using Socratic Discourse to Foster an Environment of Verbal Literacy in Science Classrooms: Strategies and Structures (p. 107)
5:00–6:00 PM	G	South Carolina Hall, Hilton	ASEE Session: Engineering the Future with <i>TeachEngineering.org</i> (p. 108)
5:00–6:00 PM	G	Charlotte Hall, Hilton	Chia Seeds Promote Cross-Cultural Inquiry in the Elementary Classroom (p. 108)
5:00–6:00 PM	E–M	201 A/B, Conv. Center	Engagement Without Learning Is Just Fun (p. 108)
5:00–6:00 PM	G	Gwynn, Hilton	Understanding the Parent-Teacher-Child Triad in STEM Education (p. 107)
5:00–6:00 PM	M	205, Conv. Center	Science Plus Literacy—Blended and Seamless (p. 107)
5:00–6:00 PM	E	215, Conv. Center	We Are Scientists! Starting Off the School Year in a First-Grade Classroom Focused on Integrating Science and Common Core State Standards on Literacy (p. 107)

Saturday

8:00–9:00 AM	E	211 A/B, Conv. Center	Science the UDL Way! (p. 111)
8:00–9:00 AM	E	207D, Conv. Center	Energy Education + Common Core = Improved Literacy (p. 113)
8:00–9:00 AM	M–H	206 A/B, Conv. Center	Science in the One-to-One Classroom (p. 111)
8:00–9:00 AM	E–M	207A, Conv. Center	Science Vocab Out of the Box: Unique Ways to Help Students Master Vocab (p. 113)
8:00–9:00 AM	M–H	Providence Blrm. III, Westin	Square Pegs (p. 112)
8:00–9:00 AM	G	Gwynn, Hilton	NOAA in Your Backyard: Professional Development Opportunities and Local Educator Resources (p. 111)
8:00–9:00 AM	G	203B, Conv. Center	NSTA Press® Session: Uncovering Students' and Teachers' Ideas in Science (p. 113)
8:00–9:00 AM	E–M	202 A/B, Conv. Center	Creativity Is Back: Targeting Science Motivation, Learning, and Engagement with Unique Unit-based Student Portfolios (p. 112)
8:00–9:00 AM	E–H	Charlotte Hall, Hilton	Promoting Students as Researchers in Science and Engineering (p. 113)
8:00–9:00 AM	G	Walker A/B, Hilton	Using Teacher Logs to Reflect on Practice and Document Instructional Practices (p. 111)
8:00–9:00 AM	G	South Carolina Hall, Hilton	Do NOT Sit Down and Be Quiet! (p. 113)
8:00–9:00 AM	M–H	Independence, Westin	Including Students with Disabilities—Strategies That Work (p. 112)
8:00–9:00 AM	M–H	Trade, Westin	Shifting Student Thinking to Incorporate Evidence-based Claims (p. 112)
9:30–10:30 AM	G	Ardrey, Hilton	From Galileo to Moon Dust—The Consilience of Science and Religion (p. 115)
9:30–10:30 AM	G	South Carolina Hall, Hilton	Using the Dimensions of the NRC <i>Framework</i> to Improve Teacher Practice in North Carolina (p. 116)
9:30–10:30 AM	E–H	Charlotte Hall, Hilton	Exploring NASA Engineering Challenges—Something for Everyone! (p. 116)
9:30–10:30 AM	E–M	202 A/B, Conv. Center	iRead, iWrite, iDoScience—Science in a Box or Bag (p. 116)
9:30–10:30 AM	G	Gwynn, Hilton	Exploring the Future of Nuclear Power (p. 115)
9:30–10:30 AM	G	Walker A/B, Hilton	Great Science Lesson = Presidential Award + \$10,000 (p. 115)
9:30–10:30 AM	M–H/I	Grand Ballroom B, Westin	Rev It Up! for Student Engagement Using Authentic Data (p. 117)
9:30–10:30 AM	M–H	206 A/B, Conv. Center	Don't Flip Out About Flipping Your Classroom (p. 114)
9:30–10:30 AM	M–H	205, Conv. Center	Science Literacy at the Secondary Level (p. 114)

Schedule at a Glance General Science

9:30–10:30 AM	P–E	204, Conv. Center	Engineering in an Elementary School (p. 114)
9:30–10:30 AM	P–E	207D, Conv. Center	The Wonder of Colors (p. 116)
9:30–10:30 AM	G	211 A/B, Conv. Center	Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (p. 114)
9:30–10:30 AM	G	212 A/B, Conv. Center	What’s the Impact? (p. 115)
11:00–11:30 AM	G	212 A/B, Conv. Center	A Model for K–8 Science Fairs—Participation and Success for All Students (p. 117)
11:00 AM–12 Noon	G	211 A/B, Conv. Center	STEM and Student Engagement: The Power of Ownership (p. 118)
11:00 AM–12 Noon	G	211 A/B, Conv. Center	Robotic Rewards: Recruiting Middle School Students for an Award-winning Robotics Team (p. 118)
11:00 AM–12 Noon	E–M	203B, Conv. Center	NSTA Press® Session: Outdoor Science and Bringing It In (p. 120)
11:00 AM–12 Noon	E–M	207 B/C, Conv. Center	Nanotechnology in Elementary and Middle School, Oh My! (p. 120)
11:00 AM–12 Noon	E	207D, Conv. Center	Taking Science Outside to Drive Literacy Instruction (p. 120)
11:00 AM–12 Noon	M–H	Trade, Westin	Measuring Student Proficiency (p. 119)
11:00 AM–12 Noon	P–E	215, Conv. Center	Racing Toward Science and Literacy Integration: A University/Urban School Partnership (p. 118)
11:00 AM–12 Noon	M–C/S	Providence Blrm. I, Westin	Merging Literacy into Science Instruction Through Problem-Based Learning in STEM Activities (p. 121)
11:00 AM–12 Noon	P–M/I	202 A/B, Conv. Center	Primary Engineering in the K–5 Classroom (p. 119)
11:00 AM–12 Noon	G	Charlotte Hall, Hilton	Interactive Content Area Reading Strategies (iCARS) (p. 120)
11:00 AM–12 Noon	G	Walker A/B, Hilton	Early Bird Lessons (p. 118)
11:00 AM–12 Noon	E–H	Gwynn, Hilton	From the Arctic to Antarctic—”Cool” Experiences Bring Polar Science to the Classroom (p. 118)
11:00 AM–12 Noon	G	Ardrey, Hilton	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 118)
11:00 AM–12 Noon	G	South Carolina Hall, Hilton	Kenan Fellows: Preparing Students for the Real World Takes Teachers Who Learn in the Real World (p. 120)

Physics/Physical Science

Thursday

8:00–9:00 AM	H	Grand Ballroom C, Westin	Come Play with a Purpose (p. 48)
12:30–1:30 PM	M–H	Grand Ballroom D, Westin	Energy in the Physics Classroom (p. 58)
12:30–1:45 PM	6–12	217A, Conv. Center	Motion Comes Alive with CPO’s Velocity Sensor (p. 59)
2:00–3:00 PM	E–M	207 B/C, Conv. Center	Elastic Power—Wind Up Your Engines and Explore (p. 63)
2:00–3:00 PM	6–8	208B, Conv. Center	Waves, Energy, and Color (p. 64)
2:00–3:00 PM	M–H	Trade, Westin	Students Engineering Labs (p. 62)
2:15–3:30 PM	6–12	208A, Conv. Center	Engineer Excitement in Your Classroom with a Carolina STEM Challenge™ (p. 66)
2:15–3:30 PM	6–12	217A, Conv. Center	Wind Turbine and the STEM Approach to Science Concepts (p. 67)
3:30–4:00 PM	H–C	Harris, Westin	Making Sense out of Curve Fitting: Using Matching Tables to Translate Between Mathematics and the Real World (p. 68)
3:30–4:30 PM	E–H	Tryon, Westin	Engineering Units from Base 2 to Base 10 (p. 71)
3:30–4:30 PM	6–12	208B, Conv. Center	Integrate Math Modeling and Problem Solving Through Racing (p. 71)
4:00–5:15 PM	6–12	217A, Conv. Center	Sound and Waves (p. 72)
5:00–6:00 PM	E–H	Providence Blrm. I, Westin	Classroom Activities for <i>Stop Faking It: Energy</i> (p. 75)

Friday

8:00–9:00 AM	G	Providence Blrm. I, Westin	AAPT Session: Modeling What You See Using Video Analysis (p. 80)
8:00–9:00 AM	G	Grand Ballroom C, Westin	Choose a Challenge: The Jet Car Project (p. 79)
8:00–9:00 AM	M–H	Grand Ballroom A, Westin	Graphing a Pathway Through Mechanics: An Inquiry into Uniform Motion (p. 79)
8:00–9:00 AM	M–H	207A, Conv. Center	Rev It Up! Energize Science and Literacy Connections (p. 79)
8:00–9:15 AM	K–3	216 A/B, Conv. Center	Science and Literature for the Young Learner (p. 81)

Schedule at a Glance Physics/Physical Science

9:30–10:30 AM	G	Providence Blrm. I, Westin	AAPT Session: PhysicsQuest: Spectra's Turbulent Times (p. 88)
9:30–10:30 AM	M–H/I	207 B/C, Conv. Center	Rev It Up with Pasta Pod Cars! (p. 86)
9:30–10:30 AM	E–M	207D, Conv. Center	Rev It Up with a Rubber Band Car Drag Race! (p. 87)
10:00–11:15 AM	5–9	212 A/B, Conv. Center	There's a New Robot in Class! LEGO® MINDSTORMS® Education EV3 in Your Classroom (p. 89)
11:00 AM–12 Noon	G	Providence Blrm. I, Westin	AAPT Session: Supernova Remnants, Cosmic Rays, and Cosmology (p. 91)
11:00 AM–12 Noon	G	Tryon, Westin	AMSE Session: A Glimpse at the Science Education in India (p. 91)
11:00 AM–12 Noon	H/I	Sharon, Westin	Best Practices for Robotics Clubs (p. 91)
12:30–1:30 PM	9–C	213D, Conv. Center	Active Physics—Ahead of Its Time in Capturing the Essence of the NGSS and STEM (p. 94)
12:30–1:30 PM	6–8	208B, Conv. Center	Matter: Properties and Change (p. 94)
2:00–3:00 PM	H	205, Conv. Center	Our Nuclear World: The Engineering Behind Nuclear Power Production (p. 96)
2:00–3:00 PM	G	Providence Blrm. I, Westin	AAPT Session: Astronomy Make-and-Take (p. 100)
2:00–3:00 PM	M–H	Independence, Westin	Anchors Away for STEM Education (p. 97)
2:00–3:00 PM	H–C	Queens, Westin	NARST Session: Comparison of the Knowledge Structures and Problem-solving Ability of AP Physics Students in a Traditional Course and a Modeling Instruction Course: An Exploration (p. 98)
2:00–3:00 PM	E–M	201 A/B, Conv. Center	Engineering: Integrate the 3Ds in the NGSS (p. 99)
2:00–3:30 PM	7–C	209 A/B, Conv. Center	Physics and Physical Science with Vernier (p. 102)
3:30–4:30 PM	G	Providence Blrm. I, Westin	AAPT Session: Using Video and Animation in Physics Instruction (p. 103)
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3:30–4:30 PM	6–12	208B, Conv. Center	Integrate Math Modeling and Problem Solving Through Racing (p. 106)
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8:00–9:00 AM	M–H	Providence Blrm. II, Westin	Hands-On Activities for Teaching the Basic Physical Quantities of Mechanics (p. 113)
8:00–9:00 AM	E	203A, Conv. Center	Soar with Inquiry: The Science of Flight for Your Elementary Science Classroom (p. 112)
9:30–10:30 AM	M	207B/C, Conv. Center	NASA Engineering Activities Under \$1! (p. 116)
9:30–10:30 AM	E–M	203B, Conv. Center	NSTA Press® Session: Stop Faking It! Finally Understand LIGHT AND SOUND So You Can Teach It (p. 116)
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